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Determinants and Market Assessment of Non-Controlling Interests Reported on Financial Statements

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To Pedro.

To my daughters, Raquel and Sara.

To my stepchildren, Francisca and Francisco.

To my parents.

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It is not easy to appoint all the persons to whom I am grateful. And it is surely unfair to choose the first or the last one to whom I want to give a word of thanks. Please, considerer these words as a circle, which has no beginning or end, but that surrounds all those who are part of my heart. If I could catch the sun, I would distribute its rays to all those who brought me light in this long journey.

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ABSTRACT

This thesis comprises three independent but related papers. We identify, in the first paper, characteristics of firms reporting Non-Controlling Interests (NCI). We find that larger firms, leveraged firms and profitable firms are more likely to use and report NCI. Country legal origin also plays an important role and we provide evidence of a higher probability of report NCI in French-civil law countries and lower in Common law, with Scandinavian/German-civil law countries placed in the middle. In the second paper we examine whether the market values NCI differently depending on the environment characteristics of each country. We find a positive association between NCI and the market value of the parent company shares in France and Greece, and a negative association in United Kingdom, Sweden and Germany, although the market penalizes less these last two. In the third paper we test the consistency of market in pricing NCI similarly irrespectively of being reported on different locations in the financial reporting. Our results suggest that investors prices NCI in the same way whether reported on the mezzanine section between liabilities and equity or within equity.

Overall, we provide new evidence about the pattern of use of NCI by European countries, supporting that the lower the investor protection environment, the more probability of report NCI and the more likelihood of a non-negative association between NCI and share prices of parent companies. Notwithstanding, the market is consistent and values the NCI similarly, whether or not reported as equity.

Key words: Non-Controlling Interests, Value Relevance, Investor Protection, Recognition *versus* Disclosure.

JEL Classification: M41-Accounting; G32- Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure.

RESUMO

Esta tese compreende três artigos independentes, ainda que relacionados. No primeiro, identificamos características das entidades que reportam *Non-Controlling Interests* (NCI). Apuramos maior probabilidade das empresas de superiores dimensão, endividamento e rendibilidade deterem e reportarem NCI. A origem do direito é igualmente factor determinante, evidenciando-se maior probabilidade de existência e reporte de NCI nos países *French-Civil law* e menor nos *Common law*, com os países *Scandinavian/German-Civil law* em posição intermédia. No segundo artigo analisamos se o mercado valoriza os NCI de forma diferente em função das características institucionais de cada país. Evidenciamos uma associação positiva entre os NCI e o valor de mercado das acções da empresa-mãe em França e na Grécia, e negativa no Reino Unido, na Suécia e na Alemanha, ainda que nestes últimos dois a penalização do mercado seja inferior. No terceiro artigo testamos se os NCI são valorizados de forma idêntica, independente da localização do seu reporte nas demonstrações financeiras consolidadas. Constatamos que os investidores valorizam similarmente os NCI quando apresentados entre o passivo e o capital próprio ou quando incluídos no capital próprio.

Globalmente, apresentamos evidência inédita sobre o padrão de uso de NCI em empresas Europeias, inferindo-se que quanto menor for o nível de protecção ao investidor, maior é a probabilidade de se reportar NCI e de se obter uma associação não negativa entre os NCI e o preço das acções da empresa-mãe. Não obstante, o mercado é consistente e valoriza os NCI de forma similar, apresentados ou não como capital próprio.

Palavras-chave: Interesses Sem Controlo, Valor Relevante, Protecção ao Investidor, Reconhecimento *versus* Divulgação.

JEL Classification: M41-Accounting; G32- Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure.

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CHAPTER 1 - INTRODUCTION

1.1. BACKGROUND OF THE RESEARCH

According to prior literature there are two major theories underlying the preparation of consolidated financial statements, the parent company theory and the entity theory (e.g. Moonitz, 1942; Baxter and Spinney, 1975; Clark, 1993; Scofield, 2003; Zeff, 2005). Differences between both theories are mainly related to the recognition and measurement of the Non-Controlling Interests reported by some parent companies in their consolidated financial statements.

The Non-Controlling Interests, hereafter designed as NCI, are defined in current International Account Standards (IAS/IFRS) issued by International Accounting Standards Board (IASB), and in Standards of Financial Accounting issued by Financial Accounting Standards Board (FASB) as the equity in a subsidiary not attributable, directly or indirectly, to a parent company. This outcomes that NCI are only reported on consolidated statement of financial position if the parent have a controlling interest but just a portion of equity ownership in a subsidiary. By other words, NCI exists when a parent company has subsidiaries that are not wholly owned.

The theoretical accounting literature for so long have been dedicated concerns with the reporting of NCI. Particularly, the major accounting boards (IASB and FASB) have been taken some joint projects aiming international standards convergence, and accounting for NCI was one of the last items they added to their agenda. In a widespread accounting systems all over the world the NCI were a hybrid element that usually was reported between equity and liabilities or within liabilities (parent company theory), but since 2005 (IASB) and 2008 (FASB) the NCI were required to be presented within equity (entity theory).

Although the vast theoretical literature on theories underlying the accounting for NCI or on evolution and development of new standard' requirements on this issue, just a scant stream has been dedicated to empirical research focusing on the NCI reported on consolidated financial statements. Even thus, to our knowledge previous empirical researches found mixed results and have only investigated single countries.

Those previous studies have been conducted with the main objective of identifying whether NCI are value relevant to investors within one single country, namely, Spain (Abad et al, 2000), Hong Kong (So and Smith, 2009) and United States (Swanson, 2010). Abad et al (2000) found some weak evidence supporting the value relevance of NCI, but their results show a positive association with the market price of the parent company shares. By contrast, So and Smith (2009) and Swanson (2010) found strong evidence of a negative association between NCI and shares prices.

Neither of the above empirical researches has justified the reasons for mixed results, which give us an opportunity to extend and contribute to prior literature. It can be possible that different market valuations of NCI are associated to differences in the institutional characteristics of the countries where firms operate. More precisely, in those countries based on common law, traditionally with a stronger level of investor protection, the relation between NCI and the parent company share prices probably can be different from those countries based on civil law, traditionally with a weaker level of investor protection.

This can be expected because parent shareholders have the right to control the subsidiary but NCI have the right to participate and in some cases to monitor the subsidiary. Prior literature says that in stronger investor protection environments the parent companies are forced to shoulder the costs of control alone, but also forced to share the benefits of control with the minority shareholders, being the latter allowed to free ride at the controller's expense. By contrast, in weaker investor protection environments, parent shareholders do not face such constrains and have more ability to act extracting private benefits from the firm they control at the expense of other non-controlling shareholders by diverting firm resources for their own use, transferring assets of profits out of subsidiaries or committing funds to unprofitable projects that provide private benefits. The way as the market views NCI in countries from different legal origin as a proxy for investor protection can be a reasonable explanation for prior mixed findings on the value relevance of this alternative source of finance.

By another hand, we do not have aware of a study that identified the pattern of use of NCI. Slight glances at the consolidated financial statements of listed firms in different countries give us some expectations to investigate the reasons why in some of them the majority of parent companies report NCI meanwhile in other countries a minor number of parent companies make use of this source of finance. Thus, it is possible that the decision to use NCI could be dependent on firms' and countries' characteristics and legal origin can be also a reason for differences in the number and proportion of firms reporting NCI in different countries.

Meanwhile, firms applying IAS/IFRS have changed the presentation of NCI, being now reported within equity. This change embraces all European countries with different legal origins, which gives us the opportunity to identify whether the market prices NCI in the same manner independently of the location where they are placed in the consolidated statement of financial position. Once again, we do not have aware of any study that provided empirical evidence of the market perception on the movement of NCI from outside equity to within equity using firms that voluntary have been adopted IAS/IFRS before 2005.

Overall, we identify some gaps on the scan literature on NCI reported on consolidated financial statements for which new empirical findings can be interesting for different players (e.g., investors, standards setters) in different countries. More precisely, we will focus on European countries whose financial statements have been prepared under IAS/IFRS.

1.2. OBJECTIVES AND CONTRIBUTION

This thesis have the general aims to identify determinants of the use of Non-Controlling Interests (NCI) and to examine the market assessment of NCI reported on consolidated statements of financial position (CSFP) by parent companies. To achieve these aims we develop a threefold approach. These three approaches are each one build

up as an independent research paper, although related, since the results from each one are consistent and expanded. The first paper aims to investigate the determinants of using NCI as an alternative source of finance equity. The second paper seeks to identify whether the market values NCI in a different way depending on the institutional environment where firms reporting NCI develop their activities, namely, their legal origin. The third paper intends to investigate whether the market prices NCI in the same way irrespectively of their location in the consolidated statement of financial position, given the new requirements of IAS/IFRS.

Accordingly, in the first paper we intend to investigate the characteristics of firms reporting NCI in order to identify the pattern of use of subsidiaries partially owned by European firms. We rely on a sample of 3.463 listed firms from fourteen European countries and we contribute to the literature finding that the probability of reporting NCI in French-civil-law countries is higher and in Common-law countries is lower, when compared to Scandinavian/German-civil-law countries, the benchmark group. We also provide empirical evidence that larger firms, leveraged firms and profitable firms are more likely to use and report NCI in their consolidated financial statements.

Given the different likelihood of firms reporting NCI around Europe, we skip to our next aim. Accordingly, in the second paper we examine whether the market values NCI in a different way depending on the institutional environment of the parent company. We select a set of European countries with different levels of investor protection. More precisely, our empirical research is developed with data from United Kingdom (Common law country), Sweden and Germany (Scandinavian/German-civil-law countries) and France and Greece (French-civil-law countries). To achieve our aim, firstly we develop a country individual analysis. We find a positive association of NCI with share prices occurring in France and in Greece, as opposed to a negative association in United Kingdom, as well as in Sweden and in Germany. These results suggest that the market values positively the NCI in French-civil law countries but negatively in Common-law and Scandinavian/German-civil law countries. Secondly, we put together firms from Common-law and from Scandinavian/German-civil law countries in order to find whether

the market penalization of NCI is significantly different between these two groups of firms. Our final results show that the NCI in Scandinavian/German-civil law countries are negatively associated with share prices, although with a less penalization than in the Common law country. These findings adds to the literature suggesting that the lower the investor protection environment, the more likelihood of a non-negative relation between NCI and share prices.

These previous results are found from a sample period covered from 2008 to 2010, thus, all the five countries applied the version of IAS 27[1], *Consolidated and Separate Financial Statements*, issued by IASB in 2003 and effective from 2005. This version of IAS 27 changed the way NCI are reported on financial statements, namely, they started to be reported within equity in the consolidated statement of financial position instead of being reported on a mezzanine section between equity and liabilities. This gives us the opportunity to achieve our latest aim, which turns us to the third paper.

The aim of our third paper is to investigate whether the market prices NCI by the same way irrespectively of their location in the consolidated statement of financial position. We analysis whether the current method of reporting NCI (as equity) has a differential effect on share prices, relative to the previous method of reporting (as non-equity), testing the consistency of market investor's perception on accounting numbers presented under different financial statements' formats. To avoid bias in our results from simultaneous changes due to the mandatory of IFRS by 2005, we conduct a within-firm design and limit our investigation to IFRS early adopters. Germany is particularly well appropriate to our study. Unlike other countries, it has a great representation of early adopter firms which provides a reasonable large sample and an ideal natural experiment for examining the financial effects of the movement of NCI without suffer the financial statement effects of the mandatory adoption of the complete set of IASB standards by

[1] Currently, IASB has issued in May 2011 the IFRS 10, *Consolidated Financial Statements*, which has superseded the requirements relating to consolidated financial statements in IAS 27. However, an entity shall apply IFRS 10 (2011) for annual periods beginning just on or after 1 January 2013. Thus, it is not effective yet, and, even it was the case, there isn´t changes to NCI or other subjects that could adjust our main research and results.

2005. With a sample of 308 firm-years observations over the period covering the years 2002 through 2007 (excluding year-2005 to avoid potential bias of the first time adoption of the new version of IAS 27) we provide new empirical evidence suggesting that the location of NCI does not matter in terms of market valuation. These final results give evidence that investors fully incorporate and process all the information about NCI and price them similarly independently of the location where they are reported. These findings extend prior literature, suggesting the consistency of investors on pricing NCI, since it seems that they are not confused with the change in the reporting format. alter

In the set of the three papers as a whole, we follow a large number of studies that relies on market based empirical research on accounting, which is the search into the relationship between publicly disclosed accounting information and the consequences of its use by the major group of users (equity investors) as such consequences are reflected in characteristics of common stocks traded in major exchanges (Lev and Ohlson, 1982). This type of research examines the relation between financial statement information and capital markets, and a large fraction of published research in leading academic accounting journals referred to its use (Kothari, 2001). Currently, the financial accounting research is broadly focused on "(…) the effect of accounting information on the investment decisions of external users in capital markets (…)", as documented in Oler, Oler and Skousen (2010: 664). Results from these authors on characterizing accounting research in these last five decades suggest that the growing body draws increasingly from both finance and economics, and we think our thesis can be framed in this regard. Additionally, each one of the papers that are part of this thesis presents a detailed contribution for the state of the investigation according to the stream of the literature that is embraced (e.g., Owusu-Ansah and Yeoh, 2006; Hughes, 2009; Jifri and Citron, 2009; Atanasov, Boone and Haushalter, 2010; So and Smith, 2009; Mitra and Hossain, 2009; Swanson, 2010; Lin et al, 2011; Landsman et al, 2011).

1.3. RESEARCH METHODOLOGY

Our research methodology uses empirical archival, which is becoming more dominant in all top journals around the world (Coyne et al, 2010). Our principal source of accounting and market data is the Worldscope© and Datastream© databases from Thomson Reuters.

The first paper uses a research method which is supported in a binary logistic regression, a form of regression which is used when the dependent is a dichotomy. It helps in the prediction of the probability of occurrence of an event by fitting data to a logit function. We develop univariate and multivariate analysis, and we use several predictor variables as independent variables, either numerical or categorical. The binary logistic is used as a research method firstly to identify firm and country characteristics that can be appointed as determinants to the use of NCI as an alternative source of finance. The binary logistic estimation accomplishes the subsequent parts of our research when necessary to correct for self-selection bias, as suggested by Heckman (1979).

The second and third papers use a research method which is supported in Ordinary Least Square (OLS) regressions, and we check that the assumptions underlying their usage are satisfied to assure the estimators will be unbiased. This OLS estimation is applied to the so-called residual income valuation model expressing firm´s market value as the sum of current book value, earnings and other information not directly included in financial statements. The model is added with variables whose analysis is of interest accordingly with the aim of each paper. More precisely, the NCI variable is included in the model used in paper 2 to obtain the market assessment in a cross country comparison from different legal origins. As well, the NCI variable is included in the model used in paper 3 to provide evidence on the pricing of this element before and after new requirements in IAS/IFRS concerning their reporting in consolidated statement of financial position.

These last two papers use a set of firms that have been reported NCI accounting numbers in consolidated statement of financial position and that just applied International

Financial Reporting Standards (IAS/IFRS) instead of local standards. Thus, it is possible that our samples include firms that are a subset of the entire set of firms, forming a non-randomly selected sample. In order to draw conclusions about the larger population of all firms in each country we used, as stated, the Heckman (1979) two-stage estimation procedure to control for self selection bias. Consistently, in each paper we firstly develop the so-called first stage, and we use again a binary logistic model which identifies the determinants of choice of use voluntary IAS/IFRS (consistent with the literature) and/or use NCI as an alternative source of finance (consistent with our own findings). The estimated values in these binary logistic models are then used to generate the Inverse of Mill's ratio for each observation. In the so-called second stage, we use this estimation as an additional explanatory variable in our OLS regression valuation model.

Following the literature, we also include other control variables and our results incorporate industry and year fixed effects. When necessary, all our results are corrected for heteroskedasticity and autocorrelation, applying the White and Newey-West correction.

1.4. ORGANIZATION OF THE THESIS

This thesis is organized through three papers. Each one is developed as an independent contribution, although they are related. These papers were submitted to several peer reviews processes under some scientific associations and academic journals.

Following this introduction, chapter two contains the first empirical research written up as a paper entitled: "Characteristics of firms reporting non-controlling interests: empirical evidence from European firms". This paper was submitted to *The International Journal of Accounting* (ISSN**:** 0020-7063) in July, 2011. We already received comments from the reviewers.

Chapter three presents the second empirical research, which rise to the paper entitled "On the relation between Non-Controlling Interests and parent companies' market value: a cross-country comparison". This paper was submitted to the Journal *of Accounting and Public Policy* (ISSN: 0278-4254) in August, 2011. Prior versions of this paper were presented in several Annual Congresses of European Accounting Association, namely the 31st (The Netherlands, 2008), 30th (Lisbon, 2007) and 29th (Ireland, 2006).

Chapter four includes the third empirical research, which paper is entitled: "Do alternative ways of reporting non-controlling interests really matter?". This paper is currently in peer review process on the *Financial Accounting and Reporting Section of American Accounting Association for their Midyear Meeting Research Sessio*n (Chicago, 2012). It was also presented in a parallel session with discussant, in the 15th Financial Reporting and Business Communications Conference, held by University of Bristol (Bristol, 2011), as well as in a research forum in the 34th annual Congress of European Accounting Association (Rome, 2011).

Finally, the thesis ends with the conclusions and contributions of each one of the papers summarized in chapter 5, and also discusses some limitations and directions for future research.

CHAPTER 2 – CHARACTERISTICS OF FIRMS REPORTING NON-CONTROLLING INTERESTS: EMPIRICAL EVIDENCE FROM EUROPEAN FIRMS[2]

(Paper 1)

[2] This paper was submitted to the *Spanish Journal of Finance and Accounting* (ISSN**:** 0210-2412). This journal is indexed in Social Sciences Citation Index (Web of Kowledge, Thomson-Reuters) and in several others. We are waiting for comments from the reviewers.

ABSTRACT

This study investigates the characteristics of firms reporting Non-Controlling Interests (NCI) in fourteen European countries. We find that size, leverage, profitability and country legal origin play an important role in explaining the likelihood of use and report NCI in consolidated financial statements. This study allows us to identify the major players affected by the accounting standards on matters related to NCI, whose financial ratios should be carefully analyzed for comparative purposes. We also provide additional insights that could be helpful for future research on the valuation implications of NCI reported on the consolidated financial statements.

Keywords: Non-controlling interests, country legal origin, firm characteristics

2.1. INTRODUCTION

The IASB standards on business combinations and consolidation have been revised in the last years in order to ensure that consolidated financial statements are prepared according to the entity theory as defined by some theorists (e.g. Paton and Littleton, 1940; Kam, 1990; Schroeder et al., 2001). The new IASB standards require changes on the recognition and measurement of Non-controlling interests[3] (NCI), as well as on the accounting treatment of equity transactions between controlling and non-controlling interests. These changes in the way as NCI are reported could have a significant impact in the consolidated financial statements of European listed firms with partially owned subsidiaries.

By the time of the mandatory adoption of IASB standards by European listed firms, two important changes related to NCI takes place. For one hand, that version of IAS 27, *Consolidated and Separate Financial Statements* (IASB, 2003) requires NCI to be presented within equity, instead of a hybrid element presented separately from liabilities and from equity. For another hand, the IFRS 3, *Business combinations* (IASB, 2004), requires NCI to be measured by the proportion share of the pre-acquisition fair values of the identifiable net assets of the subsidiary, instead of their book values.

After the completion of the project on Business Combinations developed by the IASB jointly with the FASB, there were some other important changes related to NCI. The new version of IFRS 3 (IASB, 2008a) allows firms to measure NCI either at fair value (including goodwill) or at the proportion share of the fair values of the identifiable net assets (excluding goodwill). Additionally, the more recent version of the IAS 27

[3] Recent amendments to accounting standards replace 'minority interests' by 'non-controlling interests´ in order to make this concept consistent with the definition of subsidiary. Given that nowadays the owner of a minority interest might control an entity and consolidate it, it seems to be more appropriate to use the term "non-controlling-interests".

(IASB, 2008b)[4] require that changes in a parent's ownership interest in a subsidiary that do not result in a loss of control should be accounted for as equity transactions.

These amendments could have a significant impact on financial statement analysis. John Formica, a partner of PricewaterhouseCoopers, says the new standards employs a different premise for reporting consolidated financial results, since now all shareholders - even those with a minority stake in a partially owned subsidiary - are viewed as equity holders in the consolidated financial statements of the parent company. The statement of financial position will, therefore, look better by having less leverage (Whitehouse, 2009). Charles Mulford, director of the Georgia Tech Financial Analysis Lab, with a sample of firms in United States, found significant increases in shareholders' equity and interest coverage ratio, as well as some decreases in liabilities to shareholders' equity ratio (Mulford and Quinn, 2008) with the adoption of new standards on accounting for NCI. Similar arguments are offered by Silliman (2008), Platt (2008), Whitehouse (2009) and Deitrick (2010).

Investors must therefore be aware of changes on ratios, such as the return on equity, return on assets or financial leverage, derived only from differences in accounting procedures, despite a lack of any actual change in their underlying economic profile. Creditors would probably need to revise their debt covenants. This is true not only because of potential diminish of debt, but also due to incremental total (fair value) assets, including goodwill. In this context, financial ratios should be carefully analyzed for comparative purposes. It is important to know which firms are most likely to be affected by these issues.

We are not aware of any study that previously has documented the characteristics of firms reporting NCI. Given the potential impact of this hybrid element for comparative

[4] As stated, IASB has also issued in May 2011 the IFRS 10, *Consolidated Financial Statements*, which has superseded the requirements relating to consolidated financial statements in IAS 27. However, it is not effective yet, and there isn´t changes to NCI or other subjects that could adjust our main research and results. Actually, IAS 27 covers Consolidated and Separate financial statements, and, from January 2013, IAS 27 will include only requirements to Separated Financial Statements, being the part of Consolidated Financial Statements moved for IFRS 10, which comprises all the subjects mentions to IAS 27 included in this thesis.

financial ratios analysis, we aim to investigate the characteristics of firms reporting NCI, in order to identify the pattern of use of subsidiaries partially owned by European firms. The empirical analysis relies on a sample of 3.463 listed firms from fourteen European countries. To accomplish our goal, firstly we perform univariate comparisons based on descriptive statistics and tests to the equality for the central tendency measures in the case of continuous variables, and tests of equality of proportions in case of binary variables. Secondly, the univariate comparisons are complemented by the estimation of one logistic regression, to conclude about the interrelations between the independent variables and their impact on the probability of reporting NCI in the consolidated statement of financial position.

Our findings provide strong evidence supporting the importance of country and firm characteristics in explaining the use of NCI. The probability of reporting NCI in French-civil-law countries is higher and in Common-law countries is lower, when compared to Scandinavian/German-civil-law countries, the benchmark group. These results can be justified by existing theories on the level of investor protection and its consequences on the ability to expropriate or to share wealth with NCI. Additionally, we provide empirical evidence that larger firms, leveraged firms and profitable firms are more likely to use and report NCI in their consolidated financial statements.

This study contributes to financial statements users by identifying the major players that are affected by the accounting standards on matters related to NCI. The way as NCI was and is now reported could induce significant errors when comparing financial ratios, either between different firms or between different time periods for the same firm. Analysts need to be cautious when analyzing consolidated financial statements, when performing time-series analyses, and when forecasting future values for key variables.

Additionally, we provide new insights that could be helpful for future research on the valuation implications of NCI reported on the statement of financial position. The little extant literature on NCI relates to their value relevance and provides mixed results (e.g. Abad et al., 2000; So and Smith, 2009). Abad et al (2000) find weak support for a positive association between NCI and the market value of the parent shareholders equity.

By contrast, So and Smith (2009) provide empirical evidence that NCI are negatively associated with the parent shareholder's market value of equity when they are reported as a "mezzanine item" between liability and equity, and no significant relation when NCI are reported as equity. A possible explanation for these mixed results is that they do not consider the interaction between firm's characteristics and NCI. Our findings provide empirical evidence that could be incorporated when analyzing the market valuation of NCI.

The remainder of the paper is structured as follows. Section 2.2 describes the accounting rules for NCI and the main changes towards the adoption of the entity theory. Section 2.3 describes the research design. Section 2.4 details the empirical results, and Section 2.5 presents summary and conclusions.

2.2. THEORETICAL BACKGROUND

2.2.1. Accounting for Non-Controlling Interests

When business combinations are carried out by partial acquisitions, NCI should be recognized and measured in the consolidated financial statements of the combined entity. NCI are defined in IAS 27, *Consolidated and Separate Financial Statements* (IASB, 2003) and in SFAS 160, *Noncontrolling Interests in Consolidated Financial Statements* (FASB, 2007a) as the equity in a subsidiary not attributable, directly or indirectly, to a parent. How NCI should be recognized and measured depends of the theory underling the preparation of consolidated financial statements.

According to prior literature (e.g. Moonitz, 1942; Baxter and Spinney, 1975; Kam, 1990; Clark, 1993; Schroeder et al., 2001; Nurnberg, 2001; Scofield, 1996), there are four major consolidation concepts underling the preparation of consolidated financial statements, namely, the proprietary concept, the entity concept, the parent company

concept and the parent's extension concept. These major concepts can be aggregated in two alternative theories, commonly identified as the parent company theory and the entity theory.

The parent company theory emphasis ownership through a controlling shareholding interest, and regards the purpose of consolidated financial statements as being primarily for the information of the shareholders of the parent (Davies et al., 1997). Accordingly to this theory, NCI should be reported as non-equity in the consolidated statement of financial position, inside liabilities or between equity and liabilities (usually referred as a mezzanine section). They should be measured at their proportion in the pre-acquisition carrying amount of the subsidiary's assets and liabilities. The consolidated statement of financial position is like an extension of the parent company´s statement of financial position, where the parent company´s investment in the subsidiary is replaced by the subsidiary's assets, liabilities and NCI.

The entity theory focuses on the existence of the group as an economic unit, rather than looking at it only through the eyes of the parent shareholders. It concentrates on the resources controlled by the entity and makes no distinction between the treatments given to different classes of shareholders (Davies et al., 1997). Therefore, according to this theory, NCI should be reported as equity and measured at their proportion in the fair value of the subsidiary's assets and liabilities at the acquisition date. The consolidated statement of financial position represents a set of assets and liabilities managed as a whole. NCI represents the stockholder ownership interest in the subsidiary held by parties other than the parent company.

In the last years, the main accounting standards setters have been converging in order to require consolidated financial statements to be prepared according to the entity theory. However, there was no consensual position across different standards setters and different moments of time.

The main standard in the USA regarding accounting for NCI is the Accounting Research Bulletin (ARB) 51, *Consolidated Financial Statements*, issued in 1959 (CAP,

1959). The first version of this standard did establish neither the nature and the classification, nor the measurement, of NCI in the consolidated statement of financial position. Therefore, considerable diversity in practice existed and the so-called "minority interests" were reported as liabilities or in the mezzanine section (FASB, 2007a), measured at an amount that does not include the differences between fair values and carrying amounts of the identifiable net assets of the subsidiary on the acquisition date (FASB/IASB, 2005). This traditional solution focused on NCI as outsiders, described as a "leveraging technique" used by the parent in the sense that NCI finances assets controlled by the parent without making contractual debt service claims on the parent (FASB, 1991).

The FASB started, in 1996, a project on *Business Combination* that would be expected to be developed in several phases. The second phase was taken jointly with IASB and was concluded by 2007. An amendment to the ARB 51 emerged through the SFAS 160 (2007), adding a new section named "noncontrolling interests in subsidiaries", in which the nature and classification of NCI is perfectly established (FASB, 2007a). NCI should be reported within equity, albeit separately from the parent's equity. Purchase or sales of NCI that do not result in a change in control are now accounted for as equity transactions, contrary to prior absence of guidance on this issue. Additionally, by revising in 2007 the SFAS 141, *Business Combinations* (FASB, 2007b), which had been issued in 2001, the FASB is now requiring all firms to measure NCI at their fair value. The US GAAPs are thus finally consistent with the entity theory.

The IASB standards also have evolved in order to require consolidated financial statements to be prepared according to the entity theory. The first standard on this issue was IAS 3, *Consolidated Financial Statements* (IASC, 1976), but just defined "minority interest" without any specification concerning recognition and measurement. In 1989, the IAS 3 was superseded by the IAS 27, *Consolidated Financial Statements and Accounting for Investments in Subsidiarie*s (IASC, 1989), which continues to require the so-called minority interests to be presented separately from liabilities and from equity, as a hybrid element. However, the revised version of IAS 27 issued in 2003 started to require the so-called minority interests to be presented as equity.

More recently, the current version of IAS 27 issued in 2008 (IASB, 2008b) also require (in the absence of prior guidance) the changes in a parent's ownership interest in a subsidiary that do not result in a loss of control to are accounted for as equity transactions. Any difference between NCI adjustments and the fair value of the consideration paid (or received) shall be recognized directly in equity and attributed to the owners of the parent. The first IASB standard concerning NCI measurement issues is the IAS 22, *Business Combinations* (IASC, 1983), which allow firms to measure NCI by the proportion share of either the carrying amounts or the fair values of the identifiable net assets of the subsidiary on the acquisition date.

When the IASB entered into the *Business Combination* project, taken jointly with FASB, the IAS 22 was superseded by a new standard on this issue, the IFRS 3, *Business Combinations* (IASB, 2004), which require the NCI to be measured by the proportion share of the pre-acquisition fair values of the identifiable net assets of the subsidiary. After the completion of the joint project, the IASB issued a new version of IFRS 3 (IASB, 2008a), which allows the acquirer to measure NCI either at fair value (including goodwill) or by the proportion share of the pre-acquisition fair values of the identifiable net assets of the subsidiary (excluding goodwill), whereas SFAS 141 (FASB, 2007b) requires the NCI to be measured only at fair value (including goodwill). Therefore, in contrast with the US GAAP, the IASB standards are not yet fully consistent with the entity theory.

2.2.2 Impact of Changes in Accounting Rules for Non-Controlling Interests

The main changes in the accounting rules for NCI could have a significant impact on financial statement analysis. Whitehouse (2009) says that the statement of financial position, after the inclusion of NCI inside equity, is looking better by having less

leverage. John Formica, a partner of PricewaterhouseCoopers, justifies this argument as the new standards employ a different premise for reporting consolidated financial results. He recall that under the current standards all shareholders - even those with a minority stake in a partially owned subsidiary - are viewed as equity holders in the consolidated financial statements of the parent company.

Charles Mulford, director of the Georgia Tech Financial Analysis Lab, looked at the likely effect of implementing equivalent to the IASB standards on the reporting of NCI in United States and found significant increases in shareholders' equity and interest coverage ratio, as well as some decreases in liabilities to shareholders' equity ratio (Mulford and Quinn, 2008). Similar results were found by Urbancic (2008), who justifies that lenders and credit analysts must recognize the possibility that their previous assessment of a borrower's credit profile could be altered.

Creditors probably need to revise their debt covenants according to the inclusion of NCI in equity. Sean Callaghan and Marie Treacy, both partners in Ernst & Young, advices to not forget to consider the new accounting standards early in all contract negotiations to avoid reporting transactions differently to their intended outcome and to consider the impact on debt covenants and, eventually, in remuneration packages (Callaghan and Treacy, 2008). A report of Ernst & Young (2010) also states that accounting effects and the consequential impact of the new accounting standards on NCI might be significant enough for management to consider restructuring the financial contracts.

Investors also need to be aware of changes on ratios, such as the return on equity, return on assets or financial leverage (Urbancic, 2008; Henry et al, 2008), derived only from differences in accounting procedures, despite a lack of any actual change in their underlying economic profile. Henry et al (2008) and Deitrick (2010) recall that this awareness is extensible to analysts in the computation of leverage ratios. Scofield (1996), in an experimental study, focus not only on leverage ratios, but compared other ratios produced under the way how NCI are reported on financial statements. He suggests

financial statements without the inclusion of NCI in equity are relevant for specific share recommendation by financial analysts, but when NCI are included in equity it emphasizes the single management of the entire group, indicating indicates that NCI can be relevant for assessing the group's performance. This is due to the fact that a prediction of future performance of the group is affected not only by how well or poorly the parent company itself is performing but also the subsidiaries as well.

Deitrick (2010), a KPMG Faculty Fellow, notices that because the location of NCI in equity undoubtedly change the debt-to-equity and similar ratios of several consolidated companies, either in European Countries as in United States, analysts are advised to consistently prepare and evaluate debt-to-equity and related measures when performing time-series analyses of them, especially if computerized databases are being used. They say that how databases will address the problem of inconsistent time-series measures is unclear. As a result of these and other changes brought, analysts need to be cautious when analyzing consolidated financial information, when performing time-series analyses, and when forecasting future values for key variables.

2.3. RESEARCH DESIGN

2.3.1. Sample and data

Our analysis relies on firms listed in at least one European country, excluding eastern countries as well as countries with less than 40 firms with information available in the Thomson Worldscope Database. The sample includes firms from all industries, except the financial sector (SIC 6). The accounting and market data used in the empirical analysis is that reported on the 2009 consolidated financial statements. These data were

collected from the Thomson Worldscope Database. After excluding firms that lacked sufficient data, as well as firms with negative book value or negative NCI, 3.463 valid firm observations remained.

Table 2.1 presents the sample distribution across countries and industries. In terms of country representation, the highest concentration was firms from the UK (32%), followed by firms from Germany, France and Sweden which represent 33% of the sample (around 10% each). Common-law countries, Scandinavian/German-civil-law countries and French-civil-law countries represent, respectively, around one third of the sample. Finally, the industry classification shows that the industrial sector is the most dominant with 42%, followed by the services sector which represents 26% of the sample.

TABLE 2.1

Sample distribution across countries and industries

	Mining	Industrial	Utilities	Commercial	Services	All firms	All firms (%)
Common-law countries							
United Kingdom	224	331	89	106	331	1.081	31%
Ireland	16	12	6	3	6	43	1%
	240	**343**	**95**	**109**	**337**	**1.124**	**32%**
Scandinavian/German-civil-law							
Denmark	7	47	14	5	18	91	3%
Finland	7	64	8	7	22	108	3%
Germany	17	231	45	29	132	454	13%
Norway	42	56	25	8	17	148	4%
Sweden	29	140	26	22	96	313	9%
Switzerland	3	85	12	11	25	136	4%
	105	**623**	**130**	**82**	**310**	**1.250**	**36%**
French-civil-law							
Belgium	4	45	12	8	18	87	3%
France	19	167	35	46	125	392	11%
Greece	23	97	21	48	28	217	6%
Italy	14	104	38	12	27	195	6%
Netherlands	10	46	7	10	31	104	3%
Spain	15	46	17	5	11	94	3%
	85	**505**	**130**	**129**	**240**	**1.089**	**31%**
All countries	**430**	**1.471**	**355**	**320**	**887**	**3.463**	**100%**
All countries (%)	**12%**	**42%**	**10%**	**9%**	**26%**	**100%**	

2.3.2. Methodology

To accomplish our goal in the investigation of characteristics of firms reporting NCI, firstly we perform univariate comparisons. In order to investigate the importance of country legal origin in explaining the use of NCI, we compute the percentage of firms

with and without NCI in each country, as well as in each of the groups of countries based on legal origin, the Common-law, Scandinavian/German-civil-law and French-civil-law countries. Next, we perform the test of equality of proportions. In order to investigate the importance of other firm characteristics in explaining the use of NCI, we compute descriptive statistics for a set of firm-level variables (size, leverage and profitability) separately for each group of firms, those reporting and those not reporting NCI in the consolidated statement of financial position. After that, we compare these two groups in terms of firm characteristics by applying the equality of means parametric t-test, and the non-parametric Mann-Whitney test when the normality of the variance equality assumptions underlying the t-test are not met.

Secondly, the univariate comparisons are complemented by the estimation of one logistic regression. With this econometric model, conclusions can be drawn about the interrelations between the independent variables and their impact on the probability of reporting NCI in the consolidated statement of financial position. The equation of the logistic regression is:

$$P(Y_i = 1) = E(Y_i = 1 | X_{1i}, X_{2i}, X_{3i}) = \frac{1}{1 + e^{-(\alpha + \beta_1 X_{1i} + . \beta_2 X_{2i} + \beta_3 X_{3i})}} \quad \textbf{(1)}$$

where *e* represents the exponential function and

Y = NCI;

X_{1j} = Country-level variables, with j = 1, 2;

X_{2j} = Firm-level variables, with j = 1, 2, 3;

X_{3j} = Industry dummy variables, with j = 1, 2, 3, 4.

The dependent variable, NCI, is a binary variable which assumes the value 1 if the firm reports NCI in the consolidated statement of financial position and 0 otherwise.

The country-level variables are COMMON and FRENCH, two binary variables which assume the value 1 if the firms is located, respectively, in a Common-law or in a French-civil-law country. If the coefficients on these variables are statistically significant it means in the Common-Law (or French-civil-Law) countries the percentage of firms reporting NCI in their consolidated statement of financial position is significantly different when compared to the Scandinavian/German-civil-law countries.

Previous literature has suggested that legal tradition affects both the explicit laws protecting minority shareholder rights and the net effect of these laws on a corporation's ability to receive financing (La Porta et al. (1997, 1998, 2000)). In particular, this literature has documented that Common-law countries protect minority shareholders' rights better than Civil-law countries. Within the Civil-law countries, French-civil-law provides significantly less protection for shareholders, while the German and Scandinavian traditions provide an intermediate level of protection. We are testing whether the legal origin can explain the probability of reporting NCI and, thus, the relation between country characteristics and the pattern of use of NCI in Europe.

The firm-level variables are SIZE, LEV and ROE, where SIZE is the natural logarithm of market capitalization, LEV is total liabilities divided by the parent shareholder's equity and ROE is return on equity attributable to the parent shareholders. None of these variables includes values attributable to NCI. Previous literature has suggested that these three firm characteristics affect accounting choices, accounting quality and economic behavior (e.g. Lourenço and Curto, 2010; Maijoor and Vanstraelen, 2006; Artiach et al., 2010). We are testing whether these firm characteristics could also explain the probability of reporting NCI and, thus, the pattern of use of NCI in Europe. Swanson (2010) uses size to justify differences in the value relevance of NCI, Frank and Harden (2001) refers to profitability as a determinant of disinvestment and Mulford and Quinn (2008), Urbancic (2008), Deitrick (2010), among others, mention the relation between leverage and NCI accounting.

2.4. RESULTS

2.4.1. Univariate comparisons

Table 2.2 reports analysis of data on the use of NCI by country. Panel A presents the number and the proportion of firms with and without NCI in each country as well as in each group of countries based on legal origin. Panel B presents the results of the tests of equality of proportions.

TABLE 2.2

Analysis of data on the use of NCI by country

Panel A: Descriptive statistics

	Firms without NCI	%	Firms with NCI	%	All firms
Common-law					
United Kingdom	815	75%	266	25%	1.081
Ireland	32	74%	11	26%	43
	847	**75%**	**277**	**25%**	**1.124**
Scandinavian/German-civil-law					
Denmark	52	57%	39	43%	91
Finland	51	47%	57	53%	108
Germany	194	43%	260	57%	454
Norway	80	54%	68	46%	148
Sweden	211	67%	102	33%	313
Switzerland	68	50%	68	50%	136
	656	**53%**	**594**	**47%**	**1.250**

(continued on next page)

TABLE 2.2 (Continued)

French-civil-law					
Belgium	41	47%	46	53%	87
France	108	28%	284	72%	392
Greece	83	38%	134	62%	217
Italy	51	26%	144	74%	195
Netherlands	46	44%	58	56%	104
Spain	23	24%	71	76%	94
	352	**32%**	**737**	**68%**	**1.089**
All countries	**1.856**	**54%**	**1.607**	**46%**	**3.463**

Panel B: Test for the equality of proportions

	Test	**p-value**
Common-law vs Scandinavian/German-civil-law	-11.881	0.000
Common-law vs French-civil-law	-22.509	0.000
Scandinavian/German-civil-law vs French-civil-law	-10.024	0.000

There is a large cross-country variation in the proportion of firms reporting NCI in the consolidated statement of financial position. The proportion of firms with NCI is lower in Common-law countries when compared to the proportion in Scandinavian/German-civil-law countries (25% vs 47%) which in turn is significantly lower than in French-civil-law countries (47% vs 68%). The results of the tests of equality of proportions presented in Panel B show that all of these differences are statistically significant. Therefore, the univariate analysis provides preliminary evidence supporting the role of country in explaining the use of NCI by European firms.

Table 2.3 reports statistical results on the relation between the use of NCI and firm characteristics for the entire sample and for each sub-sample of countries based on legal-origin. Panel A presents descriptive statistics for the firm-level variables separately for each of the two groups of firms, those reporting and those not reporting NCI in the

consolidated statement of financial position. Panel B presents the results of the comparison tests. When considering the entire sample, the means of SIZE, LEV and ROE are higher for firms reporting NCI, when compared to firms without NCI (SIZE: 12.636 vs 10.925; LEV: 2.820 vs 1.858; ROE: 0.007 vs -0.140). Similar results are found when each of the three groups of countries is separately analyzed. The results of the comparison tests presented in Panel B show that all of the mean differences are statistically significant. Therefore, the univariate analysis also provides preliminary evidence supporting the role of firm characteristics in explaining the use of NCI by European firms.

TABLE 2.3

Relation between the use of NCI and firm characteristics

Panel A: Descriptive statistics

	Firms without NCI		Firms with NCI		All firms	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Common-law						
SIZE	10.088	9.826	12.275	12.244	10.627	10.206
LEV	1.578	0.728	2.805	1.405	1.880	0.836
ROE	-0.181	-0.010	0.042	0.080	-0.126	0.012
Scandinavian/German-civil-law						
SIZE	12.016	11.942	13.199	13.110	12.578	12.399
LEV	2.203	0.859	2.171	1.440	2.188	1.132
ROE	-0.140	0.014	-0.012	0.052	-0.079	0.035
French-civil-law						
SIZE	10.905	11.812	12.318	12.150	11.862	11.601
LEV	1.890	1.068	3.349	1.733	2.877	1.493
ROE	-0.045	0.022	0.009	0.044	-0.008	0.039
All countries						
SIZE	10.925	10.739	12.636	12.500	11.719	11.447
LEV	1.858	0.828	2.820	1.528	2.305	1.134
ROE	-0.140	0.008	0.007	0.053	-0.072	0.031

(continued)

TABLE 2.3 (Continued)

Panel B: Comparison test

	Test	p-value
Common-law		
SIZE	-12.223	0.000
LEV	-8.094	0.000
ROE	-7.052	0.000
Scandinavian/German-civil-law		
SIZE	-8.721	0.000
LEV	-9.305	0.000
ROE	-3.178	0.000
French-civil-law		
SIZE	-9.876	0.000
LEV	-8.014	0.000
ROE	-2.894	0.000
All countries		
SIZE	-20.412	0.000
LEV	-18.076	0.000
ROE	-8.213	0.000

SIZE is the natural logarithm of the firm's end of the year market capitalization; *LEV* is the firm's end of the year total liabilities divided by end-of-year parent shareholders' equity; *ROE* is the return on equity attributable to the parent shareholders. N = 3.463.

2.4.2. Logistic regression

To obtain more powerful statistical support, we incorporate the country-level and the firm-level variables into a logistic regression model with industry effects. Table 2.4 reports the parameter estimates from the logistic regression where the dependent variable (NCI) assumes the values 1 and 0 if the consolidated statement of financial position, respectively, reports or not report NCI. The regression in column C1 includes all the covariates. Column C2 includes only the country-level variables, considering the partition of countries in three groups based on legal origin (Common-law *vs*. Scandinavia/German-law *vs* French-civil law). Finally, C3 includes only the three firm-level variables (size, leverage and profitability).

The results presented in Table 2.4 provide strong evidence supporting the relation between country and firm characteristics in explaining the use of NCI by European firms.

TABLE 2.4
Regression Results

	C1	**C2**	**C3**
Intercept	-3.986***	-0.008	-3.698***
COMMON	-0.494***	-0.998***	
FRENCH	1.154***	0.860***	
SIZE	0.312***		0.312***
LEV	0.032***		0.042***
ROE	0.407***		0.486***
Minning&Construction	-0.012	0.054	-0.326***
Utilities	-0.019	0.253**	-0.060
Commercial	-0.539***	-0.475***	-0.502***
Services	-0.169*	-0.372	-0.289***
LR statistic	**836*** **	**466*** **	**531*** **
Nagelkerke R^2	**0.287**	**0.168**	**0.190**

Dependent variable: NCI which assumes the value 1 if consolidated statement of financial position reports NCI and 0 otherwise.

Independent variables: *COMMON* is an indicator that equals 1 if the firm is located in a Common-law country and 0 otherwise; *FRENCH* is an indicator that equals 1 if the firm is located in a French-civil-law country and 0 otherwise; *SIZE* is the natural logarithm of the firm's end of the year market capitalization; *LEV* is the firm's end of the year total liabilities divided by end-of-year parent shareholders' equity; *ROE* is the return on equity attributable to the parent shareholders. N = 3.463.

***, ** and * indicate significance at the 0.01, 0.05 and 0.10 levels respectively.

The estimated coefficients on the variables FRENCH (C1: 1.154; C2: 0.860) and COMMON (C1: -0.494; C2: -0.998) are, respectively, positive and negative and they are both statistically significant. Thus, we conclude that the estimated probability of reporting

NCI in the Common-law countries (French-law-countries) is statistically lower (higher) when compared to the Scandinavian-German-civil-law countries, the benchmark variable.

A likely explanation for this finding is as follows. When ownership is concentrated, an agency conflict can be found between the controlling shareholders and the minority interest holders (Shleifer and Vishny, 1986). Controlling shareholders may seek private benefits at the expense of non-controlling shareholders, by freezing out minority shareholders, by engaging in related-party transactions and through managerial entrenchment (Ali et al., 2007).

As this is true for shareholders of one single entity, some caution must be putted in the presence of a group of entities. The cash flow benefits that parent block holders stand to realize are inversely linked to its level of ownership in the subsidiary. In fact, parent realizes no cash flow benefits by expropriation from a wholly owned subsidiary because any gains the parent makes are negated by the equivalent loss in subsidiary value (Atanasov et al., 2010). As the parent's ownership stake decreases, the proportional potential gain from expropriating increases, although expropriation is more critical where NCI are weaken protected.

Prior literature documents that under strong investor protection, the parent is forced to shoulder the costs of control alone while being forced to share the benefits of control with the minority shareholders, being the latter allowed to free ride at the controller's expense (Dammann, 2008). Also, strengthening investor protection produces a significant wealth redistribution effect from controlling shareholders to outside shareholders (Albuquerque and Wang, 2008). By contrast, under weaker investor protection private benefits of control are higher (Dyck and Zingales, 2004; Nenova, 2003). For lower levels of investor protection, controlling shareholders have the power to pursue private benefits of control at expenses of minority shareholders, without constrains imposed by investors protection including corporate laws and their enforcement. According to the literature, thus, NCI will be more costly to firms in countries where they are better protected and it is likely that a company only recourse to NCI when the benefits outweigh the costs,

justifying our results for the role of country characteristics on the pattern of use of NCI in Europe.

Regarding the firm-level variables, the results presented in Table 2.4 show that the estimated coefficients on the variables SIZE (C1: 0.312; C3: 0.312), LEV (C1: 0.032; C3: 0.042) and ROE (C1: 0.407; C3: 0.486) are all positive and statistically significant. Thus, we can conclude that larger firms, leveraged firms and profitable firms are more likely to reporting NCI in the consolidated statement of financial position. There may be some reasons for these findings. First, larger firms seems to have the financial power and market presence to refinance themselves more easily and it appears that NCI provide useful additional resources to them, being kept if they are useful and eliminated when they are detrimental (Swanson, 2010).

By another hand, a higher leverage can lead a firm to violate debt covenants (Nicolaev, 2010) and NCI can be an alternative source of finance provided they are classified as equity and do not increase the indebtness. In fact, Platt (2008), a financial writing in Global Finance, says that the continued instability in the financial services industry continues to obstruct covenant activity. He points that in the current credit market, where access to syndicated loans to finance large transactions is limited, private equity firms look for alternative ways to deploy capital, partnering with NCI. Thus, a possible explanation for parent firms to use NCI relates to the providence of additional resources to entity group without adding to the leverage, especially if they are not included in debt.

Concerning profitability, a possible explanation for our findings is that when economic performance is high firms are more likely to invest in diversified activities that involve pooling of complementary resources and skills, which could involve the use of NCI. This result can be also linked to the study of Ernst & Young (2010) pointing firms could prefer to leave NCI in subsidiaries to incentive former shareholders/executives for the entity to continue performing well.

Finally, the results presented in Table 2.4 also allow us to conclude about the relative role of firm and country characteristics in explaining the use of NCI in Europe. By comparing the results presented in columns C2 and C3 with those in column C1, we find that either country-level or firm-level variables have significant incremental explanatory power over the competing set of variables.

2.5. SUMMARY AND CONCLUSIONS

The IASB standards on business combinations and consolidation have been revised in the last years in order to ensure that consolidated financial statements are prepared according to the entity theory. The changes in the way as NCI are reported could have a significant impact in the financial analysis of European listed firms with partially owned subsidiaries. Return on assets, return on equity, and financial leverage, among others, could be different according to the way as NCI are reported. Although there are some studies (e.g., Scofield, 1996; Mulford and Quinn, 2008) drawing attention on these differences, we are not aware of any study that previously have provided insights on the European firms that have more likelihood of being affected by accounting standards on matters regarding NCI reporting.

This empirical research investigates the characteristics of firms reporting NCI, in order to identify the pattern of use of subsidiaries partially owned by European firms. Using a sample of 3.463 firms' observations from fourteen countries, we find that country and firm characteristics play an important role in explaining the use of NCI in Europe. This study provide empirical evidence that the probability of reporting NCI is higher for firms located in a Common-law country and lower for firms located in a French-civil-law country, with firms located in a Scandinavian/German-civil-law country placed in the middle. Additionally, we provide evidence that larger firms, leveraged firms and

profitable firms are more likely to use and report NCI in their consolidated financial statements.

The NCI will be more costly to firms in those countries where they are better protected and it is likely that a firm recourse to NCI only when the benefits outweigh the costs, justifying our results for the role of country characteristics on the pattern of use of NCI in Europe. Additionally, larger firms can have the financial power and market presence to refinance easily and it appears that NCI provide useful additional resources, being kept if they are useful and eliminated when they are detrimental. Also, higher leverage can lead a firm to violate debt covenants and partnering with NCI can be an alternative source of finance provided they are classified as equity and do not increase the indebtness. As well, when economic performance is high firms are more likely to invest in diversified activities that involve pooling of complementary resources and skills, which could involve the use of NCI, and their monitoring can be an incentive for former shareholders/executives to continue performing well.

These findings are of interests not only to firms that report NCI, but also to analysts, academics and other users of financial statements. Prior to the effectiveness of new revised standards on NCI accounting, there was a strong debate about the benefits and the financial consequences of considering NCI as an element of equity measured at fair value. This study offers a unique opportunity to analyze which firm and country characteristics can be determinants to the pattern of use of NCI and, thus, in which countries the revision standards have a major impact and on which firms caution must be kept for comparative financial ratios purposes. Additionally, we provide new insights that could be helpful for future research on the valuation implications of NCI reported on the consolidated statement of financial position.

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CHAPTER 3 - ON THE RELATION BETWEEN NON-CONTROLLING INTERESTS AND PARENT COMPANIES' MARKET VALUE: A CROSS-COUNTRY COMPARISON[5]

(Paper 2)

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ABSTRACT

This paper examines whether the market values Non-Controlling Interests (NCI) in a different way depending on the institutional environment of the parent company. Our empirical study relies on a set of firms from five European countries whose legal origin provides different levels of investor protection. Our results present empirical evidence of a negative association between NCI and the market value of the parent companies shares in those countries whose legal origin provides relatively strong investor protection. By contrast, our findings indicate that NCI are positively associated with the market value in those countries whose legal origin provides relatively weaker investor protection. An explanation for these findings can rely on the manner as the market views this alternative source of finance equity: as additional capital with wealth share characteristics or with wealth expropriation possibilities at expenses of non-controlling shareholders. Thus, it seems that legal origin play a significant role to understand cross-country differences in the value relevance of NCI.

Key words: Non-controlling interests, value relevance, investor protection, legal origin.

3.1 INTRODUCTION

This paper examines whether the market values Non-Controlling Interests (NCI) in a different way depending on the institutional environment of the parent company. More precisely, we examine whether the association between NCI and the market value of parent company´s shares is different across countries whose legal origin provides different levels of investor protection.

Attention to the NCI accounting has recently being strengthened by the development of new standards issued by International Financial Accounting Standards (IASB) and Financial Accounting Standards Board (FASB) in the scope of their jointly project on business combinations. Current standards are supported on the basis that NCI should be reported within equity in the consolidated statement of financial position, although separately from the equity of the owners of the parent company. It is assumed that NCI participate proportionally in the risks and rewards of an investment in the subsidiary.

An extensive accounting literature justifies that NCI represent an ownership interest in the combined entity, consistent with the entity theory (e.g., e.g. Moonitz, 1942; Baxter and Spinney, 1975; Kam, 1990; Clark, 1993; Schoroeder et al., 2001; Nurnberg, 2001; Scofield, 2003). By another hand well established literature state that differences in legal origin are associated with different levels of investor protection (e.g., La Porta et al 1997, 1998, 2008), and a widespread financial literature relies on the relation between majority and minority shareholders supporting the opportunity to extract private benefits (e.g. La Porta et al, 1997, 1998; Bozec and Laurin, 2008; Hughes, 2009; Atanasov, Boone and Haushalter, 2010; Lin et al, 2011).

However, there is just a slight stream of literature concerning the value relevance of the amounts of NCI reported on consolidated financial statements (e.g. Abad et al, 2000; So and Smith, 2009; Swanson, 2010). These previous studies covers single countries and neither of them explored the mixed findings from the perspective of legal origin as a

cause for results' diversity. We contribute to this scant stream of literature, by providing empirical evidence on the way as the market views NCI in a set of countries with different legal origin and, consequently, with different levels of investor protection.

The empirical analysis relies on five European countries, namely, United Kingdom (common law), Sweden and Germany (Scandinavian/German-civil law), France and Greece (French-civil law)[6]. For each country, we select those firms applying IAS/IFRS that has been reporting NCI each year in the sample period 2008-2010.

To achieve our aim, firstly we develop a country individual analysis. For each country we build up a research equation using Ordinary Least Square regressions (OLS) that links the firm´s market value to summary accounting measures and other information, including the NCI accounting numbers. We use two stage procedure of Heckman (1979) to control for firm self-selection bias. We find a positive association of NCI with share prices occurring in France and Greece, as opposed to a negative association in United Kingdom, as well as Sweden and Germany. These results suggest that the market values positively the NCI in French-civil law countries but negatively in Common-law and Scandinavian/German-civil law countries.

Secondly, we put together firms from Common-law and from Scandinavian/German-civil law countries in order to find whether the market penalization of NCI is significantly different between these two groups of firms. Our final results show that the NCI in Scandinavian/German-civil law countries are negatively associated with share prices, although with a less penalization than in the Common law country. These findings suggest that the lower the investor protection environment, the more likelihood of a non-negative relation between NCI and share prices.

Taken together, our findings confirms that NCI have explanatory power to share prices, but legal origin plays a significant role on the relation between the amount of NCI in subsidiaries and the market value of parent companies. A possible explanation for our

[6] Countries like Ireland (common law), Denmark, Finland and Norway (Scandinavian/German civil law), Belgium, Netherlands, Spain (French-civil law) were not included due to a scarce number of observations.

findings rely on the manner as the market views this alternative source of financing: as additional capital with ability to benefit parent company although with a higher costly effect, or, otherwise, as additional partners with ability to provide private benefits of control to parent company at expenses of non controlling shareholders.

Theoretically, the first case is assigned to common law countries, typically with stronger investor protection environments. In these cases, parent shareholders face alone the costs of control but share the wealth benefits with other shareholders. The NCI generally can have a monitoring effect, can demand their stemming of the benefits of the combined business, and can free ride on the controlling shareholders wealth, meanwhile parent company shoulder alone the costs of control and costs of litigation, which could not compensate the potential benefits of using NCI as an alternative source of financing. By contrast, the second case is assigned to civil law countries, typically with a weaker investor protection environment, where parent companies access private benefits of control and can behave at expenses of NCI. In these latter cases, the costs of having NCI can be compensated by the benefits parent company expect to obtain if they are maintained in their capital structures. The Scandinavian/German civil-law countries follow the pattern for Common-law countries, although the market seems to not value NCI so negatively due to the slight lower level of investor protection, which in turns can put more equilibrium on the benefits and the costs assigned to the decision to have NCI.

Our research on the relation between NCI and the market value of the parent company's shares, as an assessment for the way as the market prices those NCI reported on the consolidated statement of financial position, fills a gap in the empirical literature about NCI. More precisely, we add to early studies by combining the literature on value relevance with the literature on legal origin and minority shareholder protection as part of the institutional environment where firms develop financial and economic activities. Firstly, prior scant research has focused on the value relevance of NCI but just within one individual country, providing opposite results (e.g. Abad et al, 2000; So and Smith, 2009; Swanson, 2010). To our knowledge, this study is one of the first to explore cross-country differences using legal origin to draw conclusions about the relation between NCI and the

market value of parent companies. Secondly, our results contribute to the growing literature on international differences in firm´s environment factors. More precisely, it adds to the stream of research suggesting that a country´s institutional environment can lead to differences in the relation between prices, returns and accounting information reported (e.g Ali and Hwang, 2000; Leuz, Nanda and Wysocki, 2003; Boonlert-U-Thai, Meek and Nabar, 2006; Bae et al, 2007; DeFond, Hung and Trezevant, 2007; Hughes, 2009; Rahman, Yammeesri and Perera, 2010; Landsman et al, 2011).

The remainder of the paper is structured as follows. Section 2 provides the literature review. In Section 3 we present the research design. Results and discussion are presented in Section 4. Finally, section 5 provides summary and conclusions.

3.2. RELATED LITERATURE

When pyramid ownership and business groups are formed, the equity which is not wholly owned (but controlled) by the shareholders of the parent company is in the hands of non-controlling shareholders, widely known as outside investors (in financial literature) or as non-controlling interests (in accounting literature[7]). The parent companies need to prepare consolidated financial statements and recognize the portion of the consolidated subsidiaries that are attributable to NCI. The way as NCI are recognized and measured depends on the theory underlying the preparation of those consolidated financial statements.

There is an extensive theoretical accounting literature focusing the differences between several theories on consolidated financial reporting and in the interpretation of the accounting nature of the NCI itself. The main ones are the parent company theory and the entity theory (e.g Moonitz, 1942; Baxter and Spinney, 1975; Kam, 1990; Clark, 1993; Schoroeder et al., 2001; Nurnberg, 2001; Scofield, 2003). Theoretically NCI range from

[7] To be precise, until recently accounting standards referred to the element as "minority shareholders".

being perceived as equivalent to liabilities from the viewpoint of the parent-company shareholders or being perceived as a part of consolidated stockholders' equity (Beams et al, 2011).

Whilst the parent company theory had been widespread around the world, current international accounting standards (IAS/IFRS) developed by the International Accounting Standard Board (IASB) as well as Financial Accounting Standards (FAS) developed by Financial Accounting Standards Board (FASB) started to require the adoption of the entity theory by 2005 and 2009, respectively.

The financial literature helps to understand the reason why NCI arise in business. NCI can arise from two opposite types of corporate restructuring transactions, under which firms can maintain pyramid-ownership structures, whereby they control other firms through a chain of companies. Namely, they can occur from a tender offer to acquire the target firm's outstanding capital, or they can arise when a parent company sells a portion of its interests in a subsidiary in equity carve-out transactions (Beckman, 1995). These create two separate groups of shareholders, and several literature well documents that ownership and control allows controlling shareholders to pursue private benefits at the cost of the NCI (e.g La Porta et al, 1997, 1998; Bozec and Laurin, 2008; Atanasov, Boone and Haushalter, 2010).

Despite these previous accounting and financial literature, there is only a small number of empirical researches analysing the value relevance of the amount of NCI reported on consolidated financial statements and they provide mixed findings (e.g. Abad et al, So and Smith, 2009; Swanson, 2010). Value relevance is specified primarily in terms of explanatory power of summary accounting variables (book value of equity and earnings) and other information for security prices. Thus, the accounting numbers for NCI reported on consolidated financial statements can be understood as a proxy for the amount that parent shareholders have to share with other shareholders in their subsidiaries.

Abad et al (2000) rely their study on the identification of which consolidated accounts are more value relevant, those based on the entity theory or those based on parent company. One of the streams used in their study relies on the value relevance of the NCI components of net assets. Their sample comprises non-financial companies listed on the Madrid Stock Exchange, with and without NCI reported on financial statements from 1991 to 1997. At those dates the local standards in Spain required the presentation of NCI outside equity, between equity and liabilities, consistent with the parent company theory on consolidation. Their findings suggest some weak evidence in supporting the value relevance of reported NCI share of equity, with a positive association with share prices. They justify that parent company shareholders are aware of this alternative form of financing for the net total assets over which they have control, but the authors do not justify why the association with share prices, although weak supported, is positive.

So and Smith (2009) carry out their study on companies publicly listed on the Main Board of the Hong Kong Stock Exchange (HKSE), but just included those firms which reported NCI for 2004 to 2006. As in Spain, local standards in Hong Kong required that NCI were presented between liabilities and equity until 2005. Contrary to Abad et al (2000), So and Smith (2009) find a strong inverse relation of NCI with share prices until 2005. These latter authors additionally find a total decline in the value relevance of NCI after 2005, period coincident with an entire change in the accounting regime of local standards to their adaptation to equivalent-for-word IAS/IFRS. Thus, it can be possible that this specific result is biased by a change in some of the institutional factors affecting accounting information and not just NCI. Still, the authors justify the inverse relation suggesting that investors view NCI as liabilities or as a source of external financing when they are presented outside equity, as if they have claim over it.

Swanson (2010) also provides ambiguous results for the value relevance of NCI accounting numbers. He collected data from 1988 to 1994 for firms traded on NYSE or AMEX, with and without NCI reported. Within this date range US GAAP required the presentation of NCI between equity and liabilities in the consolidated financial statements. He captures the potential well-sharing effects by the inclusion of the NCI

accounting numbers reported on consolidated statement of financial position. His findings appear to provide mixed empirical evidence on the association of NCI with share prices. He divided the entire sample in three blocks with equal number of firms according to firm size, and he found that in larger firms NCI are positively and significantly associated with share prices meanwhile in smaller and in the middle block NCI are negatively associated, although statistically significant just to those firms placed in the middle.

These prior empirical studies on the value relevance of NCI reported on consolidated financial statements analyse three different countries. It can be possible that different market valuations of NCI are associated to differences in the institutional characteristics of the countries where firms operate. More precisely, in those countries based on common law, traditionally with a stronger level of investor protection, the relation between NCI and the parent company share prices probably is of different sign from those countries based on civil law, traditionally with a weaker level of investor protection.

In theory, parent shareholders have the right to control the subsidiary, which, in turns, can have other shareholders with ability to participate and monitor that subsidiary, more precisely, the NCI. However, small non-controlling and non-strategic shareholders are assumed not to monitor, as each one has little power and no incentive to engage in monitoring (e.g. Kandel, Massa and Simonov, 2011), although actions from every shareholders, including the smaller ones, could affect the price of the stock (e.g., Hong, Kubik and Stein, 2004).

But if NCI could behave as a larger shareholder for governance purposes, trying to maximize their own shareholder wealth, they could increase monitoring and demand timely and transparent information that is costly for parent shareholders, and will allow outside shareholders to exploit opportunities facing the firm (e.g Clacher et al, 2010). At the same time, the amount of NCI can be viewed as a proxy for the value of subsidiaries that must be attributable to NCI, which could contain other information linked to agency

costs and litigation costs (e.g. La Porta et al, 2006) between different shareholders in the same consolidated[8].

Thus, it could be expected that under stronger investor protection environments, parent companies are forced to shoulder the costs of control alone, but also forced to share the benefits of control with the minority shareholders. At the same time, minority shareholders are allowed to free ride at the controller's expense (e.g Dammann, 2008). In fact, strengthening investor protection produces a significant wealth redistribution effect from controlling shareholders to outside shareholders (e.g. Albuquerque and Wang, 2008). Some of the NCI rights may exercise influence on the parent firm's management's decisions if properly enforced and, probably will receive their part of benefits stemming from the corporate combination.

These cases contrast with weaker investor protection environments, where private benefits of control are higher (Dyck and Zingales, 2004; Nenova, 2003). In these environments, controlling shareholders do not face such constrains imposed by investor protection, including corporate laws and their enforcement. The large shareholders of the parent company can act extracting private benefits from the firm they control at the expense of other non-controlling shareholders (e.g. Ho and Wong, 2001; Villalonga and Amit, 2006). This may be seek by diverting firm resources for their own use, transferring assets of profits out of subsidiaries or committing funds to unprofitable projects that provide private benefits (e.g., Lin et al, 2011).

Thus, a wealth-share effect suggests that the parent company's ability to control has positive value if parent company managers can direct subsidiary activities to maximize

[8] Financial theory says that in countries with strong investor protection ownership tends to be less concentrated and there is propensity to exist agency conflict between managers and other shareholders (so-called type I agency conflict, as, e.g., in Ali and Lesagne, 2011). Thus, certain groups or individuals can have monitoring effect on management, which, in turns, can be costly because will harm outside shareholders to exploit opportunities facing the firm (e.g Clacher et al, 2010). Moreover, under better protection NCI can increase costs to parent companies due to private litigation (La Porta et al, 2006) if necessary. By contrast, in countries with weaker investor protection ownership tends to be more concentrated and there is propensity to exist agency conflict between controlling and non-controlling shareholders (so-called type II agency conflict), but recently works documents that nowadays this last type is predominant in a great number of European firms, even in those countries with stronger investor protection levels.

parent shareholder returns at non-controlling shareholders' expense (e.g. Graham and Lefanowicz (1999)[9]. Recent studies find evidence that more developed stock markets, with stronger investor protection, favors minority shareholders, as reflected in the significant gains they earned around acquisition announcements in the case of majority shareholders wants to buy (e.g., Croci and Petnezas, 2010). By contrast, well established literature (e.g. Shleifer and Vishny, 1997; La Porta et al., 1998, 1999, 2000), is frequently used to justify that in legal systems with lower level of investor protection, large owners are less motivated to sell out and do not want to give up private benefits.

Therefore, the portion of subsidiaries that is under parent company control but have to be attributable to NCI might have an effect on the wealth of parent shareholders as parent share prices respond to this information. Bearing this in mind, we posit that the relation between NCI and the market value of parent companies can be either negative or positive, depending upon how the market views this alternative source of finance equity: as additional partners with wealth share characteristics and ability to benefit parent company but with a higher costly effect, or with wealth expropriation possibilities at expenses of non-controlling shareholders.

Based on prior literature, the likely of a negative association between NCI with the market value of parent company seems to be higher in common law countries. In these countries, the benefits on the wealth share arising from business combinations for both

[9] Graham and Lefanowicz (1999) say that controlling subsidiaries' activities permits the majority owner the potential to capture minority interest value and this potential to capture control should be reflected as an increase in the value of the majority interest (premium) and a decrease in the value of the minority interest (discount). They provide evidence on whether majority and minority ownership interests are disproportionately priced. The authors conducted their study in a sample of publicly-traded parent and subsidiary pairs, traded on NYSE, AMEX or NASDAQ during the period of majority ownership, from 1983 to 1992. In a first test, they find that parent companies have greater market to book multiples for their ownership interest in their subsidiaries than minority shareholders. They justify that their findings can result from direct wealth transfers (direct expropriations) or from non-controlling shareholders discount. Accordingly, if market multiples are greater for parent shareholders that for both shareholders of diffusely-held firms and minority shareholders, it will suggest that majority shareholders capture wealth from minorities. On the other hand, if parent and diffusely-held multiples are similarly sized, it will suggest that non-controlling shareholders discount the value of their shares relative to the value of the majority shares. To test, Graham and Lefanowicz (1999) checked their sample to ensure that neither single shareholder nor group of insiders owned more that 30 percent of each firm´s outstanding voting shares. The results confirmed a price discount hypothesis but not the wealth expropriation hypothesis, which is consistent of high protective investor's laws.

groups of shareholders could not compensate the costs for the parent companies. By contrast, the likely of a positive association between NCI with the market value of parent company seems to be higher in civil law countries. In these countries, the benefits on the wealth share arising from business combinations are mainly attracted to parent shareholders, suggesting a positive reaction to obtain alternative sources of finance in environments where investors and creditors face the fears to be expropriated. It might also be said that some firms in countries with poor investor protection may have in exchange better firm-level governance to signal their good intentions to external investors, which, in turn, can increase corporate values in a way that compensate the potential costly effect of treat better their NCI (in the line of arguments found in Shleifer and Wolfenzon, 2002; Leuz, Nanda and Wysocki, 2003; Carlin and Mayer et al, 2003 and Hughes, 2009).

A large number of studies also uses the legal origin of a country´s law as indicator of shareholder protection (e.g., Leuz, Nanda and Wysocki, 2003; Dyck and Zingales, 2004; Boonlert-U-Thai, Mekk and Nabar, 2006; Hughes, 2009). Another number of studies use investor protection as a key institutional factor affecting corporate policy choices (e.g. Leuz, Nanda and Wysocki, 2003; Ball, Robin and Wu, 2003; Ali and Hwang, 2000; Burgstahler and Dichev, 2006; Rahman, Yammeesri and Perera, 2010). In turns, there is also an extensive literature arguing that the relation between majority and minority shareholders is different accordingly to stronger or weaker levels of investor protection. Recent studies mention that currently the primary agency conflict is between large controlling shareholders and other investors (and not with management) due to, for example, the widespread use of pyramid ownership structures and cross-holdings among firms that belong to a business group (e.g., Claessens, Djankov and Lang, 2000; Claessens et al, 2002; Faccio, Lang and Young, 2001; Faccio and Lang, 2002; Villalong and Amit, 2006; Bozec and Laurin, 2008; Lin et al, 2011).

We contribute with an extended research with countries based on the same accounting system, but from different institutional environments. This can lead to a cross-country comparison without suffer major differences on the enforcement of accounting

standards. Additionally, this can permit cross-country comparison, positing that legal origin can have an important role in the justification of the mixed results in previous empirical researches.

3.3. RESEARCH DESIGN

3.3.1. Sample selection and data

To develop our study, we select a set of European countries with different levels of investor protection. According to La Porta et al (1998), French-civil law countries have the weaker investor protection environment, and Common-law countries the stronger, with Scandinavian/German-civil law countries placed in the middle. We select countries from each of these three groups. We assure that to be included in the sample it needs to be available at least fifty observations in each year covered by our research. Thus, five European countries are selected, namely, United Kingdom (common law), Sweden and Germany (Scandinavian/German-civil law) and France and Greece (French-civil law).

We use the following procedures to compose our sample. Banks and financial institutions are excluded from this research. Then, we include only those firms applying IAS/IFRS[10] in the consolidated financial statements to avoid bias from mixed accounting measurements and different levels of financial accounting quality if applied another set of standards. We analyze those firms reporting NCI in their consolidated statement of financial position consecutively during the three years of our sample period (2008-2010). This procedure is taken to assure that firms have a frequently and continuous use of NCI disclosed in consolidated financial statements. The accounting and market data used in our analysis are collected from the Thompson Worlsdcope© database. We exclude those

[10] Although Regulation 1606/2002 requires the mandatory adoption of IAS/IFRS in the preparation of consolidated financial statements for European firms listed in an European stock exchange, a great number of firms as disclosed in Worldscope Database uses other standards, namely, US GAAP.

firms with no data available at least in one year, as well as those firms with negative book value of equity. Finally, to ensure that regression results are not influenced by outlying observations, the top and bottom one percent of each continuous variable distribution and also the observations with absolute studentized residual above 3 have been eliminated.

Nevertheless, firms with NCI reported on the consolidated statement of financial position are a subset of the entire set of firms in each country, since there are a number of firms not reporting NCI in their financial statements, but as well applying IAS/IFRS. In order to compare our sample of firms with NCI with those firms without NCI, we used the same procedures as mentioned above and collected for the latest the same information from the Thompson Worlsdcope© Database.

Table 3.1 presents the sample distribution across country and industry. The first column shows the total number of firms applying IAS/IFRS in each country. The other columns present data for firm-years observations respectively with and without NCI reported on financial statements. Panel A presents the number of firm-years by country. It shows that our final sample of firms reporting NCI during 2008-2010 in consolidated financial statements consists of 2060 firm-years observations across the five countries. The greatest number of firm-years among the firms reporting NCI comes from France (671) followed by Germany (494), United Kingdom (475), Greece (261) and Sweden (159). Additionally, the set of firms without NCI reported during 2008-2010 in consolidated financial statements comprises 2790 firm-years observations across the five

TABLE 3.1

Sample Description cross Countries and Industries

	firm-years observations	With NCI		Without NCI	
	N	N	%	N	%
Panel A: Country breakdown					
United Kingdom	2,071	475	23%	1,596	77%
Germany	845	494	58%	351	42%
Sweden	552	159	29%	393	71%
France	932	671	72%	261	28%
Greece	450	261	58%	189	42%
	4,850	2,060		2,790	
Panel B: Industry Breakdown					
United Kingdom					
Mining and Construction	353	83	17%	270	17%
Manufacturing/Industrials	725	194	41%	531	33%
Utilities	170	47	10%	123	8%
Wholesale/Retail trade	222	36	8%	186	12%
Services	601	115	24%	486	30%
	2,071	475	100%	1,596	100%
Germany					
Mining and Construction	33	30	6%	3	1%
Manufacturing/Industrials	450	273	55%	177	50%
Utilities	82	52	11%	30	9%
Wholesale/Retail trade	63	33	7%	30	9%
Services	217	106	21%	111	32%
	845	494	100%	351	100%
Sweden					
Mining and Construction	48	6	4%	42	11%
Manufacturing/Industrials	265	85	52%	180	46%
Utilities	32	11	7%	21	5%
Wholesale/Retail trade	39	0	0%	39	10%
Services	168	57	35%	111	28%
	552	159	100%	393	100%
France					
Mining and Construction	45	42	6%	3	1%
Manufacturing/Industrials	397	277	41%	120	46%
Utilities	82	76	11%	6	2%
Wholesale/Retail trade	106	64	10%	42	16%
Services	302	212	32%	90	34%
	932	671	100%	261	100%
Greece					
Mining and Construction	55	43	16%	12	6%
Manufacturing/Industrials	200	119	46%	81	43%
Utilities	60	30	11%	30	16%
Wholesale/Retail trade	91	46	18%	45	24%
Services	44	23	9%	21	11%
	450	261	100%	189	100%

(continued on next page)

TABLE 3.1 (Continued)

Table 3.1 presents the sample description by country and industry breakdowns.

The main sample of firms with NCI accounting numbers in consolidated statement of financial position consists of 471 firm year observations for United Kingdom, 494 for Germany, 159 for Sweden, 671 for France and 261 for Greece for the fiscal years 2008 to 2010. To be included in our sample, firms in each country must have all the accounting and market variables with data available, non negative NCI and non negative equity. We require information for these three consecutive years and financial firms were excluded. We must have, also, at least 50 firm-year observations in each country.

The sample of firms without NCI accounting numbers in consolidated statement of financial position consists of 1596 firm year observations for United Kingdom, 351 for Germany, 393 for Sweden, 261 for France and 189 for Greece for the fiscal years 2008 to 2010. To be included in this table we require that none of the firms has been reporting NCI in consolidated financial statements for these three consecutive years and financial firms were excluded.

The Industry breakdown is bases on one-digit SIC Codes, namely Mining and Construction (SIC 1000-1999); Manufacturing/Industrials (SIC 2000-3999); Utilities (SIC 4000-4999); Wholesale/Retail trade (SIC 5000-5999); Services (SIC 7000-9999).

countries. The greatest number of firm-years among the firms without NCI in comes from United Kingdom (1596), followed by Sweden (393), Germany (351), France (261) and Greece (189). Panel B presents the sample distribution by industry. The Manufacturing is the most dominant industry in each set of firms (with and without NCI) in each country, followed by Services, except for Greece, in which the second most dominant Industry is wholesale and retail trade.

The results of the tests of equality of proportions of firm-year observations with and without NCI in the consolidated statement of financial position (untabulated) were rejected, suggesting that there is evidence of statistically significant differences in each country. Furthermore, when comparing our five European countries we observe that United Kingdom is the country with a lower proportion of firms reporting NCI (23%), followed by Sweden (29%), Germany (58%), Greece (58%) and France (72%). This findings are consistent with Lopes and Lourenço (2011)[11] whose univariate analysis and logistics regression indicated that the proportion of firms and the estimated probability of reporting NCI were lower in Common-law countries when compared to the proportion and probability of reporting NCI in Scandinavian/German-civil-law countries, which in

[11] This paper is the one presented in Chapter 1 of this thesis.

turn were significantly lower than in French-civil-law countries. They support their findings on the agency conflict between the controlling and non-controlling shareholders, putting in evidence that the use of NCI is more preeminent in countries whose characteristics provide more probability of extract private benefits at the expense of non-controlling shareholders, by freezing out minority shareholders, by engaging in related-party transactions and through managerial entrenchment (e.g. Ali et al., 2007).

3.3.2. Research method

We aim to examine whether the market values Non-Controlling Interests (NCI) in a different way depending on the institutional environment of the parent company. We analyze a set of firms from five European countries whose legal origin provides different levels of investor protection.

Although prior literature reveals some cautions with value relevance studies (e.g., Holthausen and Watts, 2001), Barth, Beaver and Landsman (2001) argue that value-relevance research anchors on the use of widely accepted valuation models and it provides a helpful assessment of how well accounting figures reflect information used by equity investors when they have to take economic decisions. Capital market-based accounting research, as well as value relevance empirical studies, originated firstly with the work of Ball and Brown (1968) and Beaver (1968). The more recent value relevance research relies on the idea that there is a relationship between market value of equity and accounting information. Thus, despite the fact that these valuations models must not accurately portray all aspects of real firms, it is an established, parsimonious, and well-accepted valuation theory that is the basis for much extant empirical accounting capital markets research (Barth and Clinch, 2009).

Following the widespread research on value relevance, the empirical model employed in this study relies on a general equity valuation model, which expresses the

market value of equity as a function of the book value of equity and net income, given by Equation (1),

$$MV_{it}=\alpha_0+\alpha_1 BV_{it}+\propto_2 NI_{it}+\varepsilon_{it} \quad \textbf{(1)}$$

where *MV* is the market value of equity at the fiscal year end[12], *BV* and *NI* are respectively the book value of equity attributable to parent shareholders and net income, and ε is value-relevant information not yet reflected in *BV* and NI. In order to mitigate scale effect problems, all the variables are deflated by the number of shares outstanding, resulting in a per share basis.

Prior literature provides evidence that the market valuation of net income is rather different for cases with negative amounts (e.g., Rees, 1999). The rational is that the market expects profits to persist, meanwhile losses are not expected to persist in the future (e.g., Hayn, 1995; Chang, Herbohn and Tutticci, 2009). Since shareholders can liquidate a firm rather than suffer from persistent losses, investors perceive losses as temporary (Hayn, 1995). Therefore, we use a new estimating equation, Equation (2), which allows the relation between the market value of equity and net income to vary according to whether net income is positive or negative and is given by

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} +\propto_2 NI_{it} +\propto_3 NI_{it} x LOSS_{it} + \varepsilon_{it} \quad \textbf{(2)}$$

where *LOSS* is a dummy variable that assumes 1 for firms with negative *NI* and 0 otherwise. The coefficient on the interaction term *NI x LOSS* reflects how the market's valuation of losses differs from its valuation of profits. To the extent losses are more weakly associated with firm market value than profits, we expect that $\alpha_3 < 0$.

[12] Not tabulated findings reveal that our results are not sensitive to use the market value three months after fiscal year-end.

Findings from the scant literature on the value relevance of NCI provides some empirical ambiguous evidence that they have significant explanatory power for stock prices over the traditional summary accounting measures such as book value of equity and net income (e.g. Abad et al, 2000; So and Smith, 2009; Swanson, 2010). Given that our focus also is on the market valuation of NCI, we use a new regression equation, Equation (3), which comprises the variable *NCI*. This variable is defined as the amount of equity in a subsidiary not attributable, directly or indirectly, to a parent and it represents the amount displayed in the consolidated financial position of the parent company at fiscal year end. Our equation turns to,

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \propto_2 NI_{it} + \propto_3 LOSS_{it} x NI_{it} + \propto_4 NCI_{it} + \varepsilon_{it} \quad \textbf{(3)}$$

Would NCI have value relevance, the coefficient on NCI, α_4, would be statistical significant and different from zero. If NCI impacts positively on share prices, the coefficient on NCI, α_4, will be positive. By contrast, if NCI has a negative relation with share prices, the coefficient on NCI, α_4, will be negative.

Given that our sample includes only those firms reporting NCI in consolidated statement of financial position, a potential self selection bias may be introduced when analyzing the value relevance of NCI. To control for the effects of self-selection bias, we implement the Heckman (1979) two-stage estimation procedure. In the first stage we use a binary logistic model which identifies the determinants of choice of using NCI. The estimated value in this binary logistic model is then used to generate the Inverse of Mill's ratio for each observation. In the second stage, we use this estimation as an additional explanatory variable in our linear regression model stated in Equation (3), for which parameters will be estimated by Ordinary Least Square (OLS) method.

The dependent variable used in the binary logistic regression is a binary variable which assumes 1 for firms reporting NCI in their consolidated statement of financial

position. Following prior studies (e.g. Lopes and Lourenço, 2011[13]), we predict that incentives for using NCI as a source of finance include profitability, leverage, size and industry membership. More specifically, we estimate the following logit model:

$$NCI\_FIN_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_n(\sum IND) + \varepsilon_{it} \quad \textbf{(4)}$$

where *NCI_FIN* is a binary variable which assumes 1 for firms reporting NCI every year during the entire sample period and 0 for firms who have never reported NCI during the entire sample period, *ROE* is the firm's return on equity, *LEV* is the firm's leverage measured as total liabilities divided by total assets, *SIZE* is the natural logarithm of market capitalization and *IND* are indicator variables based on one-digit SIC codes. In addition, since the amount of NCI can vary across years, we run the logistic regression with year fixed effects.

This binary logistic regression, Equation (4), is estimated on a country-specific analysis based on 2071 firm-year observations from United Kingdom, 552 from Sweden, 845 from Germany, 932 from France and 450 from Greece, representing the total number of firms applying IAS/IFRS, with and without NCI reported on consolidated financial statements (see table 3.1).

As stated, the Equation (4) will permit to construct the Inverse of Mill's ratio, which in turns is included in Equation (3) as a variable with the function of control for selection bias. Furthermore, Equation (3) should include other controls for factors that previous research identifies as associated with firm´s market value, namely, profitability, leverage and firm size. We do not include those control variables because they are already incorporated in the estimation of the Inverse of Mill´s ratio, but we include *AUD* and *XLIST*, which are often used in prior literature to control for law enforcement and for financing growth opportunities, respectively. More precisely, the auditor´s role in

[13] From this point ahead until the end of chapter 3, the reference of Lopes and Lourenço (2011) is coincided with the paper in Chapter 1 of this thesis.

different countries can be distinct, in the sense that auditors can be used as a sign of better law enforcement with ability to reduce information asymmetry (e.g. Khalil, Magnan and Cohen, 2008; Barth, Landsman and Lang, 2008). By other hand, the cross-listing in other stock exchanges is frequently taken by firms domiciled in countries with poor investor protection, as a sign of better commitment to protect their investors with ability to face the constrains on financing growth opportunities externally (e.g., see Reese and Weisbach (2002) and O´Connor (2006)). We incorporate *AUD* and *XLIST* as binary variables assuming 1 for firms audited by a Big 4 audit firm and for firms listed in more than one stock exchange, respectively, and 0 otherwise.

The Equation (4) is estimated at a country level, with industry and year fixed effects. We run this equation separately for each one of the five countries, and just include firms that has been reported NCI for three consecutive years from 2008 to 2010, comprising 475 firm-year observations from United Kingdom, 159 from Sweden, 494 from Germany, 671 from France and 261 from Greece (see table 3.1). This equation is helpful to the research question, since it assess whether NCI help explain the variation of market values in addition of the effects of book value and net income.

Discussion of results of OLS estimates for Equation (3), including control variables, allows us to identify whether the sign of the coefficient on the variable NCI, α_4, differ across countries with different level of investor protection. Based on investor protection differences related to legal origin, we expect opposite signs of α_4 between France/Greece (French-civil law) and United Kingdom (Common law). We do not make predictions about Sweden and Germany (Scandinavian/German-civil law).

3.4. RESULTS

3.4.1. Descriptive Statistics and Correlations

Table 3.2 presents the descriptive statistics for the sample of firms with NCI, for which we apply our value relevance OLS regression based on Equation (3). Panel A shows data for the common law country (United Kingdom), meanwhile Panel B and C presents data for Scandinavian/German law (Germany and Sweden) and French-civil law countries (France and Greece), respectively.

A simple observation of table 3.2 reveals that the mean and the median of the market value per share (MV) are substantial higher than the book value (BV) in all countries except on Greece. There are differences in the mean values comparing all the variables between countries and the median is lower than the media for the generality of the continuous variables in each country, except for the variable NCI in Sweden and the variables BV and NI in Greece, in which their median is higher than their media. These differences appear to justify the use of post hoc tests in the analysis of variance to provide specific information on which means are significantly different from each other.

TABLE 3.2
Descriptive Statistics for variables used in analyses – OLS Regression

	Mean	Median	Stand. Deviation	Minimum	Maximum
Panel A: Common-Law Countries					
United Kingdom (N= 475)					
MV	4.654	2.500	5.796	0.034	35.209
BV	2.296	1.540	2.202	0.011	15.924
NI	0.320	0.186	0.436	-0.411	2.870
NCI	0.075	0.018	0.143	>0.000	1.021
LOSS	0.18				
AUD	0.81				
XLIST	0.09				
Panel B: Scandinavian/German civil-law countries					
Sweden (N=159)					
MV	59.847	54.500	41.618	1.490	169.700
BV	31.323	25.303	23.259	1.034	107.661
NI	3.614	3.321	4.052	-7.259	15.625
NCI	0.313	1.408	0.406	0.001	2.463
LOSS	0.16				
AUD	0.96				
XLIST	0.12				
Germany (N=496)					
MV	21.765	14.540	21.861	0.700	158.938
BV	14.664	10.883	14.642	1.006	124.313
NI	1.304	0.707	2.209	-6.438	14.693
NCI	0.544	0.151	0.973	>0.000	5.877
LOSS	0.17				
AUD	0.68				
XLIST	0.56				
Panel C: French civil-law countries					
France (N=671)					
MV	29.787	21.154	28.572	0.600	203.482
BV	24.377	16.981	24.808	0.769	174.641
NI	2.179	1.543	3.441	-10.617	21.743
NCI	1.346	1.1929	4.347	>0.000	66.325
LOSS	0.16				
AUD	0.69				
XLIST	0.14				
Greece (N=261)					
MV	1.921	1.760	2.099	0.140	11.9
BV	2.775	3.399	2.049	0.214	14.192
NI	0.006	0.097	0.370	-1.168	1.676
NCI	0.304	0.279	0.530	>0.000	3.010
LOSS	0.45				
AUD	0.26				
XLIST	0.08				

(Continued on next page)

TABLE 3.2 (Continued)

Table 3.2 provides the descriptive for the variables used in Equation (4) estimated using OLS regression estimation. All the monetary values are presented in Euros currency.

Sample: The variables are computed from 475 firm year observations for United Kingdom, 494 for Germany, 159 for Sweden, 671 for France and 261 for Greece for the fiscal years 2008 to 2010.
Variables definition: MV is market value of equity per share at the fiscal year end. BV is book value of equity per share attributable to parent shareholders. NI is net income per share attributable to parent shareholders. LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise. NCI is the portion of equity in subsidiaries per share not attributable to the parent. AUD is an indicator variable that takes the value of 1 if the parent company is audited by a Big 4, and 0 otherwise. XLIST is a indicator variable that takes the value of 1 if the firm is quoted in more than one stock exchange and 0 otherwise.

The mean values for the variables LOSS, AUD and XLIST represent the percentage of firms reporting losses, the percentage of firms audited by a BIG 4 audit firm and the percentage of firms listed in more than one stock exchange respectively.

Untabulated results for ANOVA reveals that we reject the null of the equality of the means between the five countries for each one of the variables ($p<0.000$) meaning that at least two means are different. With the post hoc test we identify that the differences of the means for MV, BV and NI are statistical significant for each pair-wise country comparison except between United Kingdom *versus* Greece. Furthermore, we identify that the difference of the means for NCI is statistical significant between France *versus* United Kingdom ($p=0.000$), *versus* Sweden ($p=0.000$), *versus* Germany ($p=0.000$) and *versus* Greece ($p=0.000$), as well as between United Kingdom *versus* Germany ($p=0.033$). In all the other possible pair-wise country comparisons the difference of the means on the NCI variable are not statistically significant ($p>0.10$).

Table 3.3 presents the descriptive statistics for the sample of firms for which we apply our binary logistic regression estimate to Equation (4). This table compares the characteristics of firms reporting NCI every year during the entire sample period with those who have never reported NCI during the same period. We find that in each country those firms with NCI are significantly larger (SIZE), more leveraged (LEV) and more profitable (ROE) when compared to firms without NCI[14].

[14] The ROE in Greece was the only one whose mean difference between firms with and without NCI, does not present statistical significance.

TABLE 3.3
Descriptive statistics by country - Binary Logistic model

		Common law country			*Scandinavian/German civil law countries*						*French civil law countries*					
		United Kingdom			**Sweden**			**Germany**			**France**			**Greece**		
		Mean	Stand. Deviation	p-value	Mean	Stand. Deviation	p-value	Mean	Stand. Deviation	p-value	Mean	Stand. Deviation	p-value	Mean	Stand. Deviation	p-value
ROE	With NCI	0.118	0.175	0.000	0.109	0.154	0.000	0.072	0.150	0.000	0.075	0.151	0.000	-0.018	0.171	0.902
	Without NCI	0.010	0.243		-0.006	0.284		0.020	0.232		0.013	0.226		0.020	0.162	
SIZE	With NCI	12.880	2.456	0.000	15.201	2.135	0.000	12.620	2.350	0.000	12.669	2.321	0.000	10.588	1.516	0.000
	Without NCI	10.504	1.848		12.618	1.985		10.974	1.447		10.633	1.804		9.886	1.670	
LEV	With NCI	0.553	0.183	0.000	0.534	0.162	0.000	0.556	0.168	0.000	0.585	1.580	0.000	0.591	0.157	0.000
	Without NCI	0.398	0.216		0.417	0.207		0.467	0.210		0.477	1.186		0.475	0.180	

Table 3.3 provides the descriptive statistics for the variables used in Equation (5) estimated using a binary logistic regression.

Sample: The main sample of firms with NCI accounting numbers in consolidated statement of financial position consists of 475 firm year observations for United Kingdom, 494 for Germany, 159 for Sweden, 671 for France and 261 for Greece for the fiscal years 2008 to 2010. The sample of firms without NCI accounting numbers in consolidated statement of financial position consists of 1,596firm year observations for United Kingdom, 351 for Germany, 393 for Sweden, 261 for France and 189 for Greece for the fiscal years 2008 to 2010.

Variables definition: ROE is Return on Equity, calculated as the net income attributable to common shareholders divided by the parent shareholders´ common equity, LEV is leverage measured by total liabilities divided by total assets and SIZE is a measure of firm size, being the natural logarithm of market capitalization. Industry and year fixed effects included.

The results for the equality of means parametric t-test for independent samples confirm that the mean values are statistically different, consistent with prior literature on the characteristics of firms reporting NCI in consolidated financial statements (e.g. Lopes and Lourenço, 2011).

Table 3.4 reveals correlations for the continuous variables included in the OLS regression. Panels A, B and C present the correlation matrix for each country classified by legal origin.

TABLE 3.4
Correlation matrix between continuous variables in the OLS Regression

Panel A: Common law countries

	United Kingdom			
	MV	BV	NI	NCI
MV	1	0.733**	0.857**	0.276**
BV	0.817**	1	0.676**	0.450**
NI	0.805**	0.695**	1	0.266**
NCI	0.421**	0.428**	0.326**	1

Panel B: Scandinavian/German-civil law countries

	Sweden				Germany			
	MV	BV	NI	NCI	MV	BV	NI	NCI
MV	1	0.607**	0.633**	0.124	1	0.824**	0.654**	0.404**
BV	0.695**	1	0.397**	0.375**	0.860**	1	0.549**	0.517**
NI	0.668**	0.522**	1	0.143	0.691**	0.627**	1	0.320**
NCI	0.221**	0.403**	0.213**	1	0.435**	0.484**	0.314**	1

Panel C: French-civil law countries

	France				Greece			
	MV	BV	NI	NCI	MV	BV	NI	NCI
MV	1	0.699**	0.764**	0.288**	1	0.474**	0.597**	0.348**
BV	0.798**	1	0.673**	0.278**	0.599**	1	0.197**	0.466**
NI	0.792**	0.679**	1	0.195**	0.574**	0.215**	1	0.046
NCI	0.349**	0.418**	0.267**	1	0.329**	0.410**	0.062	1

(Continued on next page)

TABLE 3.4 (Continued)

Table 3.4 presents Pearson (Spearman) correlations above (below) the diagonal for the variables on Equation (4) estimated using a OLS Regression.

**. In these table means that correlation is significant at the 0.01 level (2-tailed).

*. In these table means that correlation is significant at the 0.05 level (2-tailed).

Sample: The main sample of firms with NCI accounting numbers in consolidated statement of financial position consists of 475 firm year observations for United Kingdom, 494 for Germany, 159 for Sweden, 671 for France and 261 for Greece for the fiscal years 2008 to 2010.

Variables definition: MV is market value of equity per share at the fiscal year end. BV is book value of equity per share attributable to parent shareholders. NI is net income per share attributable to parent shareholders. NCI is the portion of equity in subsidiaries per share not attributable to the parent.

Consistent with conventional results in the accounting literature, the market value of equity is positively and statistically related to book value and earnings. It is also positively related with NCI but with lower pairwise correlations coefficients. In each country, the independent variables included in the regressions, whilst reveals some indications of collinearity in the majority of the cases, have no pairwise correlations coefficients in excess of 0.80, a rule of thumb suggesting that multicollinearity is not a serious problem (e.g. Gurajati, 2008). Even though, the problem can still exist for lower correlations values. Thus, tolerance and variance inflation factors (VIF) are measured as part of the value relevance OLS regression model to detect multicollinearity (e.g Gujarati, 2008).

3.4.2. Regression results and discussion

Following the Heckman´s procedure to control for self selection bias[15], we firstly run the binary logistic regression (Equation 3). The results, presented in Table 3.5., indicate that in all the five countries there is a positive association between the variables ROE, SIZE and LEV and the choice of use NCI as an alternative source of finance, but just statistically significant for LEV and SIZE.

The estimated value from the binary logistic is used to generate the Inverse of Mill's ratio for each observation, added in the second stage as a new explanatory variable in our value relevance OLS regression for Equation (3). Table 3.6 reports the results for each one of the countries including all the covariates, corrected for self selection and for heteroskedasticity (White test)[16].

TABLE 3.5
Determinants for the use of NCI - Binary Logistic regression results

	Common law country	*Scandinavian/German civil-law countries*		*French civil-law countries*	
	United Kingdom	**Sweden**	**Germany**	**France**	**Greece**
	coef.	coef.	coef.	coef.	coef.
ROE	0.320	0.347	0.561	0.677	0.276
SIZE	0.480 ***	0.598 ***	0.455 ***	0.540 ***	0.354 ***
LEV	3.203 ***	2.000 ***	1.943 ***	3.624 ***	4.323 ***
Nagelkerke R^2	0.370	0.453	0.276	0.334	0.242
N	2,081	553	856	946	454

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[15] This is because we want that our value relevance OLS estimation of Equation (4) includes controls for self selection bias. It can be expected that firms do not choose randomly when they should have or should not have NCI reported in consolidated financial statements, but rather on the basis on the firm´s characteristics and comparative advantages of alternative sources of finance.

[16] Untabulated results show that our estimates maintains qualitatively unchanged if we have dropped Inverse Mills from the Equation although a lower adjusted R^2.

TABLE 3.5 (Continued)

Table 3.5 reveals the results for Equation (5) estimated using a binary logistic regression. . Industry and year fixed effects included.

Sample: This estimation was run for a sample of 2,081 firm year-observations for United Kingdom (485 with NCI and 1,596 without NCI), 856 for Germany (505 with NCI and 351 without NCI), 553 for Sweden (160 with NCI and 393 without NCI), 946 for France (685 with NCI and 261 without NCI) and 454 for Greece (265 with NCI and 189 without NCI) for the fiscal years 2008 to 2010.

Variables definition: The dependent variable is NCI_FIN, a binary variable which assumes 1 for firms reporting NCI every year during the entire sample period and 0 for firms who never reported NCI during the entire sample period. The covariates are: ROE is Return on Equity, calculated as the net income attributable to common shareholders divided by the parent shareholders´ common equity, LEV is leverage measured by total liabilities divided by total assets and SIZE is a measure of firm size, being the natural logarithm of market capitalization
***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

The empirical results highlight the value relevance of summary accounting measures, as well as other information, namely, the amount of NCI reported on the consolidated statement of financial position. The coefficients estimates for the variables BV is positive and statistically significant (p-value < 0.01) in each one of the countries for the sample period covered by our analysis, and they are consistent with prior value relevance studies. The coefficients estimates for the variable NI are also statistically positive ($p<0.01$), while the coefficient estimate for the interaction term of NI with the binary variable LOSS is significantly negative ($p<0.01$) for all the countries. These results for losses are consistent with economic intuition (e.g. Bauman, 2003), and are evidence that the market valuation of losses differs from its valuation of profits. Investors perceive them as temporary and, thus, they are more weakly associated with firm value than profits (as the sum of the coefficients of the variables NI with *LOSSxNI* is near zero, except in United Kingdom).

TABLE 3.6
Value relevance of NCI by country – OLS regression results

	Common law country	*Scandinavian/Germa- civil law countries*		*French civil-law countries*	
	United Kingdom	**Sweden**	**Germany**	**France**	**Greece**
	coef	coef	coef	coef	coef
Intercept	-1.449 ***	-18.185 ***	-12.900	-27.109 ***	-0.586
BV	0.664 ***	0.501 ***	0.884 ***	0.261 ***	0.206 ***
NI	8.674 ***	4.881 ***	3.276 ***	5.341 ***	4.960 ***
LOSSxNI	-13.594 ***	-4.992 **	-2.320 **	-5.326 ***	-4.075 ***
NCI	-3.141 ***	-9.444 **	-1.683 **	0.450 ***	0.430 **
AUD	-0.676 ***	-2.696	0.059	2.204 **	0.379 *
XLIST	0.241	-2.127	-0.169	1.889	-0.644 *
Inv_Mills	3.644 ***	44.368 ***	20.866 ***	35.123 ***	2.361 ***
Adjusted R^2	0.827	0.753	0.791	0.744	0.665
F-test	175.459***	41.242***	144.564***	150.463***	40.762***

Table 3.6 reveals the results for Equation (4) estimated using a OLS Regression corrected for self-selection and for heteroskedasticity. Industry and year fixed effects included in both.

Sample: The main sample of firms with NCI accounting numbers in consolidated statement of financial position consists of 475 firm year observations for United Kingdom, 494 for Germany, 159 for Sweden, 671 for France and 261 for Greece for the fiscal years 2008 to 2010.

Variables definition: The dependent variable is MV, the market value of equity per share at the fiscal year end. The independent variables are: BV is book value of equity per share attributable to parent shareholders. NI is net income per share attributable to parent shareholders. LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise. NCI is the portion of equity in subsidiaries per share not attributable to the parent. SIZE is a measure of firm size, being the natural logarithm of market capitalization. AUD is an indicator variable that takes the value of 1 if the parent company is audited by a Big 4 and 0 otherwise. XLIST is an indicator variable that takes the value of 1 if the firm is quoted in more than one stock exchange and 0 otherwise. Inv_Mills is the Inverse of Mill's ratio computed with the binary logistic model in the first stage, consistent with Heckman (1979) procedure.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

In order to achieve the main objective of this empirical study, our analysis relies on the coefficient estimates for the variable NCI. The results show that in all the countries the variable NCI has explanatory power for share prices, since all the coefficients α_4 are statistically different from zero. More precisely, in United Kingdom,

NCI is statistically negative (coef. = -3,141; p-value < 0.01), suggesting an inverse relation with share prices. Similar results are found for Germany (coef. = -1.683; p-value < 0.01) and Sweden (coef. = -9.444; p-value < 0.05). By contrast, NCI is statistically positive in France (coef. = 0.450; p-value < 0.01) and in Greece (coef. = 0.430; p-value < 0.05), suggesting a positive relation with share prices.

All the coefficients presented in Table 3.6 are corrected for heteroskedasticity. Even so, because the correlation analysis provided some caution to collinearity, we estimate tolerance and VIF, as well as Durbin-Watson statistics, as part of our OLS regression estimations presented in this table. All the variables are at conventional levels, suggesting that there are no apparent multicollinearity or autocorrelation problems affecting our results.

Our findings for the United Kingdom suggest that the amount of NCI reported has a negative association with share prices. These findings are consistent with the expectation that in common law countries, with a stronger level of investor protection, parent companies bear the costs of control alone but are forced to share the benefits of business combination with the NCI. The probable wealth redistribution effect from controlling shareholders to NCI, the ability of NCI to demand monitoring, timely and quality accounting information and the allowance to free ride at expenses of controlling shareholders can be so costly to parent companies that the market discount that value. Thus, it seems that the potential benefits of synergies and additional capital provided by other shareholders could not be compensated with the potential costs of control, and the market reacts negatively to NCI in common law countries. Thus, our results corroborate the findings in Lopes and Lourenço (2011) and can justify the reason why a smaller number of firms in United Kingdom use NCI as an alternative source of finance equity and why that the majority of subsidiaries are wholly owned by parent companies.

By contrast, our findings suggest that the amount of NCI has a positive association with share prices in France and Greece. These findings are also consistent with expectations, since in those countries based on civil law, traditionally with a weaker level of investor protection, the large shareholders can behave toward their

private benefits at expenses of non-controlling interests, who, in turns, generally do not have the power to constrain that ability. Thus, it seems that the parent company's ability to control has positive value, even if the firm engage voluntary in actions to show to the market that NCI are well treated, and the markets reacts positively to NCI in French-civil law countries. These findings also support the ones in Lopes and Lourenço (2011) and can justify the reason why a greater number of firms in France and Greece use NCI as an alternative source of finance equity and why that the majority of subsidiaries are partially owned by parent companies.

Our findings about the value relevance of NCI for Germany and Sweden are similar to those of the United Kingdom, ie, in both cases there is a negative association between NCI and the parent company's share prices. However, prior literature document that Germany and Sweden, although having a higher level of investor protection than French-civil law countries, present a lower level as compared to Common law countries (e.g. La Porta et al., 1998). Thus, we develop further analysis in order to find whether the market penalization of NCI is different for firms from Germany and Sweden, when compared to firms from the United Kingdom.

We develop a firm-level analysis including the firms from these three countries all together. We use a new estimating equation which allows the coefficient of the variable NCI to vary according country origin. Thus, we add to Equation (3) an indicator variable, *SGL*, which assumes 1 for firms from Sweden and Germany and 0 for firms from the United Kingdom, as well as the interaction term of *SGL* with *NCI*. If the market penalization of firms from Germany and Sweden is statistically lower/higher, when compared to the United Kingdom, then the coefficient of *SGLxNCI* would be positive/negative and statistically significant.

Table 3.7 presents the results of this additional analysis. The coefficient estimate for the variable NCI remains negative and statistically significant (-6.480, $p<0.01$). By contrast, the coefficient estimate for the interaction term of *NCI* with *SGL* is positive and statistically significant (3.213, $p<0.01$), which means that the market penalization of NCI for Swedish and German firms is lower when compared to the United Kingdom.

TABLE 3.7

Value Relevance of NCI by legal origin - OLS regression results

	Common Law vs Scandinavian/German civil law
Intercept	-9.286 ***
BV	0.822 ***
NI	5.688 ***
LOSSxNI	-6.999 ***
NCI	-6.480 ***
SGL	3.427 ***
SGLxNCI	3.213 ***
N	1,128
Adjusted R^2	0.808
F-test	317.529***

Table 3.7 reveals the results for extending Equation (4) to include interactions of NCI with Scandinavian/German (SGL) legal origins. The results are corrected for heteroskedasticity and autocorrelation, with industry and year fixed effects.

Sample: Includes all the firms with NCI accounting numbers in consolidated statement of financial position in United Kingdom, Sweden and Germany, comprising 1,128 firm year observations.

Variables definition: The dependent variable is MV, the market value of equity per share at the fiscal year end. The independent variables are: MV is market value of equity per share at the fiscal year end. BV is book value of equity per share attributable to parent shareholders. NI is net income per share attributable to parent shareholders. LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise. NCI is the portion of equity in subsidiaries per share not attributable to the parent. SGL is an indicator variable that takes the value of 1 if the firm year belongs to German or Sweden and 0 otherwise. The estimation also includes other control variables, not tabulated for easier presentation. AUD is an indicator variable that takes the value of 1 if the parent company is audited by a Big 4 and 0 otherwise. XLIST is an indicator variable that takes the value of 1 if the firm is quoted in more than one stock exchange and 0 otherwise. Inv_Mills is the Inverse of Mill's ratio computed with the binary logistic model in the first stage, consistent with Heckman (1979) procedure. Results maintain qualitatively unchanged if controls for firm size, profitability and leverage are included.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

This last result allows us to have more robust conclusions on the way as the market views NCI. Accordingly, the market seems to penalize firms reporting NCI in stronger level of investor protection countries and seems to benefit those in weakest level investor protection countries, with firms located in a Scandinavian/German-civil-law countries placed in the middle. This evidence is consistent with prior literature confirming that Scandinavian/German-civil law countries are in between Common law and French-civil law countries and offer intermediate levels of investor protection (e.g., La Porta et al, 1998, 2000).

Taken together, our results extend prior literature on the value relevance of NCI. A positive association of NCI and share prices was documented by Abad et al (2000) for Spanish firms, meanwhile negative association were found in So and Smith (2009) and Swanson (2010) for firms from Hong Kong and United States, respectively. These three countries are associated to different legal origins, namely, French-civil law (the first) and Common law (the last two). Moreover, previous studies range from including all the listed firms in the specific country (Abad et al, 2000; Swanson, 2010), or only those firms with NCI reported on consolidated financial statements (So and Smith, 2009). Our study departs from prior literature in several ways. We are the first to control for self selection derived from the firms' choice to use NCI as an alternative source of finance equity. Additionally, we include firms from different countries applying similar accounting rules, since all of them use IAS/IFRS in their consolidated financial statements. Finally, we analyze the effect of investor protection on the market valuation of NCI. Our results seem to confirm that the market values NCI in a different way depending on the institutional environment of the parent company. More precisely, legal origin, as a proxy for its intrinsic level of investor protection, can play a role in explain the relation between NCI and the market value of the shares of parent companies.

3.5. SUMMARY AND CONCLUSIONS

This study investigates whether the market values NCI in a different way depending on the institutional environment of the parent company. We analyze a set of firms from five European countries with different legal origins and, consequently, different levels of investor protection, namely, United Kingdom (common law), German and Sweden (Scandinavian/German-civil law) and France and Greece (French-civil law). We examine whether the association between NCI and the market value of parent company´ shares is different across these three groups of countries. For each country, we analyze firms applying IAS/IFRS that reporting NCI in their statement of financial position. We use a market based valuation model that links the market value of parent companies' shares with accounting data and other information, analyzing the slope and the sign of the variable NCI.

The empirical evidence suggests a positive association between NCI and the parent company's share prices occurring in France and Greece, as opposed to a negative association in the United Kingdom, Germany and Sweden. Additionally, we find that the market penalization of NCI for Swedish and German firms is lower when compared to the United Kingdom. These evidences are based on countries whose legal origin differs among them, and our results are consistent with prior findings separating civil law origins and placing Scandinavian/German-civil law origin in the middle of French-civil law and Common law (e.g., La Porta et al, 1998, 2000).

Overall, our results provide robust evidence that legal origin plays a role on the relation between NCI and the market value of parent companies. Given that legal origin is linked to the level of investor protection, our research provides evidence that the lower the investor protection environment, the more likelihood of a non-negative association between NCI and share prices.

On institutional environments with stronger protection to investors, parent companies have to wealth share benefits with NCI but they are costly, and the market

discounts that value, since investors react harmfully when they have to share financial assets. Thus, in United Kingdom, Sweden and Germany, the relation between NCI with share prices of parent companies is negative, in spite of a higher penalization for firms from the United Kingdom. This evidence can probably justify the reason why there are a lower percentage of parent companies with subsidiaries partially owned in the United Kingdom, Sweden and Germany, when compared to France and Greece.

By contrast, as the level of protection is weaker, more opportunity to extract private benefits of control at expenses of NCI arises. If the market values positively that ability, a positive relation of NCI with the market value of parent companies' shares occurs. The NCI contributes with additional capital that can be useful to parent companies without the monitoring and other constrains imposed by higher levels of investor protection. This evidence can probably justify the reason why there are a higher percentage of parent companies with subsidiaries partially owned in France and Greece than in other countries with stronger investor protection.

Our findings contribute to the literature that focuses in attributes of information provided by financial accounting within or across different countries, whose institutional characteristics offer different levels of investor protection. More precisely, we help to explain the diversity of the scant literature on the value relevance of NCI, which can be useful to investors, other users of financial statements and even to standard setters, since our results seems not to be influenced by diversity on the accounting for NCI. As far as we know, this should be the one of the first studies to explore cross-country differences using legal origin to draw conclusions about the relation between NCI reported on the consolidated statement of financial position and the market value of parent companies. It should nevertheless be inferred carefully because there can be other omitted variables and because we do not include all the European countries due to lack of information. However, our evidence is robust to the inclusion of controls for firms characteristic and for the potential effect of self-selection bias.

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CHAPTER 4 - DO ALTERNATIVE WAYS OF REPORTING NON-CONTROLLING INTERESTS REALLY MATTER?[17]

(Paper 3)

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ABSTRACT

This paper investigates whether the market prices non-controlling interests (NCI) by the same way irrespectively of their location in the consolidated statement of financial position. We use a cross-sectional valuation model to test whether the current method of reporting NCI (as equity) has a differential effect on share prices, relative to the previous method of reporting (as non-equity), testing the consistency of market investor's perception on accounting numbers presented under different financial statements' formats.

Our sample includes publicly traded German firms that were early adopters of IAS/IFRS in 2002, in a total of six years, assuring that data provides evidence in both periods in which NCI is reported as non-equity and as equity. Additionally, we divide the sample by firm characteristics like the weight of NCI, the firm size and the leverage. Our results suggest that NCI are priced by the market in the same manner irrespectively of being included as equity or non-equity. Our study extends prior literature on the debate surrounding alternative manners of report accounting information in financial statements and on the relevance of NCI.

Key words: Non-controlling interests, recognition *vs* disclosure, consolidated statement of financial position, changes to standards.

4.1. INTRODUCTION

This paper investigates whether the market prices non-controlling interests (NCI) by the same way irrespectively of their location in the consolidated statement of financial position. NCI has been for so long reported as a mezzanine item between liability and equity, while currently it should be presented within equity. In the USA and in Europe these changes were required by the new rules on consolidation prepared in the scope of the second phase of the joint project on business combination, namely the SFAS 160, *Noncontrolling Interests and Consolidated Financial statement*s (issued 2007, effective 2008) and the IAS 27, *Consolidated and Separate Financial Statements* (revised 2003, effective 2005)[18].

Charles Mulford, director of the Georgia Tech Financial Analysis Lab, looked at the likely effect of implementing SFAS 160 on the reporting of NCI and found significant increases in shareholders' equity and interest coverage ratio, as well as some decreases in liabilities to shareholders' equity ratio (Mulford and Quinn, 2008). Investors must therefore be aware of changes on financial ratios derived only from differences in accounting procedures despite of a lack of any actual changes in their underlying economic profile (Urbancic, 2008; Henry et al., 2008). Henry et al (2008) and Deitrick (2010) recall that this awareness is extensible to analysts in the computation of financial ratios.

However, the Standard and Poor's already have been including NCI within equity in the computation of debt to debt plus equity ratios even before the accounting standards require such procedure (corporate ratings criteria: 2006, 2008). Actually,

[18] The non-controlling interests are the new name for minority interests, chosen by both Boards under the Business Combinations Project, due to the fact that better defines the nature of these element of financial statements (changed in 2008 IAS 27 revision). Also, as stated in previous chapters, IASB has issued in May 2011 the IFRS 10, *Consolidated Financial Statements*, which has superseded the requirements relating to consolidated financial statements in IAS 27. However, it is not effective yet, but just after January 2013, and there isn´t changes to NCI or other subjects that could adjust our main research and results. Indeed, to develop the previous research study we need to rely on the changes of IAS 27 that were effective from 2005.

efficient markets theory does suggest that rational investors fully process information regardless of the way as they are presented. It does not matter where firms place accounting information. The markets adopt a substance over form approach and incorporate all publicly available information, irrespective of the way as they are presented.

There is a stream of literature providing evidence that the markets are efficiently incorporating accounting information irrespectively of where it appears in the financial statements (e.g. Owusu-Ansah and Yeoh, 2006; Jiffi and Citron, 2009). However, other studies find the opposite. They provide empirical evidence that investors do price accounting information differently according to the way as they are presented in the financial statements (e.g. Ahmed et al, 2006; Mitra and Hossain, 2009). We contribute to this growing body of literature that provides mixed evidence on the market perception of accounting information presented in different ways in the financial statements.

We develop a value-relevance study to examine whether the market prices NCI by the same way before and after the adoption of the new standards requiring the NCI to be presented within equity, instead of as a mezzanine item between liability and equity. We support our analysis on the changes required by the new IAS 27, which was effective in 2005. To avoid bias in our results from simultaneous changes due to the mandatory of IFRS by 2005, we conduct a within-firm design and limit our investigation to IFRS early adopters. Germany is particularly well appropriate to our study. Unlike other countries, it has a great representation of early adopter firms (e.g., Hung and Subramanyam, 2007; Barth, Landsman and Lang, 2008), which provides a reasonable large sample and an ideal natural experiment for examining the financial effects of the movement of NCI without suffer the financial statement effects of the mandatory adoption of the complete set of IASB standards by 2005.

With a sample of 308 firm-years observations over the period covering the years 2002 through 2007 (excluding year-2005 to avoid potential bias of the first time

adoption of the new version of IAS 27) [19], we provide new empirical evidence suggesting that the location of NCI does not matter in terms of market valuation. To guarantee the robustness of our results, we implement a research design that compares information under the same accounting system (IAS/IFRS) and for the same set of firms before and after the new presentation form of NCI. We control for firm self-selection bias from choosing IAS/IFRS versus HGB standards, and, also, from choosing to use or do not use NCI as a source of finance. We also perform sensitivity analysis for different sub-sample of firms divided based on characteristics like size, leverage and the weight of NCI in total consolidated equity. These findings support those previously found for the entire sample.

This study contributes to the literature in two ways. Firstly, it contributes to the literature about market consistency on the valuation of accounting data presented under different alternative formats. Findings from previous studies are mixed and involve different topics of accounting information. Some studies demonstrate that share prices reflect amounts reported on different financial statements similarly (e.g., Jifri and Citron, 2009; Owusu-Ansah and Yeoh, 2006), and others find the opposite (e.g., Ahmed et al, 2006; Mitra and Hossain, 2009). Some authors justifies that, despite of market efficiency, there are conditions under which different locations are not equal associated with market values. We add to this literature by providing additional evidence that the market prices NCI by the same way irrespectively of their location in the consolidated statement of financial position. Our findings suggest that the market is consistent and the change on the reporting of NCI do not have pricing consequences, which can be interpreted as efficiency on the processing of accounting information.

Secondly, our findings contribute to the scant literature on the value relevance of NCI. Some prior studies support the value relevance of NCI while others show that the market does not value the NCI presented in the statement of financial position (e.g., Abad et al, 2000; So and Smith, 2009a). We provide additional evidence of a significant

[19] Our results are not sensitive to the inclusion of 2005.

association between the market value of parent shareholders equity and the amount of NCI presented in the statement of financial position.

The remainder of this study is organized as follows. Section 2 presents literature review. Section 3 describes the research design. Section 4 presents the empirical results and finally section 5 provides summary and concluding remarks.

4.2. PRIOR RESEARCH

There are a significant number of prior empirical studies that provides mixed evidence on the investor perception of accounting information presented in different locations in the financial statements.

Some studies provide empirical evidence focusing on the investor perception of accounting information disclosed in the notes and/or recognized in other financial statements (e.g. Ayers, 1998; Davis-Friday et al, 1999; Espahbodi et al, 2002; Cotter and Zimmer, 2003; Ahmed et al, 2006; Mitra and Hossain, 2009; Jifri and Citron, 2009; Niu and Xiu, 2009). Other studies relies on the accounting information recognized in different financial statements (other than notes), namely the statement of comprehensive income *versus* statement of income *versus* statement of financial position (e.g. Cahan et al, 2000; Owusu-Ansah and Yeoh, 2006; So and Smith, 2009b). Finally, there are a few studies analyzing accounting information presented in different locations in the same financial statement. (e.g. Cahan et al, 2000; So and Smith, 2009a).

These prior researches cover several accounting subjects, including assets revaluations and other components of comprehensive income (e.g. Cahan et al, 2000; Cotter and Zimmer, 2003; Mitra and Hossain, 2009), goodwill accounting (e.g. Jifri and Citron, 2009), pension accounting (e.g. Davis-Friday et al, 1999), deferred tax accounting (e.g. Ayers, 1998), noncontrolling interests (e.g. So and Smith, 2009a),

investment property (e.g. Owusu-Ansah and Yeoh, 2006; So and Smith, 2009b), employed stock option (e.g. Espahbodi et al, 2002; Niu and Xu, 2009) and derivative financial instruments (e.g. Ahmed et al, 2006).

These studies use a common approach to identify the way as the market reacts to accounting information disclosed or recognized in different locations in the financial statements. Usually they analyze cases of changes in accounting regulation[20]. Generally, the investor perception is captured by associations between market variables and the item reported under alternative locations in the financial statements. When different valuations weighs are taken to the same item according to the way it was reported, it is suggested that investors perceive the underlying accounting information differently (Schipper, 2007). The tests use a within-firm research in an over-time analysis in which periods of reporting of an item in one financial statement are followed by periods of reporting in another location, frequently due to a change in reporting requirements.

Prior evidence not always support theoretical framework. Efficient markets theory does suggest that in traditional models of financial markets, rational investors fully process information regardless of the way as they are presented. This means that would not matter where firms place accounting data. The markets adopt a substance over form approach and incorporate all publicly available information, irrespectively of the way of disclosure and/or recognition. Thus, one would not expect that market prices are sensitive to the accounting treatment and the location where the information is presented.

There are some studies providing empirical evidence of cases under which the market values similarly the amounts reported on different locations in the financial

[20] Another line of research, as in Dhaliwal et al (1999), look at the market perception of different accounting information, for instance, the income or comprehensive income as a measure of firm performance. However, the authors say the analysis in their study cannot address whether reporting dirty surplus items as part of comprehensive income, rather than as direct adjustments to equity, will affect the way the market processes accounting information. Another line of research focus on the market perception of new information included in financial statements, as, for instance, in *Linsmeier et al, 2002.* Finally, another line of research relates to disclosure versus recognition but as a matter of accounting choices, like in Choudhary (2011). These types of researches are not the focus of our study, even though we can comment our results with supported arguments from those.

statements (e.g. Cahan et al, 2000; Owsu-Ansah and Yeoh, 2006; Jifri and Citron, 2009). These studies can be identified as using a "no differences" view point in the classification of Schipper (2007), positing that once an item has entered the financial reports, location and presentation have no direct implications concerning that all communications in financial reports are processed based on their informational properties, not on how and where they are displayed.

However, most studies find that the market values differently the amounts reported on different locations in the financial statements (e.g. Ayers, 1998; Davis-Friday et al, 1999; Espahbodi et al, 2002; Cotter and Zimmer, 2003; Ahmed et al, 2006; Mitra and Hossain, 2009; So and Smith, 2009a; So and Smith, 2009b). Although these differences could be interpreted as market inefficiency, several alternative arguments are appointed by studies on this issue, which can be identified as using a "rational differences" view point in the classification of Schipper (2007), positing that location (primarily disclosure versus recognition) has implications because an item's location reveals something about its decision usefulness.

There are some arguments appointed for the reason why investors could weight information reported on one location more heavily that information in another location in the financial statements, namely, reliability of accounting information, costs of processing information, contracting costs, cognitive bias, degree of sophistication, limited attention of investors and methodological constructions on the research design.

A great number of authors appoint differences in perceived reliability of accounting information as a primary source of differences in the market valuation of accounting information presented in diverse locations. The majority relates to information recognized in some financial statements *versus* information disclosed in the notes (e.g. Ahmed et al, 2006; Frederikson et al, 2006; Libby et al, 2006; Schipper, 2007). Schipper (2007) identify archival and experimental research that considers management perspectives and auditor behavior, which highlight the reliability of disclosed items as one of the most important reasons for why accounting information in different locations can imply different analysis. This type of explanation is based on

conclusions that auditors are likely to permit more misstatement in a disclosed item than in a recognized item and that the difference is due at least in part to an auditor perception that errors in disclosed amounts are less material (Libby et al, 2006)[21]. Not only auditors, but other users (e.g., students and bankers) are also suggested as seeing some accounting information more material and reliable in some financial statements assuming differences in perceiving amounts presented in different formats (e.g Harper et al, 1987; Choudhary, 2011). Additionally, there are empirical researches finding that managers choose recognition for those items that are judged more reliable and disclosure for those judged less reliable based on informational qualities (e.g., Cotter and Zimmer, 2003).

Costs of processing information (e.g. Barth et al, 2003) and contracting costs (e.g. Espahbodi et al, 2002; Amir et al, 2010; Bamber et al, 2010) are also appointed as a source of differences in market perceptions of information presented in notes versus in other financial statements. The first case is related to costs assumed to transform information provided in a manner that must be unscrambled to be correctly perceived. The second case is related to issues (e.g. future earnings, debt contracts and possible of violate debt covenants) that would be affected by recognition but not by disclosures.

Another type of explanations includes cognitive bias of investors (Schiper, 2007) or less-sophisticated versus professional investors (e.g., Frederickson and Miller, 2004; Allee et al, 2007). These empirical researches find that the degree of knowledge and other skills in interpreting accounting information can justify different interpretation of accounting depending on its placement. Barth et al (2003) suggest that this problem can be a kind of mitigated when the majority of investors are accounting experts. Hirshleifer and Teoh (2003) add the "limited attention" motive, suggesting that investors neglect relevant aspects of the economic environments they face, such as strategic incentives of firms to manipulate investors' perceptions. This research also points that information

[21] Libby et al (2006) indicates that there are three additional possible reasons for such a difference in auditor behavior: differences in auditing standards; differences in materiality judgments; and differences in auditing practices.

that is presented in salient and easily processed form is assumed to be better processed than information that is less salient, or that is only implicit in the public information set. They say this tends to induce individuals to use information in the form it is displayed rather than modifying it appropriately.

As far as these arguments above can be attributable to all users of financial statements, Schipper (2007) emphases investors are assumed to process accounting information in the same way, so that any differences in valuation weights can be attributed to informational qualities of the items and not to cognitive activities of investors. She adverts that archival research can be difficult to interpret. Also Hirshleifer and Teoh (2003) and Kothari (2001) emphases some findings of apparent market inefficiency in existing literature may be derived from methodology questions.

These methodological questions, often attributable to archival research, can embrace confusion by self-selection (e.g., Schipper, 2007; Choudhary, 2011), difficulties of research setting (e.g., Schipper, 2007), of research design (e.g., Schipper, 2007; Choudhary, 2011) and of data availability (e.g., Schipper, 2007), risk measurement (e.g. Kothari, 2001; Hirshleifer and Teoh , 2003) and the effect of skewness on financial variables (e.g. Kothari, 2001; Hirshleifer and Teoh , 2003). Also simultaneous changes in the valuation, in the accounting regime, or differences in information quantity recognition (addressing measurement problems) can be a reason for different results for the market perception of accounting information presented in different locations (eg., Ahmed et al 2006; Niu and Xu, 2009; Choudhary, 2011) [22].

[22] In another kind of justifications, some authors let us to not forget that different information provided in different formats should be equaled value by the market, but incremental information provided in another financial statement could have incremental value relevance. This was the case of deferred taxes under the income statement method instead of balance sheet method (e.g., Chang et al, 2009), meaning investors are not confused and price as assets or liabilities accounting information with a positive or negative signal to the market. Also, it can be the case that market values differently accounting information according to industries' specifications. Namely, for real state property value (e.g., Kang and Zhao, 2010), accumulated depreciation value relevance differs cross industries and market values those accumulated depreciation beyond net income and book value of net assets. In this case, investors correctly recognize the understatement of real estate property value due to the application of depreciation, irrespectively of the way where accounting information is placed.

Overall, Schipper (2007) justifies that if "investors are rational, knowledgeable, not constrained by cognitive limitations, and not ascribing any meaning to how information is presented" (p. 319), thus, the market perception of accounting information should not change. Altogether, it looks like what makes the difference is not the location of accounting information itself, but other factors. Maines et al. (2003) also point that we have to rely on equity prices being, in some sense, "correct" or "efficient" – but we do not know if the market is making correct assessments of value given the information available. Schipper (2007) also points differences in valuation weights when compared to their theoretical values for accounting items, reasonable confidence intervals around the estimated valuation weights, and results' sensitive to specification choices as examples to be considered in the analysis. If this is the case, Maines et al (2003) posits the results just tell us that investors may not fully understand the valuation implications of the accounting information itself. Nevertheless, even if the value is not correct, it must be consistently priced.

Hirshleifer and Teoh (2003) argue that regulators and commentators think that investors are imperfect processors of public available information, and such concern is reflected in the structure of accounting regulation. This justifies why firms and regulators care not just about the information made publicly available to investors, but the form in which it is revealed, even when the information content of the alternative formats is identical.

The attention on NCI reporting is of interest because there was a change in the accounting regime and there is scarce literature concerning the value relevance of NCI. With a sample of Spanish firms, Abad et al (2000) find a very weak support for the value relevance of NCI presented inside or outside equity, although some of the values attracted to this item were constructed from assumptions and not extracted directly from financial statements. By the contrary, with a sample of Hong Kong listed companies, So and Smith (2009a) suggested a negative relation of NCI with share prices when they were presented outside equity, with a changing in investor´s perceptions after their

inclusion inside equity, which are no longer perceived as liabilities (loss relevance). They run their empirical research under an environment of changes in the all the scope of the accounting regime and this is appointed for some authors (e.g., Choudhary, 2011) as one cause of disturbances on market perceptions. Further investigation is therefore needed to provide more evidence about the value relevance of NCI and about the impact of presenting NCI in different locations.

4.3. RESEARCH DESIGN

4.3.1. Changes in IAS/IFRS related to NCI

The IAS 27, *Consolidated and Separate Financial Statements* (2003) provides the accounting rules for consolidation, including NCI. The first version of this standard was issued in 1989. At that time, firms were required to present NCI in a mezzanine section of statement of financial position, separately from liabilities and from equity, as a hybrid element. However, the revised version of IAS 27, issued in 2003 (effective from 2005) requires firms to present NCI inside consolidated equity, despite of separately from the parent's shareholders equity.

This change in the IASB standard on consolidation was firstly motivated by the improvements to IAS/IFRS, since the framework for presentation of financial statements does not contemplate other elements behind assets, liabilities and equity. Secondly, accounting for NCI is one of the topics included in the project on Business Combinations jointly developed by the IASB and the FASB. Both boards converged to the same procedures on consolidation, and agreed to apply a set of procedures consistent with the entity theory. Thus, both group of shareholders – those from the parent company and those from the subsidiaries (not wholly owned) – are seeing as shareholders of the entire consolidated entity.

After January 2005, firms applying IAS 27 started to use a different approach when reporting NCI in their consolidated financial statements. These firms report now a lower amount for total liabilities and a larger amount for equity, experiencing an apparent improvement in credit risk and borrowing capacity, despite a lack of any actual change in their underlying economic profile.

4.3.2. Sample and Data

European firms are required to apply IAS/IFRS mandatorily since 2005. Therefore, the impact of the new requirements for consolidation included in the IAS 27 (effective from 2005) cannot be analyzed separately from the overall impact of the new accounting regime (IAS/IFRS). In order to overcome this limitation, the empirical analysis relies on a set of firms applying IAS/IFRS voluntarily before 2005.

Germany is particularly well appropriate to our study. Unlike other countries, it has a great representation of early adopters (e.g., Hung and Subramanyam, 2007; Barth, Landsman and Lang, 2008), which provides a reasonable large sample and an ideal natural experiment for examining the financial effects of the movement of NCI without suffer the financial statement effects of IAS/IFRS adoption.

We use data from German firms applying IAS/IFRS since 2002 in order to guarantee that we have a large sample of firms reporting NCI for a long period of time[23]. We analyze the three years before and the three years after the change in the location of NCI in the statement of financial position. We exclude year 2005 to avoid potential bias of the first time adoption of the new version of IAS 27. We want to assure that the sample include the same set of firms in all firm-years observations in both

[23] We do not include observations prior to 2002 because we only include early adopters reporting NCI in all years covered by the sample and, before this date, even in Germany, the sample would be much reduced.

periods of time. So, our analysis relies on data from 2002 to 2004 and from 2006 to 2008 for exactly the same set of firms.

We use the following procedures to identify our sample. First, we collect data from Datastream Worlscope® to identify all the German firms (non-financials) applying IAS/IFRS in 2002 as the unique standards followed to prepare their consolidated financial statements. Second, we selected only those firms presenting positive NCI for all the six years included in the analysis. Third, we pull together all firms with accounting and market data available for all the years. Fourth, we exclude firms with negative book value of equity. Finally, to ensure that regression results are not influenced by outlying observations, the top and bottom one percent of each continuous variable distribution and also the observations with absolute studentized residual above 3 have been eliminated. Thus, the final sample is composed of 308 firm-year observations for 54 firms.

Table 4.1 presents the sample distribution across industries. Despite some dispersion of firms between industries, the manufacturing industries (SIC one-digit 3) is the most dominant with 32%, followed by the Services and by the other manufacturing Industries (one-digit SIC 2) with 22% and 18%, respectively.

TABLE 4.1
Sample composition by industry

	N	%
Mining and Construction	23	7%
Manufacturing - Type I	54	18%
Manufacturing - Type II	100	32%
Utilities	40	13%
Wholesale/Retail trade	24	8%
Services	67	22%
	308	100%

The industry decomposition follows the Standard Industrial Classification (SIC) for classifying industries, namely: Minning and Construction (SIC 1000-1999); Manufacturing - type I (SIC 2000-2999); Manufacturing - type II (SIC 3000-3999), Utilities (SIC 4000-4999); Wholesale trade and Retail trade (SIC 5000-5999); Service Industries (SIC 7000-9999).

4.3.3. Research Method

4.3.3.1. Valuation Model

This paper investigates whether the market prices NCI by the same way irrespectively of their location in the consolidated statement of financial position. We expect to find whether, after the effectiveness of the new IAS 27 in 2005, the change in the way as NCI is reported on the consolidated statement of financial position is associated with a change in the investor´s perceptions of this accounting item.

The empirical model employed in this study relies on a general equity valuation model, which expresses the market value of equity as a function of the book value of equity and net income, given by Equation (1),[24]

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \propto_2 NI_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

where *MV* are the market value of equity at the fiscal year end[25], *BV* and *NI* are respectively the book value of equity attributable to parent shareholders and net income, and ε is value-relevant information not yet reflected in *BV* and NI. In order to mitigate scale effect problems, all the variables are deflated by the number of shares outstanding, resulting in a per share basis.

Prior literature shows that the market valuation of net income is rather different for cases with negative amounts (e.g., Rees, 1999). The market expect profits to persist, meanwhile losses are not expected to persist in the future (e.g., Hayn, 1995; Chang, Herbohn and Tutticci, 2009). Since shareholders can liquidate a firm rather than suffer from persistent losses, investors perceive losses as temporary (Hayn, 1995). Therefore,

[24] As suggested by Barth and Glinch (2009), this model must not accurately portray all aspects of real firms but it is an established, parsimonious, and well-accepted valuation theory that is the basis for much extant empirical accounting capital markets research.
[25] We also develop all the equations with data from three months after the fiscal year end.

we use a new estimating equation, Equation (2), which allows the relation between the market value of equity and net income to vary according to whether net income is positive or negative and is given by

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \propto_2 NI_{it} + \propto_3 NI_{it} x LOSS_{it} + \varepsilon_{it} \qquad \textbf{(2)}$$

where *LOSS* is a dummy variable that assumes 1 for firms with negative *NI* and 0 otherwise. The coefficient on the interaction term *NI x LOSS* reflects how the market's valuation of losses differs from its valuation of profits. To the extent losses are more weakly associated with firm market value than profits, we expect that $\alpha_3 < 0$.

Prior literature provides some empirical evidence that NCI has significant explanatory power for stock prices over the traditional summary accounting measures such as book value of equity and net income (e.g. Abad et al, 2000; So and Smith, 2009a). Given our focus on the market valuation of NCI, we use a new regression equation, Equation (3), which comprises the variable *NCI*. This is defined as the equity in a subsidiary not attributable, directly or indirectly, to a parent and it represents the amount displayed in the consolidated financial position of the parent company at fiscal year end.

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \propto_2 NI_{it} + \propto_3 LOSS_{it} x NI_{it} + \propto_4 NCI_{it} + \varepsilon_{it} \qquad \textbf{(3)}$$

In order to analyze whether the market prices by the same way the NCI reported as a mezzanine item outside equity (before 2005) and the NCI reported as equity (after 2005), we use a final estimating equation, Equation (4), which allows all the coefficients in Equation (3) to vary according to whether the accounting data relate to the period before or after the effectiveness of the new requirements of IAS 27 by 2005. Our Equation (4) is given by

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \propto_2 NI_{it} + \propto_3 LOSS_{it} x NI_{it} + \propto_4 NCI_{it} + \propto_5 AFTER + \propto_6 AFTER x BV_{it} + \propto_7 AFTER x NI_{it} + \propto_8 AFTER x LOSS_{it} x NI_{it} + \propto_9 AFTER x NCI_{it} + \varepsilon_{it} \quad \textbf{(4)}$$

where *AFTER* is a dummy variable that assumes 1 for the observations belonging to the period after 2005 and 0 otherwise. This equation is estimated with industry fixed effects.

The coefficient on the interaction term *AFTER x NCI* reflects how the market's valuation of NCI presented inside equity (after 2005) differ from its valuation of NCI as a mezzanine item outside equity (before 2005). To the extent that the market valuation of NCI after 2005 is different from the market valuation before 2005, we expect that α_9 is statistically significant. By contrast, if the market values NCI by the same way irrespectively of its location in the statement of financial position, than α_9 would be not statistically significant.

As our analysis relies on a set of firms applying voluntarily IAS/IFRS and reporting NCI in their consolidated statement of financial position, they could not represent a random selection of all the German firms (e.g., Hung and Subramanyam, 2007). To control for the potential effect of self-selection bias, we apply the two-stage regression procedure suggested by Heckman (1979) in all subsequent analysis in this paper. In the first stage we use two binary logistic models which identify the determinants of choice to adopt IAS/IFRS voluntarily as well as the choice of having NCI. The estimated value in each of these two binary logistic models is then used to generate the Inverse Mills ratio for each observation (as explained in section 3.2.2). In the second stage, we use these Inverse Mills ratios as additional explanatory variables in our linear regression model stated in Equation (4) which parameters will be estimated by Ordinary Least Square (OLS) method.

4.3.3.2 Binary Logistic Models - Controlling for self-selection bias

In this section, we describe the first-stage analysis used in this study, in which we estimate two binary logistic models. The first one concerns self-selection for IAS/IFRS early adopter firms. The second one concerns self-selection for using NCI as a source of financing.

A. Self selection regarding the choice to adopt IAS/IFRS voluntary

Considering a wide range of German firms applying either IAS/IFRS or German GAAP, we control for potential self selection bias due to the accounting standards choice before the mandatory adoption of IAS/IFRS by 2005. We use a binary logistic regression to estimate the effects on the odds of a firm choice to adopt IAS/IFRS voluntary before 2005. Our dependent variable is a binary variable which assumes 1 for German firms applying IAS/IFRS voluntarily in the years 2002, 2003 and 2004 and 0 for German firms applying local GAAP during the same period. Following prior studies (e.g. Harris and Muller, 1999; Leuz, 2003; Hung and Subramanyan, 2007; Barth et al, 2008), we predict that incentives to apply IAS/IFRS voluntarily include profitability, leverage, size, listing status, auditor type and industry. More specifically, we estimate the following logit model:

$$Early_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 XLIST_{it} + \beta_5 AUD_{it} + \beta_n(\sum IND) + \varepsilon_{it} \quad \textbf{(5)}$$

where *Early* is a binary variable which assumes 1 for firms applying IAS/IFRS voluntarily in the period 2002-2004 and 0 for firms applying German GAAP in the period 2002-2004, *ROE* is the firm's return on equity, *LEV* is the firm's leverage measured as total liabilities divided by total assets, *SIZE* is the natural logarithm of

market capitalization, *XLIST* is a binary variable which assumes 1 for firms listed in more than one stock exchange and 0 otherwise, *AUD* is a binary variable which assumes 1 for firms audited by a Big4 audit firm and 0 otherwise and *IND* are indicator variables based on one-digit SIC codes.

This binary logistic regression is estimated on a sample of 853 observations, comprising 463 firm-year observations for German firms applying IAS/IFRS voluntarily in the period 2002-2004 and 390 firm-year observations for German firms applying German GAAP in the same period. Using this logistic model, we compute the Inverse Mills ratios for each observation, denoted by *DELTA*. We then include this *DELTA* variable in all subsequent regression models, procedure known as second-stage, providing the control for self-selection bias.

B. Self selection regarding the choice of using NCI

Considering only the group of German IAS/IFRS early adopter firms, we control for potential self selection bias due to the choice of using NCI as a source of financing. We use a binary logistic regression to estimate the effects on the odds of a firm choice of using NCI. Our dependent variable is a binary variable which assumes 1 for German IAS/IFRS early adopter firms reporting NCI in their consolidated statement of financial position every year during the entire sample period and 0 for German IAS/IFRS early adopter firms who have never reported NCI during the entire sample period. Following prior studies (e.g. Lourenço and Lopes, 2011), we predict that incentives for using NCI as a source of finance include profitability, leverage, size and industry. More specifically, we estimate the following logit model:

$$NCI\_FIN_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_n(\sum IND) + \varepsilon_{it} \quad \textbf{(6)}$$

where *NCI_FIN* is a binary variable which assumes 1 for firms reporting NCI every year during the entire sample period 0 for firms who have never reported NCI during the entire sample period, *ROE* is the firm's return on equity, *LEV* is the firm's leverage measured as total liabilities divided by total assets, *SIZE* is the natural logarithm of market capitalization and *IND* are indicator variables based on one-digit SIC codes. In addition, since the change in the way of reporting NCI could have an impact in the decision of using NCI, we also include a separate dummy variable that split the periods before and after the application of the new version of IAS 27.

This second binary regression is estimated on a sample of 463 firm-years observations for German IAS/IFRS early adopters firms, comprising 313 firm-year observations for firms reporting NCI and 150 firm-year observations for firms that were not reporting NCI during the entire sample period. Using this logistic model, we compute the Inverse Mills ratios for each observation, denoted by *IOTA*. We then include this *IOTA* variable in all subsequent OLS regression models, procedure known as second-stage, providing the control for self-selection bias.

4.4. EMPIRICAL FINDINGS

4.4.1 Binary Logistic Models

Tables 4.2 and 4.3 present findings of the two binary logistic models used in the first stage procedure suggested by Heckman (1979) and applied in this study.

Empirical evidence on the firm's choice about the accounting standards applied in their financial statements before the mandatory adoption of IAS/IFRS by 2005 is reported in Table 4.2.

TABLE 4.2
Descriptive Statistics for IAS/IFRS Early versus Mandatory Adopters Firms

Panel A: Firms ´characteristics

	Observations	N	Mean	Std.dev.	t-test
ROE	Early adopter firms	463	-0.008	0.547	-2.617***
	Mandatory adopter firms	390	0.076	0.387	
LEV	Early adopter firms	463	0.560	0.198	-2.501**
	Mandatory adopter firms	390	0.592	0.175	
SIZE	Early adopter firms	463	12.461	2.329	6.613***
	Mandatory adopter firms	390	11.487	1.972	
XLIST	Early adopter firms	463	0.611	0.488	2.593***
	Mandatory adopter firms	390	0.523	0.500	
AUD	Early adopter firms	463	0.622	0.485	2.918***
	Mandatory adopter firms	390	0.523	0.500	

Panel B: binary logistic model - choice to adopt IAS/IFRS voluntary

	Coef.
Constant	-3.531***
ROE	-0.999***
LEV	-1.582***
SIZE	0.363***
XLIST	0.101
AUD	0.023
N	863
Nagel Kerke R Square	0,197

This sample comprises German firms applying IAS/IFRS since 2002 (early adopters) and German firms applying German GAAP in the period 2002-2004 and IAS/IFRS after 2005 (mandatory adopters). The sample covers the period between 2002 and 2008 (excluding 2005).

ROE is Return on Equity, calculated as the net income attributable to common shareholders divided by the parent shareholders´ common equity, LEV is leverage measured by total liabilities divided by total assets and SIZE is a measure of firm size, being the natural logarithm of market capitalization, XLIST is a indicator variable that takes the value of 1 if the firm is quoted in more than one stock exchange and 0 otherwise, AUD is an indicator variable that takes the value of 1 if the parent company is audited by a Big 4, and 0 otherwise. Industry fixed effect is included.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Characteristics of German firms applying IAS/IFRS since 2002 (early adopters) and German firms applying German GAAP in the period 2002-2004 and IAS/IFRS after 2005 (mandatory adopters) are compared in Panel A. We find that IAS/IFRS early adopters firms are significantly larger (SIZE), not so leveraged (LEV) and with a lower return on equity (ROE), more likely to be listed in several stock exchanges (XLIST) and more likely to be audited by a BIG 4 audit firm (AUD) than mandatory adopter firms, with each of these differences being significant. These findings are consistent with prior literature on this issue (e.g., Bartov et al, 2005). As well, we find that book value, net income, total assets and total liabilities (not tabulated) are significantly higher for the group of firms early adopters of IAS/IFRS than mandatory adopters, which is consistent with previous literature finding these amounts are significant higher under IAS/IFRS than under German GAAP (e.g. Leuz, 2003, Bartov et al, 2005, Hung and Subramanyan, 2007).

The coefficient estimates of the accounting standards choice logit model are presented in Panel B. We find that the coefficients on ROE, LEV and SIZE are statistically significantly ($p<0,000$) and XLIST and AUD are positive. Overall, our estimation results are consistent with prior literature suggesting the existence of incentives on firm characteristics to apply IAS/IFRS voluntarily.Empirical evidence on the firm's choice about using NCI as a source of financing is reported in Table 4.3. Characteristics of German IAS/IFRS early adopter firms reporting NCI every year during the entire sample period (early adopters with NCI) and those who have never reported NCI during the same period (early adopters without NCI) are compared in Panel A. We find that early adopter firms with NCI are significantly larger (SIZE), more leveraged (LEV) and more profitable (ROE) when compared to early adopter firms without NCI. These findings are consistent with prior literature on this issue (e.g. Lourenço and Lopes, 2011). The coefficient estimates of the NCI choice logit model are presented in Panel B. We find that the coefficients on ROE ($p>0,100$), LEV ($p<0,001$) and SIZE ($p<0,000$) are positive. Overall, our estimation results are in line with prior

literature suggesting the existence of distinctive characteristics between those firms using NCI as a source of finance and those firms that never used.

TABLE 4.3

Descriptive Statistics for IAS/IFRS Early Adopter Firms With and Without NCI

Panel A: Firms ´characteristics

	Observations	N	Mean	Std.dev.	t-test
ROE	Early adopter firms with NCI	313	0.047	0.271	5,681**
	Early adopter firms without NCI	150	-0.122	0.869	
LEV	Early adopter firms with NCI	313	0.047	0.271	5,681**
	Early adopter firms without NCI	150	-0.122	0.869	
SIZE	Early adopter firms with NCI	313	13.212	2.251	12,732***
	Early adopter firms without NCI	150	10.893	1.598	

Panel B: binary logistic model - choice to use NCI as a source of financing

	Coef.
Constant	-7.262***
ROE	0.303
LEV	2.017**
SIZE	0.570***
N	463
Nagel Kerke R^2	0.409

This sample comprises German early adopter firms reporting NCI every year during the entire sample period (early adopters with NCI) and those who have never reported NCI during the same period (early adopters without NCI) The sample covers the period between 2002 and 2008 (excluding 2005).

ROE is Return on Equity, calculated as the net income attributable to common shareholders divided by the parent shareholders´ common equity, LEV is leverage measured by total liabilities divided by total assets and SIZE is a measure of firm size, being the natural logarithm of market capitalization. Industry fixed effect is included.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

4.4.2. OLS Valuation Model

Tables 4.4, 4.5 and 4.6 present findings of the OLS valuation model used in the second stage procedure suggested by Heckman (1979) and applied in this study.

Descriptive statistics for the variables used in the valuation model are reported in Table 4.4, for the entire sample (Panel A) and for the two periods covering 2002-2004 (Panel B) and 2006-2008 (Panel C), which means respectively the periods before and after the effectiveness of the new requirements of IAS 27 by 2005. When comparing these two periods (Panel D), we find that the variables MV and NI are statistically higher in the period 2006-2008 than in 2002-2004, while for the variables BV and NCI statistically differences cannot be found.

Table 4.5 presents correlations for the continuous variables used in the OLS valuation model. Consistent with established results in the accounting literature, the market value of equity is positively and statistically related with BV and NI. The independent continuous variables included in the regression, whilst showing some indications of collinearity, have no pairwise correlation coefficients in excess of 0.80, indicating that the threat of multicollinearity is limited.

TABLE 4.4
Summary Descriptive Statistics

	Mean	Median	Std. Dev.	Min.	Max.
Panel A: 308 observations, pooled sample					
MV	25.66	17.63	27.70	0.5488	164.9879
BV	17.52	10.57	24.25	0.4919	170.0822
NI	1.63	0.98	3.04	-5.2165	26.4980
NCI	1.27	0.20	3.86	0.0002	37.4243
Panel B: 157 observations for the period 2002-2004					
MV	19.58	13.06	23.02	0.5488	139.9899
BV	16.01	9.16	26.06	0.4919	170.0822
NI	0.88	0.69	1.99	-5.2165	8.6505
NCI	1.48	0.17	4.82	0.0002	37.4243
Panel C: 151 observations for the period 2006-2008					
MV	31.98	22.76	30.68	0.6770	164.9879
BV	19.09	11.38	22.18	0.5447	124.3133
NI	2.42	1.41	3.69	-3.6995	26.4980
NCI	1.05	0.24	2.49	0.0003	16.8900

Panel D: Paired sample T-test for differences in means		
		t-test
MV:	*2002-2004 versus 2006-2008*	-4.306***
BV:	*2002-2004 versus 2006-2008*	-1.229
NI:	*2002-2004 versus 2006-2008*	-4.779***
NCI:	*2002-2004 versus 2006-2008*	1.181

The sample comprises German early adopter firms reporting NCI every year during the entire sample period, covering the years between between 2002 and 2008 (excluding 2005).

MV is market value of equity per share at the fiscal year end, BV is book value of equity per share attributable to parent shareholders, NI is net income per share attributable to parent shareholders, LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise, NCI is the portion of equity in subsidiaries per share not attributable to the parent.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

TABLE 4.5

Correlations

	MV	*BV*	*NI*	*NCI*	*DELTA*	*IOTA*
MV	1	0.832***	0.678***	0.466***	0.163***	0.325***
BV	0.823***	1	0.624***	0.759***	-0.016	0.158***
NI	0.778***	0.709***	1	0.324***	0.038	0.220***
NCI	0.440***	0.565***	0.435***	1	-0.128**	0.039
DELTA	0.247***	0.101	0.043	0-.154***	1	0.458***
IOTA	0.537***	0.446***	0.357***	0.234***	0.439***	1

Pearson (Spearman) correlations above (below) the diagonal

The sample comprises German early adopter firms reporting NCI every year during the entire sample period, covering the years between 2002 and 2008 (excluding 2005).

MV is market value of equity per share at the fiscal year end, BV is book value of equity per share attributable to parent shareholders, NI is net income per share attributable to parent shareholders, LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise, NCI is the portion of equity in subsidiaries per share not attributable to the parent. DELTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to adopt IAS/IFRS voluntary, IOTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to use NCI as a source of financing.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Table 4.6 shows regression statistics resulting from the OLS estimation of Equation (4), controlling for self selection bias, which allows all the coefficients to vary according to whether the accounting data relate to the period before or after the effectiveness of the new requirements of IAS 27 by 2005.

The empirical results in Column 1 (C1) highlight the value relevance of summary accounting measures, as well as other information namely the amount of NCI reported on the consolidated financial position. The coefficients estimates for the variable BV is positive and statistically significant (α_1=0,966; *p-value* < 0,000), which is not the case of NI whose coefficient is not statistically significant (α_2=1,059; *p-value* > 0,100). This result for NI is consistent with Hung and Subramanyan (2007). When comparing the value relevance of IAS/IFRS measures with German GAAP measures of

BV and NI, they found that in Germany there is a greater noise (measurement error) in the IAS/IFRS NI justifying the lack of value relevance for this variable.

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TABLE 4.6

OLS Regression results

	C1			C2		
	Coef.	**t-test**		**Coef.**	**t-test**	
Intercept	-28.302	-6.03	***	-28.3	-6,03	***
BV	0.966	10.366	***			
NI	1.059	1.16				
LOSSxNI	-0.687	-0.403				
NCI	-1.621	-3.652	***			
AFTER	5.323	2.818	***	5.323	2,818	***
AFTERxBV	0.114	0.995		1.08	15,245	***
AFTERxNI	-0.486	-0.493		0.573	1,43	
AFTERxLOSSxNI	3,376	1.261		2.689	1.299	
AFTERxNCI	0,43	0.686		-1.191	-2.554	**
DELTA	29.702	3.844	***	29.702	3,844	***
IOTA	10.731	2.151	***	10.731	2,151	***
BEFORExBV				0.966	10.366	***
BEFORExNI				1.059	1.16	
BEFORExLOSSxNI				-0.687	-0.403	
BEFORExNCI				-1.621	-3.652	***
N	308			308		
Adjusted R^2	0,828			0.830		

Pearson (Spearman) correlations above (below) the diagonal.

The sample comprises German early adopter firms reporting NCI every year during the entire sample period, covering the years between 2002 and 2008 (excluding 2005).

MV is market value of equity per share at the fiscal year end, BV is book value of equity per share attributable to parent shareholders, NI is net income per share attributable to parent shareholders, LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise, NCI is the portion of equity in subsidiaries per share not attributable to the parent. AFTER is a dummy variable that takes the value of 1 for firm years observations for the period between 2006 and 2008 and 0 otherwise, BEFORE is a dummy variable that takes the value of 1 for firm years observations for the period 2002 and 2004 and 0 otherwise. DELTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to adopt IAS/IFRS voluntary, IOTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to use NCI as a source of financing. Industry fixed effect is included.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

The coefficient estimate for the variable NCI is negative and statistically significant (α_4=-1,621; *p-value* < 0,001). These results provide evidence that investors believe NCI have wealth-sharing characteristics and could downgrade the market price of the parent companies' shareholders (e.g Swanson, 2010). They also confirm prior empirical results for the value relevance of NCI in German firms (e.g .Lopes and Lourenço, 2011b)[26].

The coefficient estimate for the interaction term of NCI with the binary variable AFTER reflects how the market's valuation of NCI presented inside equity (after 2005) differs from its valuation of NCI as a mezzanine item outside equity (before 2005). The results reported in Table 4.6, C1, shows that this coefficient is not statistically significant (α_9=0,430; *p-value* > 0,100), suggesting the market do not place a different weight on NCI when they are reported inside equity. Therefore, we conclude that the market values NCI by the same way irrespectively of its location in the statement of financial position.

The results presented in Column 2 (C2) corroborate this conclusion. While C1 identified an absence of any differential effect on the variables after the inclusion of NCI in equity in the after-2005 period, C2 identify the statistical significance of each one of the variables separately for each period of time (before and after the inclusion of NCI inside equity by 2005). The coefficient estimate for the variable NCI is negative and statistically significant either before or after 2005. Moreover, assuming that the market views NCI reported outside equity in the same way as reported inside equity, then, the coefficient of *BEFORExNCI* should be equal to *AFTERxNCI.* Untabulated findings shows that the coefficient estimates for the interaction term of NCI with the variables BEFORE and AFTER are not statistically different[27].

[26] From this point ahead until the end of chapter 4, the references of Lopes and Lourenço (2011) and (2011b) are coincided with the papers on Chapters 1 and 2 of this thesis, respectively.
[27] The Wald test (untabulated) was applied to the other pair-variables and we cannot reject the null of the equality of the coefficient on each one of the variables interacted with the variables BEFORE and AFTER.

Our findings suggest that the IAS 27 revision does not change the investor's perceptions about NCI. Thus, reporting NCI as an element of equity or as an element outside equity does not matter, in the sense that investors are not fully confused with the location under which NCI are reported on consolidated statement of financial position and prices then consistently with the former years. These results are consistent with prior literature showing that the market values similarly the amounts reported on different locations in the financial statements (e.g. Cahan et al 2000, Owusu-Ansah and Yeoh, 2006, Jifri and Citron, 2009) and, once an item has entered in financial reports, location have no direct implications (e.g. Schipper 2007). These arguments justify that if the market is consistent, the association between NCI and share prices will be analogous and investors react similarly to NCI reported as non-equity *or* equity component.

In this particular point regarding the period after the revision of IAS 27, our results are different from So and Smith (2009a) but not total comparable. In their study on the value relevance of IAS 27 on presentation of NCI, they include not only the revision of Japanese equivalent-to IAS 27 standard, but, simultaneous, the adoption of a new set of accounting standards in Japan, equivalent word-for-word to IFRS. They find a negative relation of NCI with share prices only when they were presented outside equity, and no value relevance of NCI when presented inside equity after 2005. The environment of changes in the all the scope of the accounting regime and this is appointed for some authors (e.g., Choudhary, 2011) as one cause of disturbances on market perceptions. Thus, we give confidence to our results across prior empirical studies that provide mixed evidence on the investor's perception of accounting information presented in different locations in the financial statements. This argument can be justified as follows.

Reliability is appointed by some authors as a primary source of differences in the market valuation of accounting information accordingly with different locations in financial statements accordingly, primarily in the notes versus other financial statements (e.g. Ahmed et al, 2006; Frederikson et al, 2006; Libby et al, 2006; Schipper, 2007).

However, reporting NCI outside equity or within equity, is so reliable before as after IAS 27 (2003) revision, since the unique change was location but in the same financial statement, namely, the consolidated statement of financial position. Further, it seems that will be no additional costs to process new information (e.g. Barth et al, 2003), although some authors appoint the potential need to revise debt covenants due to some changes in ratios analyses after the inclusion of NCI within equity (e.g Nicolaev, 2010).

Considering that investors are assumed to process accounting information in the same way, Schipper (2007), Hirshleifer and Teoh (2003) and Kotari (2001) emphasis that apparent market inefficiency in existing literature may be derived from methodology questions, like self-selection and other confusing effects, often attributable to archival research. Trying to overcome these potential difficulties, we controlled for self selection (e.g. Choudhary, 2011) of IAS/IFRS early adoption using the two-stage procedure suggest by Heckman (1979). We also controlled for the decision to use NCI as a source of finance (as compared to firms that never used NCI in the period covered by our analysis). Since we use only early adopter firms, our study is not influenced by simultaneous differences in measurement of other assets, liabilities and components of earnings due to a transition to a different accounting regime (e.g., Ahmed et al, 2006, Niu and Xu, 2009, Choudhary, 2011). More precisely, our research includes the same set of firms before and after the change on NCI reporting, providing firm's bookkeeping system in the same manner (e.g., Jifri and Citron, 2009; Choudhary, 2011), assuring that the initial amounts recorded for both sets of NCI (before and after 2005) are equally objective and free from systematic bias. Thus, our results provide evidence on the consistency of investors on pricing NCI and it seems that they are not confused with the change in the reporting format.

4.4.3 Sensitivity Analysis

4.4.3.1 Scale effects

Potential for incorrect inferences in capital market-based accounting research associated with size differences between sample firms is frequently appointed in value relevance studies as scale effects(e.g., Barth and Clinch, 2009; Gil-Alana et al, 2011). Several possible solutions to mitigate this scale effect bias are found in the literature, namely, deflating continuous variables by lagged (i.e., beginning of period) total market capitalization. To assure the robustness of our results we perform an additional analysis, using alternative ways of deflating variables. Consistent with Ahmed et al. (2006), Jifri and Citron (2009) and Hung and Subramanyam (2007), we repeat our OLS Regression Equation (4) but scaling the variables by the lagged market value per share instead of the number of shares outstanding. The analysis (not tabulated) indicates that the signs and significance levels of our coefficients are qualitatively unchanged, with the exception of a slight decrease in the statistical significance of NCI and in the adjusted R squared of the model. Thus, our general conclusions are unchanged after such deflation. Also, to ensure that all accounting data other information are in the public domain, we then run our Equation (4) with market information three months after fiscal year end. Once more, our result (not tabulated) maintains.

4.4.3.2 Firm Characteristics

We also perform additional analyses in order to find whether our results could be sensitive to differences in firm characteristics. More precisely, we re-run our OLS Regression Equation (4) for different groups of firm-year observations accordingly with three firm characteristics, namely, the weight of NCI in the total of consolidated equity (NCI included), firm size and leverage. The three panels (A, B and C) of Table 4.7 present the results of these regressions.

TABLE 4.7

Results for the partition of sample by firm characteristics

Panel A: Firms split based on the weight of NCI

	Low		High		
	n= 154		n= 154		
	coef.	t-test	coef.	t-test	
NCI	0,301	0,021	-3,028	-5,903	***
AFTERxNCI	14,551	0,836	0,383	0,533	

Panel B: Firms split based on size

	Low		High		
	n= 154		n= 154		
	coef.	t-test	coef.	t-test	
NCI	-3,150	-9,646	*** 1,168	0,968	
AFTERxNCI	-0,917	-0,982	-1,041	-0,788	

Panel C: Firms split based on leverage

	Low		High		
	n= 154		n= 154		
	coef.	t-test	coef.	t-test	
NCI	-3,459	-5,953	*** 1,214	1,951	**
AFTERxNCI	0,690	0,701	-0,727	-0,942	

The sample comprises German early adopter firms reporting NCI every year during the entire sample period, covering the years between 2002 and 2008 (excluding 2005).

MV is market value of equity per share at the fiscal year end, BV is book value of equity per share attributable to parent shareholders, NI is net income per share attributable to parent shareholders, LOSS is a dummy variable that takes the value of 1 for firms with negative NI and 0 otherwise, NCI is the portion of equity in subsidiaries per share not attributable to the parent. AFTER is a dummy variable that takes the value of 1 for firm years observations for the period between 2006 and 2008 and 0 otherwise, DELTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to adopt IAS/IFRS voluntary, IOTA is the Inverse mills ratio of the first-stage of Heckman (1979) procedure computed from binary logistic model to control for self selection bias related to the choice to use NCI as a source of financing.
Industry fixed effect is included.

The results to other variables other than NCI and AFTERxNCI were suppressed.

***, ** and * indicate statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

These results are consistent with those presented in Table 4.6, although the market perception of NCI varies according to different firm characteristics.

For those firms in which the weight of NCI in total consolidated equity is low (i.e. below the median) NCI have no value relevance to the market, and there is no incremental effect on prices after their inclusion within equity after 2005. A possible explanation for the absence of value relevance can be due to the fact that in these firms NCI are just a smaller part of consolidated equity, providing that their impact in the consolidated statement of financial position is closer to zero, reason why their presence can be not valued by the market. By the contrary, for those firms in which the weight of NCI in total consolidated equity is higher (i.e. above the median) NCI have an inverse relation to share prices, before and after their inclusion within equity after 2005, consistent with the results for the polled sample.

For higher firms (i.e., those firm-year observations above the median of the natural logarithm of market capitalization) NCI as well do not have value relevance, neither before nor after their reporting within equity after 2005. For this case, a possible explanation consistent with Swanson (2010) relates to the fact that large firms can access to alternative sources of finance, and have the facility to maintain NCI when they are is useful and to eliminate them when they are detrimental. Thus, investors do not put a negative nor positive impact on the amounts reported for NCI in large firms. By the contrary, for smaller firms (i.e., those firms below the median of the natural logarithm of market capitalization) NCI have an inverse relation to share prices, before and after their inclusion within equity after 2005, consistent with the results for the polled sample.

For lower leveraged firms (i.e., those firm-year observations below the median of the natural logarithm of market capitalization) the inverse relation between NCI and share prices still hold for both periods in which NCI are reported in different locations. However, for higher leveraged firms, this is the only time in this study that the NCI variable does have a positive statistically significant with share prices, both before and after their inclusion in equity. A possible explanation could include the fact that as the

amount of debt increases, the firm cannot have access to finance other than partners inside the entity group. In this case, the presence of NCI as a source of alternative finance can impact positively in share prices.

Altogether, these findings confirm our prior predictions. They provide evidence that the market prices NCI in the same manner, irrespectively of their location and the market perception is not affected by the inclusion of NCI within equity.

4.5. SUMMARY AND CONCLUDING REMARKS

The main question this study addresses is whether the market prices NCI in the consolidated statement of financial position in the same way irrespectively of their location in the consolidated statement of financial position. We concentrate on this question by estimating cross-sectional equity valuation regressions to assess whether the market prices NCI reported as equity in the same manner as NCI reported as non-equity, given the market perception of NCI.

The IAS 27 revision, issued in 2003 and effective in 2005, gave a unique opportunity to do develop this study. The previous version of IAS 27 required the NCI to be reported on a mezzanine item between liability and equity, while since 2005 to date IAS 27 requires the movement of NCI from the mezzanine section of consolidated statement of financial position to within equity.

In order to achieve our goal, we performed a cross-sectional valuation model, covering a within-firm analysis with a sample of German early adopters of IAS/IFRS before and after the revision of IAS 27. Similar to Choudhary (2011) we use a unique setting of firms to overcome three typical problems with studies that compare accounting data presented under different financial statements. Firstly, the inclusion of just IAS/IFRS early adopters prevents the bias from changes in the accounting regime in 2005. Secondly, the adoption of IAS 27 in 2005 do not changed the measurement of

NCI and other variables. Third, we use the so-called two stage procedure of Heckman (1979) to control for self-selection.

Results indicate that the market prices NCI similarly before and after their inclusion in equity. To be precise, the main conclusion is that there is no differential or incremental value relevance in NCI when they move from outside equity to within equity, providing that the alternative ways of reporting of NCI do not matter to market valuation.

Although the market perception of NCI could vary according to different firms' characteristics, our findings show that the change in the location where they are reported on the consolidated financial statement had no effect in their explanatory power to share prices.

Our findings contribute to the literature concerning market consistency in pricing accounting data presented in different locations of financial statements. Our contribution to this stream of literature provides evidence that NCI are valued in the same manner before and after the new requirements of accounting standards. Namely, investors are not sensitive to changes in reporting location. We contribute, also, to the scant literature concerning the value relevance of NCI, finding that the market prices differently the NCI according to the weigh in the consolidated financial statements, the firm size and the leverage.

Overall, our results give evidence that investors fully incorporate and process all the information about NCI, and could price them differently according to firm characteristics, but similarly according to the location where they are reported. These findings suggest the consistency of investors on pricing NCI and it seems that they are not confused with the change in the reporting format.

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CHAPTER 5 - CONCLUSION

5.1 CONCLUDING REMARKS AND CONTRIBUTIONS

This thesis is a result of an intensive empirical study that covers several issues on the determinants and market assessment of the NCI in subsidiaries, outlined in three independent but related research papers. Overall, in the first paper we identified firm and country determinants for the pattern of use of NCI in fourteen European countries. In the second paper we examined whether the market values NCI in a different way depending on the institutional environment of the parent company. Finally, in the third paper we analyzed whether the market prices NCI by the same way before and after the adoption of the new standards requiring the NCI to be presented within equity, instead of as a mezzanine item between liability and equity.

Accordingly, our findings in the first paper covered fourteen European countries and revealed that the probability of reporting NCI in French-civil-law countries is higher and in Common-law countries is lower, when compared to Scandinavian/German-civil-law countries, the benchmark group. Besides, we also provided empirical evidence that larger firms, leveraged firms and profitable firms are more likely to use and report NCI in their consolidated financial statements. In the second paper we developed a research covering five from that fourteen European countries whose legal origin provides different level of investor protection. We found a positive association of NCI with share prices occurring in France and Greece, as opposed to a negative association in United Kingdom, as well as Sweden and Germany. Afterward, we putted together firms from Common-law and from Scandinavian/German civil law countries in order to find whether the market penalization of NCI is significantly different between these two groups of firms. Our final results also supported that that the NCI in Scandinavian/German civil law countries were negatively associated with share prices, although with a less penalization than in the Common law country. Finally, in the third paper we provided new empirical evidence suggesting that the location of NCI does not matter in terms of market valuation, meaning that the market prices the NCI in the same manner irrespectively of being presented within or

outside equity. We also perform sensitivity analysis for different sub-sample of firms split on characteristics like size, leverage and the weight of NCI in total consolidated equity and the previous findings are supported. These last findings covered only Germany because, unlike other countries, it has a great representation of early adopter firms which provided a reasonable large sample and an ideal natural experiment for examining the financial effects of the movement of NCI without suffer the financial statement effects of the mandatory adoption of the complete set of IASB standards by 2005.

Each one of the research papers that comprises this thesis describes it owns conclusions, which can be integrated in the following outline. Firstly, larger firms, more leveraged firms and more profitable firms can have incentives to use NCI. However, the NCI will be more costly to firms in those countries where they are better protected and it is likely that a firm choices to use NCI only when the benefits outweigh the costs, justifying our results for the role of country characteristics on the pattern of use of NCI in Europe countries. As a matter of fact, our results suggested that the probability of use and report NCI is different between countries whose institutional characteristics offer different protection to investors, which can be linked to the wealth redistributing effect between controlling and non-controlling shareholders. More precisely, it seems that the lower the investor protection, the higher the probability of use and report NCI.

Furthermore, we conclude that legal origin plays a role on the relation between NCI and the market value of parent companies. Given that legal origin is linked to the level of investor protection, our research provides evidence to conclude that the lower the investor protection environment, the more likelihood of a non-negative association between NCI and share prices. As institutional environments with stronger protection to investors, parent companies are considerate to afford wealth share benefits with NCI but they are costly, and the market discounts that value, since literature says that investors react harmfully when they have to share financial assets. Thus, in United Kingdom, in Sweden and in Germany, the relation between NCI with share prices of parent companies is negative, although there is a lower penalization for firms from

Scandinavian/German-civil law countries that for our Common law country. These conclusions can probably also justify the reason why there are a lower percentage of parent companies with subsidiaries partially owned in those three countries when compared French-civil law countries. In truth, based on findings for France and Greece, we conclude that as the level of protection is weaker, more opportunity to extract private benefits of control at expenses of NCI arises and the market values positively that ability. In these cases, a plausible reason is that the NCI contribute with additional capital that can be useful to parent companies without these suffer from the monitoring and other constrains imposed by higher levels of investor protection.

Finally, we have found no differential or incremental value relevance in NCI when they move from outside equity to within equity, providing that the alternative ways of reporting of NCI do not matter to market valuation. Moreover, although the market perception of NCI could vary according to different firms' characteristics, our findings show that the change in the location where they are reported on the consolidated financial statement had no effect in their explanatory power to share prices. These findings suggest that investors process all the information and process them accordingly, revealing the consistency on pricing NCI and it seems that they are not confused with the change in the reporting format.

Overall, this thesis is one of the first providing empirical evidence on the pattern of use of NCI by European countries, on the way as the market values NCI in different institutional environments with several controlling-noncontrolling shareholders conflicts, and on the consistency of the market pricing NCI before and after changes to their location on CSFP under recently IAS/IFRS requirements. Thus, we are convicted that our thesis fills a gap on the empirical research comprising the NCI reported on financial statements, whose accounting for has recently being strengthened by the development of new standards issued by IASB and FASB in their jointly project on business combinations. Therefore, our findings may be of use to financial statement users, regulators and law and accounting setters.

As a final point, we contribute and add prior literature in several ways, summarized in the following. Our thesis is helpful for financial statements users because we identify the major European players that are affected by the accounting standards on matters related to NCI. The way as NCI was and is now reported could induce significant errors when comparing financial ratios, either between different firms or between different time periods for the same firm (e.g., Mulford and Quinn, 2008; Silliman, 2008; Platt, 2008; Whitehouse, 2009; Deitrick, 2010). Analysts need to be cautious when analyzing consolidated financial statements, when performing time-series analyses, and when forecasting future values for key variables. Secondly, we add to early studies by combining the literature on value relevance (e.g. Abad et al, 2000; So and Smith, 2009; Swanso, 2010) with the literature on legal origin and minority shareholder protection as part of the institutional environment where firms develop financial and economic activities (e.g Ali and Hwang, 2000; Leuz, Nanda and Wysocki, 2003; DeFond, Hung and Trezevant, 2007; Hughes, 2009; Rahman, Yammeesri and Perera, 2010). We are not aware of other study exploring cross-country differences using legal origin to draw conclusions about the way as the market values NCI. Finally, our thesis brings new insights in the market perception of NCI. More precisely, we contribute to the literature about market consistency on the valuation of accounting data presented under different alternative formats, especially when a difference on accounting system has occurred (e.g., Ahmed et al, 2006; Owusu-Ansah and Yeoh, 2006; Jifri and Citron, 2009; Mitra and Hossain, 2009).

5.2 LIMITATIONS AND FUTURE RESEARCH

This research has several limitations that can be viewed as opportunities to future research. In first place we do not include all the European countries in the three papers, due to the lack of observations, as stated before. Thus, like any serious and rigorous research, we have to be caution when draw generalizations. Since we have found that

legal origin (and the implied institutional characteristics) can play a role on the way as the market views NCI, one possible extension is to develop an analysis but including data from all European countries grouped together by legal origin. Given that, it is possible to use a sample technique used by Daske et al (2008) and Landsman et al (2011) that retains randomly selected firm-years under which legal origin has the same weight by virtue of contributing the same number of observations. Notwithstanding slight sensitivity tests (not reported) give robustness to our results.

A second point is that from fiscal years after July 2009, under new subsidiary´s acquisitions, NCI can be measured at fair values (full goodwill method) or can be measured at NCI´s proportionate share on the fair value of net assets of that subsidiary. We randomly hand collected some reports from 2009 and 2010, and we get evidence that just a minor number of firms has chosen the full goodwill method and that fact not changed our main results. However, we draw a further opportunity to future research, identifying the determinants of the choice to measure NCI by one of the two alternative methods, even if that choice will have no impact on share prices. As US GAAP just require one method, it is possible to fill the gap on the literature and create a stream of research that provides evidence and guidance to the IASB on the convergence with FASB on matters concerning the measurement of NCI, which is the only topic for which divergence is maintained between these two standards setters.

A third opportunity to investigate is related to the market assessment of credit risk. The Standard & Poor (S&P) Corporate Rate Criteria stated that accounting changes should not have any direct impact on credit quality, unless they reveal new information about a firm. Nonetheless, they can produce indirect effects due to triggering of financial covenants violations or adverse market reactions as a result of changes in the market sentiment about the companies apparent leverage. For another point of view, current IAS/IFRS and US GAAP requires that all the changes in a parent´s ownership interests in a subsidiary that do not result in the parent losing control are accounted as equity transactions, and any gains or losses are only recognized in the consolidated income or comprehensive income in those cases of partial disposal of an investment in a

subsidiary that results in loss of control. Thus, the leverage of a consolidated entity can be linked to the transactions with NCI. Moreover, the carrying value of assets and liabilities will not be affected by those transactions but, in turns, will be affected by the chosen method of measurement of NCI in the initial recognition of a subsidiary. If the credit rating assigned by S&P or equivalent can be used as a proxy for the market assessment of firms' credit risk, a further investigation can be developed examining whether creditors assign a different rating to firms that have NCI, to firms that effectuate equity transactions with NCI (including the loss of control of subsidiaries), and to firms who choose to measure NCI at fair value instead of the proportional share of net assets. The potential findings will be helpful for accounting, business and strategic behavior, and will contribute to fill a gap on the understandable of NCI as shareholders of a consolidated equity, whose financial reporting provides useful information to investors and creditors in making rational investment and credit decisions.

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