

THE ROLE OF NON-CONTROLLING INTERESTS IN THE VALUE RELEVANCE OF CONSOLIDATED FINANCIAL STATEMENTS

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Abstract

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Based on a sample of European listed companies, the present study has investigated value relevance of consolidated financial statements prepared according to IASs/IFRSs and whether presence or absence of non-controlling interests is relevant to capital markets investors.

Several previous studies deal with value relevance of consolidated annual reports, but none of them considered the influence of non-controlling interests on investor's choices.

To analyze if and how minority shareholders presence can affect investors' choices, we have analyzed the value relevance of consolidated financial statements with minorities and, on the other side, annual reports from groups without non-controlling interests.

To do it, we have used a valuation framework based on Ohlson theory and we have tested our hypothesis through an Ohlson derived price model.

Findings provide evidence that consolidated financial statements prepared according to IASs/IFRSs are value-relevant. Moreover, contrary to expectations, financial information related to non-controlling interests is not so significant to investors' choices.

Keywords: Value Relevance, Financial Statements, Consolidated Reporting, Accounting

1. INTRODUCTION

In this paper, we explore the value relevance of consolidated financial statements and the role of non-controlling interests (NCI hereinafter) reported, if present, in groups annual reports.

Value relevance research empirically analyses whether financial statements provide useful information to equity investors. In fact, one of the most important purposes of financial reports is to offer data for estimating firm's value. When financial accounts are useful for pricing company shares, information arising from financial statements is defined as value relevant.

In recent years, this research stream has been well developed by several authors, as claimed by Beisland (2009), trying to answer many issues in this scope. We refer to this broad literature as the value relevance literature. It belongs to the general field of capital market-based accounting research, originated with Ball and Brown (1968) and Beaver (1968), by

which investigates relations between capital markets and financial statements.

In this study, we adopt a theoretical foundation and a definition of value relevance solely devoted to equity investment. Thus, it becomes a measure of accounting information usefulness from equity investors' perspectives.

Empirical research developed in this direction is based on valuation theory and on models that put in connection accounting numbers to value of a company's equity. These models are tested thru the statistical methodology of regression analysis.

Once we have stated what to explore and how to explore it, we have turned our attention to data required to develop our analysis. Financial statements are the main source of accounting data used in many studies that have been carried out by collecting accounting numbers from listed companies' annual reports, available on several databases that collect consolidated financial statements. This type of financial reports, contrary to the separate ones, is the actual reports of the

economic entities and they are the only publicly available statements in many countries as in the U.S. Consequently, almost all studies about value relevance have developed empirical research on accounting numbers collected on a consolidated basis. Only a few papers deal with value relevance of separate financial reports (Alford, Jones, Leftwich, and Zmijeski, 1993; Harris, Lang, and Moller, 1997; Abad *et al.*, 2000; Palea, 2014).

However, they do not consider specific features of consolidated reports as the presence of NCI and the role and nature of consolidated values. In fact, models developed to study the relationship between firms' market values and certain accounting variables, like equity and net income, refer to parent company related figures, whilst consolidated equity and net income are actually divided into two parts: one attributable to the parent company and the other attributable to NCI, if existing. We keep adopting models that put in relation firm market value with accounting numbers attributable solely to the parent company, but we consider NCI presence in database preparation.

Based on a sample of European listed companies, we have tested the value relevance of their consolidated financial statements to verify our first hypothesis: consolidated financial statements prepared under IASs/IFRSs are value relevant.

Then, we have compared financial statements value relevance of groups with minority shareholders to one of groups without them. In this way, we have analyzed whether non-controlling interests affect the value relevance of financial reporting. Our related hypothesis is that presence of NCI negatively affects the value relevance of consolidated reports.

2. LITERATURE REVIEW

We start analyzing value relevance from the definition by Barth *et al.* (2001): 'an accounting amount is defined as value relevant if it has a predicted association with equity market values'. Literature has been examining the relationship between accounting values and market values for over 30 years, beginning from the famous Modigliani and Miller theory (1958) and from the capital market research in accounting developed by Ball and Brown (1968) and Beaver (1968).

However, only several years later, Amir *et al.* (1993) used the term 'value relevance' for the first time and, in the same period, other scholars like Beaver (1998, p. 116), Ohlson (1999), and Barth (2000) proposed similar definitions. The common feature of these definitions is that an accounting value is assumed as relevant when it has a significant relationship with equity market value.

Beginning from the first studies by Ball and Brown and Beaver, many other scholars have approached this topic to verify the value relevance of accounting information. It is not easy to provide a neat classification of these studies. Holtausen and Watts (2001) and Kothari (2001) refer to value relevance studies distinguishing between information content studies or event studies and association studies.

The first ones analyzed whether a certain event produces new information that has a significant impact on the market. For example, Ball, Brown, and

Beaver have carried out their studies under this approach and have met several troubles in finding a correct method to be developed. For example, the effect of the event could get lost in time or be connected to other aspects.

Also for this reason, many scholars have concentrated on second type studies called association studies. Their main feature is testing for a positive correlation between an accounting value and stock returns like earning or cash flow from operations and stocks returns over a one year. Other studies have tested for correlation between stock market price and values from consolidated financial statements (price models). We refer to this type of studies.

A research stream compares the features of book earnings and the taxable income, even if it is not publicly available. Hanlon, LaPlante, and Shevlin (2005) analyze information supplied by the book income and an estimate of taxable income. They find that book income explains a larger part of stock returns than taxable income. This finding has been confirmed by other authors. Atwood, Drake, and Myers (2008) analyzed a sample of financial statements collected from different countries and verified that book income shows a bigger explanatory power for future earnings and cash flows.

However, only a few studies deal with properties and features of consolidated and separate financial statements. Some of them bring evidence of the superior relevance of consolidated reports compared to separate financial statements (Harris *et al.*, 1994, Niskanen *et al.*, 1998; Abad *et al.*, 2000; Müller, 2011). Others find lack of incremental relevance of parent company separate financial statement (Niskanen *et al.*, 1998; Goncharov *et al.*, 2009).

Harris *et al.* (1994) analyze the value relevance of accounting values for U.S. and German companies matched on industry and firm size. Their findings show that accounting data have a bigger explanatory power when they are consolidated ones; contrary, unconsolidated data demonstrate less relevance.

Niskanen *et al.* (1998) concentrate on the information content of earnings. They compare the consolidated earnings versus the parent company earnings of Finnish firms. The analysis of accounting and market data shows that consolidated earnings are more relevant to explain stock returns whilst earnings from separated reports are less. These findings prove that consolidation process increases the information content of earnings.

Abad *et al.* (2000) consider the different relevance of consolidated financial statements and parent company (separate) statements. They have applied the Edwards-Bell-Ohlson valuation framework to a sample of firms listed on the Madrid Stock exchange. Their findings demonstrate that consolidated information overtook non-consolidated one in terms of relevance.

Gontcharov *et al.* (2009) verify that group accounts of German holding companies have more desirable properties for economic decision making.

A survey of Pellens *et al.* (2003) draws a list of the most important determinants of dividend policy. They rank consolidated earnings and lagged dividends at first and second place, before unconsolidated earnings.

Even if prior literature provides empirical research about value relevance of different types of accounts, most studies have based their analysis only on consolidated financial statements. This approach is due to theoretical and practical reasons. From a theoretical perspective, group accounts represent the financial reports of the real economic entity. Separate financial statements provide only a limited representation of the group as long as investments in subsidiaries are recognized and evaluated as financial instruments. Contrary, in consolidated reports, subsidiaries assets and liabilities are combined and shown as belonging to a single reporting entity. Practical reasons addressing studies to group accounts are linked to the public availability of financial statements. In several countries, consolidated financial statements are the only publicly available reports and in the European Union, listed companies have been adopting IAS/IFRS in preparing consolidated reports since 2005. This has allowed cross-country analysis as long as they consider consolidated reports.

Accounting figures taken from consolidated financial statements have some specific features compared to separate ones. At first, they result from the process of combining financial results of subsidiaries into the combined financial results of the parent company. Secondly, in preparing consolidated reports, any NCI in the subsidiaries must be recognized and measured.

This issue implies that, within group equity and net income, there is a part attributable to the parent company and another one attributable to other shareholders, non-controlling interests or minorities. Almost all studies about value relevance are based on parent company accounting values, forgetting the presence of other items related to other shareholders. For example, econometric models as Ohlson derived price model, put market value in relation to equity equity book value and net income, consider only parent company equity and net income as reported in a consolidated financial statement. No studies refer to explanation power of accounting values related to NCI and to their role in financial reports relevance.

Our analysis offers a new contribution to the existing literature in this way. Do non-controlling interests among group equity and net income affect investors' choices? Is minority shareholders presence relevant to the explanatory power of consolidated financial statements?

3. METHODOLOGY AND VARIABLES

3.1. Choice of valuation model

At first, value relevance research should consider the selection of the valuation model to use in the tests. In recent years, many researchers have used models based on Ohlson (1995) and its subsequent refinements (Feltham and Ohlson, 1995, 1996; Ohlson, 1999, 2000).

Beaver (2002) states: 'The F-O approach [Ohlson 1995 (OM) and Feltham and Ohlson 1995 (FOM)] is, in my opinion, one of the most important research developments in the past ten years'. The most important contribution of Ohlson model is the definition of a conceptual framework for equity valuation.

This model has had a big impact on contemporary accounting literature and several reasons have made Ohlson model not just influential but also a classic. First, there is a consensus among scholars on the formal linkage between valuation and accounting values provided by this model: 'Ohlson and Feltham present us with a very crisp yet descriptive representation of the accounting and valuation process' (Lundholm: 1995, 761). Second, one of the most important advantages of the model is its versatility: '[the residual income valuation] model should be an integral part of a broader solution to the problem of accounting diversity' (Frankel and Lee, 1996, 3). '[... results ... illustrate the resilience of the model to international accounting diversity' (Frankel and Lee, 1996, 2). In a nutshell, it can be re-expressed in various ways, adding new variables or ignoring other ones.

Another reason for Ohlson model success is that it has found a good response to some critical points in traditional accounting research. Lev (1989) argued about low linkage (low R^2) between firm value and accounting information found in empirical research. Contrary, studies that trust on the OM verify that 'our estimate [from the residual income valuation model] accounts for more than 70% of the cross-sectional price variation' (Frankel and Lee, 1996, 2).

Moreover, the high R^2 found by the previous analysis suggests that the original independent variables required by the model (book value of equity, net income, and dividend) are sufficient to explain most of the value relevance. For example, Hand and Landsman, after finding an R^2 more than 80% in firm-level regressions, stated that "[T]he role in setting prices of information outside key aggregate accounting numbers in current financial statements may be more limited than previously thought" (Hand and Landsman, 1999, 24).

Finally, researchers suggested that thanks to the explanatory power of the model, it could be used for policy recommendations. For example, as cited by Hand and Landsman, the Coopers & Lybrand Accounting Advisory Committee in 1997 supported that empirical research evaluating financial reporting standards promulgated by standard setting bodies is best conducted through the Ohlson framework.

Due to this broad acknowledgment of OM, we decided to adopt it in our analysis.

The original version of the model expresses firm value as a linear function of the book value of equity and the present value of expected future abnormal earnings. The model assumes strong hypothesis as the existence of perfect capital markets, but with additional assumptions, it can re-express the firm value as a linear function of equity book value, net income, dividends and other information.

We have based on an Ohlson modified price model in which two major items from financial reports (balance sheet and income statement) are used to test the value relevance of consolidated financial statements. Moving from the original assumption of the model (Ohlson, 1995), we have adopted an extension of the model that allows us to explore relations between equity market value and two main financial accounting variables. The first one is the book value per share and represents the

balance sheet, whilst the second one is the earning per share and represents the income statements.

This econometric model is explained by this equation (Kwong, 2010: 9-10):

$$MVPS_{it} = \beta_0 + \beta_1 BVPS_{it} + \beta_2 EPS_{it} + \varepsilon_{it} \quad (1)$$

where:

$MVPS_{it}$ is the market value per share of firm i at time t (fiscal year-end) and it is designed as the dependent variable;

$BVPS_{it}$ is the book value of equity per share of firm i at year t ; it is the first independent variable;

EPS_{it} is the reported accounting earnings of firm i at the fiscal year ended at time t ; it is the second independent variable.

We have applied it to consolidated financial statements.

Primary, we have reasoned on the items that compose equity and net income in a consolidated financial statement.

As the result of the consolidation process, both group equity and net income can be divided into two components, due to the non-controlling interests, if existing. Although in consolidated financial statements and in value relevance studies much attention is given to equity and net income of the parent company, the presence of net controlling interests represents a significant issue to consider. Moreover, accounting values attributable to such shareholders can be very significant and have a huge amount of balance sheet and income statement.

According to these considerations, we decided to consider this issue in the model, as the following paragraphs describe.

3.2. Dependent variable

In this section, we describe the dependent variable used in our research model, coherently with our research hypotheses.

Equity market value or price of a firm, in our research scheme, is a function of accounting variables, such as earnings and book value. In this study, we have assumed dependent variable or regressand a value that is an expression of the market price of common or ordinary shares. Although many studies assume the market capitalization of firms as the dependent variable, we set the share price as the regressand. In this way, we could solve some issues related to scale effects. As Easton and Summers (2003) claimed, largest companies of a sample drive the regression result, also when they make a little part of the whole sample and undeflated regression results might suffer from a coefficient bias and heteroscedasticity (Göttsche and Schauer, 2011, p. 13).

Deflating the regression values could be a way to solve this issue. Despite this, according to Barth and Clinch research (2009), share deflated and undeflated specifications of the Edwards-Bell-Ohlson evidence the best results also when scale effects occur. Thus, our model will follow the undeflated theory.

To test for the relationship between share price and some accounting values, we have looked for a dependent value that could reflect the effects of accounting information on investors' choices. Whereas the share price is a good value to represent

them, we have assumed as dependent value the share price three months after the end of the fiscal period. In our sample, we collected the share price of several firms referred to 31st March. In fact, for many companies, fiscal year end occurs on December 31st, so in our opinion, three months are a fair period to observe effects of accounting information on investors choices.

Moreover, to make our analysis deeper, we have collected, for each firm of the sample, the share price on the 31st March for five years, from 2010 to 2014 and accounting figures from 2009-2013 financial statements.

3.3. Independent variable

In many implemented regression models based on Ohlson theory, the independent variables, or regressors, are accounting values like equity book value or net income. Although our first aim was to introduce some variations to consider the presence of non-controlling interests, we have followed this approach.

Because of data arising from consolidated financial statements, we could observe how different values compose the group equity and net income. For both the equity and net income recognized in consolidated reports, we can distinguish the part attributable to the parent company and the one attributable to the NCI.

Almost all the studies about value relevance assume, as independent variables, accounting values attributable only to the parent company, such as parent company shareholders' equity and net income/profit. Often, they are assumed on a per-share basis to avoid scale effects.

In defining independent variables, we have reasoned on the real nature of the consolidated financial statement. Consolidated reports as consolidated financial statements are the real financial statements of an economic entity and it is evident in the modern economy where the most important firms have a group pattern made by a parent undertaking and its subsidiary or subsidiaries. Even though the parent company and its subsidiaries are legally and formally independent, they are a single economic entity. Moreover, a subsidiary can be not wholly owned, and this results in the presence of non-controlling interests to be recognized in the balance sheet and in the profit and loss. Whereas non-controlling interests are relevant values within the group equity and net income, we have decided to consider this issue in our analysis. Initially, we have thought about assuming, as independent variables, equity book value and net income attributable to NCI. In other words, we would have added - in our regression model - figures related to non-controlling interests. Unfortunately, in operationalizing accounting values related to NCI, we have incurred in some obstacles. Because of the assumption of values on a per-share basis, we would have to do the same for NCI and it would have required a plenty of information. In fact, the amount of NCI recognized in the income statement and in the balance sheet is made by the sum of single NCI related to each subsidiary controlled directly or indirectly by the parent, after eliminations for intra-group transactions. Thus, we should have decomposed NCI in as many components as the

number of subsidiaries and express them on a per-share basis. Due to these issues, we have abandoned the idea of considering accounting values directly associated with non-controlling interests in favor of developing a database considering the presence of minorities.

Therefore, in our models, we have considered only the following independent variables, all related to the parent company.

The Parent company book value of equity per share (PARENT BVPS) represents a per-share measure of the group equity attributable to the owners of the parent. It is often named as "Parent company' shareholder's equity" or "Equity attributable to shareholders of parent company". This variable is present in almost all studies based on price models.

The Parent company earnings per share (PARENT EPS) stand as an indicator of the company profitability. It is calculated assuming as the numerator the group net income attributable to the parent company and as the denominator the weighted average number of equity shares in issue during the period.

3.4. Sample and source of data

By gathering quantitative data from annual reports prepared according to the same accounting standards, we have developed a proprietary database composed of secondary data and consistent with the purpose of our survey. In preparing our database, we have considered annual reports from companies listed on regulated markets in the EU, where IASs/IFRSs have been compulsory since 2005 in the preparation of consolidated financial statements.

Among all listed companies in the European Union, we have focused on the financial markets of the five major EU economies: UK, Germany, France, Italy, and Spain representing together more than half of the European Union GDP. We have only looked at European listed companies and consolidated financial statements, all adopting the same accounting standards since 2005. This guarantees relevance, materiality, comparability, verifiability, faithfulness, and therefore, homogeneous, and consistent data.

At first, we have done a preliminary analysis of all the companies listed on the mentioned exchanges at the date we have started our research (2008) to identify those that could be used for our purposes, then we have focused on firms with consolidated reports, as these are perfectly comparable among countries. Factset database has been used to collect data of 5,166 companies listed on the above-mentioned markets. Then, we have excluded companies for which data were not available over the entire period because of delisting or extraordinary operations and so on or companies with a fiscal year not beginning on January 1st and we have developed a database made by firms with available accounting data over the period 2009-2013, with share price available at the end of March for 2010-2014. Moreover, banks and assurance companies have been excluded because of their industry. At the end of these refinements, our database is made by 1,356 companies, all with the fiscal year beginning on January 1st.

To take into account NCI presence, we have divided our dataset into two sub-databases. The first one gathers data from 511 companies in which there are not non-controlling interests. The second one is made by 845 companies with non-controlling interests among the shareholders.

The following tables summarize the sub-databases composition.

Table 1. Sub-database 1 composition by country. Companies without NCI

Country	Freq.	Percent	Cum.
Germany	46	9	9
UK	338	66.14	75.2
Spain	16	3.13	78.3
Italy	30	5.87	84.2
France	81	15.85	100
Total	511	100	

Table 2. Sub-database 2 composition by country. Companies with NCI

Country	Freq.	Percent	Cum.
Germany	124	14.67	14.7
UK	234	27.69	42.4
Spain	66	7.81	50.2
Italy	167	19.76	69.9
France	254	30.06	100
Total	845	100	

3.5. Methodology and hypotheses development

As most of the former studies, the present work is based on the Edward-Bell-Ohlson (1995) model, transformed into an OLS (ordinary least squares) regression approach as before explained.

Our empirical analysis is based on regression models that we used to test different hypothesis related to value relevance of consolidated financial report.

H1: Information supplied by consolidated financial statements is value relevant. This hypothesis is the starting point and the base for elaborating and testing the next hypothesis. Naturally, for its development, we considered empirical results of previous research that support the thesis of consolidated financial statement relevance (Harris *et al.*, 1994; Niskanen *et al.*, 1998; Abad *et al.*, 2000; Goncharov *et al.*, 2009).

To test for this first hypothesis, we considered only independent variables attributable to parent company's shareholders like parent company book value per share and parent company earnings per share and we did not take into account NCI presence or not. This decision in line with almost all studies about value relevance that are based on accounting values attributable to the parent company and do not consider NCI presence and values attributable to them.

H2: The value relevance of information supplied by consolidated financial statements is different depending on whether there are NCI within the group or not.

At the basis of this hypothesis development lies, on one hand, the attention given by the IFRS Board to this matter and on the other the relevance of NCI values within the consolidated financial statement. In fact, IASB deeply dealt with recognition and measurement issues related to NCI. As underlined by the Board in several standards, the

minority (non-controlling) interests represent the residual interest in the net assets of those subsidiaries held by some of the shareholders and therefore met the Framework's definition of equity. The Board reached the conclusion that the NCI is a part of the equity of the group, as well any other interests in the group equity. It does not matter whether they can exercise control over the entity or not, their accounting treatments should be the same as the one adopted for the controlling interests.

On the other hand, we reasoned on the NCI role in a group or in a legal entity. Although these shareholders cannot exercise control over any subsidiaries within the group, the corporate governance of each subsidiary may attribute them some rights and powers. For example, NCI holding rights in an intermediate parent company can object to the exception of non-presenting consolidated financial statements. Moreover, companies with the elevated presence of NCI can be more subjected to takeovers.

We have supposed that value relevance of consolidated financial statements is bigger when there are not NCI within the group. In fact, the Olson model does not consider accounting values related to NCI even though they can be relevant for investors choices and should be considered by them. Omitting these values from the model makes the value relevance tested only on parent company basis. Instead, in the case of NCI absence, no accounting values are omitted from the model, just because they do not exist. In other words, Ohlson model better fits when groups do not have non-controlling interest. We have also supposed that value relevance of financial statements with no NCI is bigger because of no variables are omitted in explaining investors choices.

4. DEVELOPMENT OF EMPIRICAL MODELS

To empirically test the research hypotheses about the value relevance of information supplied by consolidated financial statements, we developed a series of econometric valuation models that measure the degree of association between share price and accounting information (equity and net income attributable to the parent company). The starting point in developing these models is the linear regression (whose parameters are to be estimated using ordinary least square - OLS) indicated in paragraph 3.1.

This regression model is affected in a small amount by an eventual inefficiency of the market, because of price level regressions reflect information accumulated since the establishment of the companies (concentrated for example in net assets) (Aboody *et al.*, 2002: 978). Another advantage of this model is that the two explanatory variables (equity and net income) can be broken down into their components.

To compare relevance in absolute values of different information supplied by consolidated financial statements we elaborated the following empirical model:

$$P_{it} = \alpha_0 + \beta_1 * PARENT\ BVPS_{it} + \beta_2 * PARENT\ EPS_{it} + \varepsilon_{it} \quad (2)$$

where, the definitions of its components are described in paragraph 3.1.

According to with previous literature, the value relevance of an accounting figure can be supposed if its coefficient is statistically significant (Göttsche and Schauer, 2011). To analyze the value relevance of variables included in the models, we concentrate on *p-values* related to them. It stands for the minimum level to which the null hypothesis of no statistical significance of the variables would be rejected. We have tested the significance of variables at three different levels, 10%, 5% and 1%. When the *p-value* associated to a variable is smaller than one of the three stated levels, the variable is assumed to be significant.

In our analysis, we also investigate the accuracy of different models by comparing R^2 , that expresses how well data fit a statistical model. Per Göttsche and Schauer (2011) R^2 is a measurement of value relevance of a set of accounting figures included in a regression equation. R^2 expresses the percentage of the variation in the dependent variable explained by the regression (Simon, 2003).

We have developed different types of regressions using STATA 13 to investigate the above-defined research hypotheses and we have applied them to the sub-databases.

The first regression type is an OLS whilst, in the second regression model, we have arranged our dataset as a panel data to analyze the impact of variables that vary over time. We have run the regression using fixed effects and we have kept year and sector dummy variables too.

4.1. Regression analysis and discussion of findings

Table 3 and 4 show some preliminary data about descriptive statistics. We observe that all the dependent variables can assume negative values too because of bad results over the period considered.

Table 3. Descriptive statistics of sub-database 1. Companies without NCI

Variable	Obs	Mean	Std. Dev.	Min	Max
P	2,555	9	42	0	1,000
PARENT BVPS	2,555	5	21	-4	451
PARENT EPS	2,555	0	4	-15	107

Table 4. Descriptive statistics of sub-database 2. Companies with NCI

Variable	Obs	Mean	Std. Dev.	Min	Max
P	4,225	51	347	0	8,900
PARENT BVPS	4,225	36	270	-59	6,522
PARENT EPS	4,225	2	21	-667	632

We have verified also multicollinearity issues calculating variance inflation factor (VIF). It results in Table 5 and 6.

Table 5. Variance inflation factor. Sub-database 1. Companies without NCI

Variable	VIF	SQRT VIF	Tolerance	R-squared
PARENT BVPS	2.66	1.63	0.3758	0.6242
PARENT EPS	2.66	1.63	0.3758	0.6242
Mean VIF	2.66			

Table 6. Variance inflation factor. Sub-database 2. Companies with NCI

Variable	VIF	SQRT VIF	Tolerance	R-squared
PARENT BVPS	1.08	1.04	0.9251	0.0749
PARENT EPS	1.08	1.04	0.9251	0.0749
Mean VIF	1.08			

As Tables 5 and 6 show, the regressors have a Variance Inflation Factor (VIF) fairly small, meaning that there is no correlation between the predictor and the remaining predictor variables. Moreover, the highest value of VIF is far from exceeding 10, which represents a sign of serious multicollinearity requiring correction.

Table 7 and 8 outline the results of the regressions developed using STATA 13.

Table 7. Regression analysis. Companies without NCI

Variable name	Model 1 - OLS	Model 2 - F.E.
PARENT BVPS	1.619*** (85.07)	0.884*** (18.71)
PARENT EPS	1.944*** (21.30)	1.442*** (22.73)
_cons	-0.146 (-0.59)	3.133*** (9.04)
N	2555	2555
R ²	0.917	0.938
F	14040.4	257.7

Note: t statistics in parentheses
* p<0.05 ** p<0.01 *** p<0.001

Table 8. Regression analysis. Companies with NCI

Variable name	Model 1 - OLS	Model 2 - F.E.
PARENT BVPS	1.182*** (185.17)	1.328*** (192.16)
PARENT EPS	1.607*** (19.64)	1.112*** (29.91)
_cons	5.119** (3.06)	0.0821 (0.06)
N	4225	4225
R ²	0.904	0.918
F	19816.5	6271.0

Note: t statistics in parentheses
* p<0.05 ** p<0.01 *** p<0.001

At first, we observed that none of the sector dummies is statistically significant. In addition, year dummies are no statistically significant. This suggests that sector and year have a secondary role in explaining share price for the companies in our sample.

Referring to the general explanatory power of the different models as expressed by R², each regression run on both databases evidences a high level of this indicator, always more than 0.90.

In fact, for groups without NCI, OLS regression evidences high R² equals to 0.917 and the fixed effects regression run on panel data confirms the result (R² = 0.938). For groups with the presence of minorities, the explanatory power of the model tested slightly decreases but validates the general fitting of the regression. The R² of the OLS regression is equal to 0.904 and the one of the fixed effects regression is 0.918.

These facts offer a further confirmation regarding the value relevance of consolidated financial statements prepared under IFRSs and

corroborate our first hypothesis: consolidated financial statements are highly valued relevant.

Independent variables, in both sub-databases, behave as expected. Book value per share and equity per share are both positive and statistically significant, indicating that consolidated accounting data (book value and earnings per share) provide value-relevant information to investors and explain most of the variation in share prices, regardless the presence of minorities. In fact, these conclusions apply perfectly both to the two sub-databases we have developed for our studies. The findings are in line with studies about value relevance of consolidated financial statements.

Coefficients of independent variables are always statistically significant (p-value < 0.001) and positive, thus support the idea that equity and net income increases positively affect investors choices.

Because of we have developed regressions separately on both sub-databases, we can evaluate whether there are differences or not in value relevance of consolidated financial statements with or without NCI.

Even if the two sets of consolidated financial statements provide value-relevant data, as demonstrated before, we can observe some differences between financial reporting of groups with NCI and groups without them.

At first, the explanatory power (R²) of regressions applied to groups with NCI is lower, although by a narrow margin, compared to the R² related to a database of companies without NCI. In fact, in groups with NCI, R² is 0.904 in the model 1 and 0.918 in the model 2 while in groups without NCI it is 0.917 and 0.938, respectively in model 1 and 2. This suggests that value relevance of consolidated financial reports increases when there are not NCI within the group, although the increase is very small.

Moreover, the coefficients of dependent variables for companies without NCI in three cases out of four are bigger than the ones related to groups without NCI. Because of accounting values (equity book value and earning per share, both related to the parent company) drive investors choices and these have effects on stocks prices, our results evidence that financial statements are more value relevant when there are not NCI. However, this difference in terms of value relevance is quite small and suggests that the presence of NCI within a group is a circumstance not so relevant in driving investors choices.

5. CONCLUSION

This paper presents an analysis of value relevance of consolidated financial statements prepared according to IAS/IFRS by several European listed companies. We investigate whether there are or not differences in value relevance due to the presence of non-controlling interests. We refer to the rights held by non-controlling shareholders in parent company subsidiaries that are represented within consolidated equity and net income.

We examine the extent to which accounting measures are reflected in share price, or value relevance, for consolidated financial statements that have or do not have accounting values attributable

to NCI in the balance sheet and in the profit and loss.

To this end, we have estimated OLS and panel-data regressions using data for 1,356 companies listed on five European stock markets, for the period 2010-2014 by gathering their 2009-2013 consolidated financial statements.

Our main findings, based on the empirical analysis above illustrated, confirm our first hypothesis and, partially, our second one. Consolidated financial statements prepared under IFRSs/IASs have a high-value relevance. This also proves that compulsory adoption of IASs/IFRSs by European listed company has improved quality of financial information regardless sector or observation time.

Each type of regression run on the available data evidence, at least, an R^2 equal to 0.904 and p-values are always smaller than a significance level of 0.001. For each model analyzed, p-values related to the entire model imply the existence of a linear relationship between share price (dependent variable) and independent variables (predictors) taken together in each model.

Therefore, our findings confirm the theoretical cornerstones of financial statements value relevance and introduce novel evidence.

Considering separately groups with NCI and companies without them, we have observed slight differences in financial statements value relevance. In fact, the explanatory power of the regressions run on data from groups without NCI is slightly higher

than the one related to groups of minorities. Also, coefficients of equity book value per share and earning per share are slightly higher for financial statements without NCI. For the present sample, these results might also be driven by the fact that – in our models – only accounting measures related to the parent company are reflected in share price whilst no accounting measures related to NCI are considered. This implies that when value relevance is tested for financial statements without NCI, there are not independent variables related to NCI to be – even just hypothetically – considered in the regression model. We claim that Ohlson model fits better for companies without NCI because of its original pattern does not consider NCI whilst their presence should be taken into account. We are aware that accounting values related to minorities could have been considered in the model used to test for value relevance. However, collecting such data would have been very burdensome because they are not reported in consolidated financial statements in a way useful to our analysis. A different consideration of NCI related values in the econometric model could be a future development of our study.

Comparing value relevance of financial statements of our two datasets has evidenced that presence of non-controlling interests tends to limit the value relevance of consolidated reports. However, this decrease in value relevance is too small to claim that the presence of NCI is a significant element for investors' choices.

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