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The value relevance of accounting information in the Italian and UK stock markets

Abstract

The research is aimed at verifying the value relevance of accounting information with reference to two different stock markets: the UK and the Italian one.

Starting from the Edward, Bell and Ohlson's approach, different regression models have been implemented, analyzing – for a three year period (2011-2013) – a sample of 100 companies listed on the Milan Stock Exchange and on London Stock Exchange and ranked by market capitalization.

The authors report two primary findings. First, evidence shows the greater value relevance of accounting information in Italy than in the UK, even if this result must be explained according to the sample's characteristics. Second, the study underlines that in Italy the most value relevant accounting data refer to earnings while in the UK the focus is mainly on cash flows.

Keywords: value relevance, earnings, cash flows, accounting data.

JEL Classification: M40, M41.

Introduction

Our paper investigates the value relevance of accounting information with regard to Italian and UK stock markets.

The main differences between the above stated stock markets, can be assessed focusing on the following factors: legal system, capital markets' features and role of accountancy profession.

With reference to the legal system, it is possible to identify two main systems: the Civil law and the Common law (Alexander and Nobes, 2013). Countries with Civil law system – such as Italy – have comprehensive continuously updated legal codes that specify all matters, the applicable procedure, and the appropriate punishment for each offense. Otherwise, the Common law system – generally uncodified – does not imply a comprehensive compilation of legal rules and statutes, but it is largely based on *precedent*, meaning the judicial that have already been made in similar cases.

With regard to capital markets features, evidence shows that in Anglo-Saxon countries, capital markets dominate these countries' financial systems, in contrast to Italian ones where banks are more important. In detail, the UK capital markets – where public companies dominate the scenario – are larger, more active and more efficient than Italian ones characterized by medium and small family companies.

Considering the above stated factors, the role and influence of accountants differs in the two selected countries: in Italy, the professional accountancy bodies have just a supporting role in the regulatory system, while in the United Kingdom these bodies operate as standard setters.

The above stated factors provide a general framework for understanding the findings explained in the following sections.

The paper is structured as follows. Section 1 contains a literature review. Sections 2 and 3 describe the sample's selection and the methodology. The main findings are examined and discussed in Section 4. The final section contains some concluding remarks taken from the results explained in Section 4.

1. Literature review

The value relevance of accounting information has been studied in different perspectives.

Francis and Schipper proposed four different interpretations of “value relevance”:

- ◆ under interpretation 1, “*financial statement information leads stock prices by capturing intrinsic share values towards which stock prices drift*” (Francis and Schipper, 1999, p. 325). According to this definition, value relevance can be measured by the profits that the implementation of accounting-based trading rules could generate;
- ◆ interpretation 2 defines a financial information value relevant if “*it contains the variables used in a valuation model or assists in predicting those variables*”. Consequently, “*the value relevance of earnings (...) might be measured by the ability of earnings to predict future dividends, future cash flows, future earnings, or future book values*”(Francis and Schipper, 1999, p. 325);
- ◆ interpretations 3 and 4 assume the value relevance as a statistical association between financial information and stock returns. In detail, interpretation 3 considers value relevance as the ability of the information contained in the

financial statement to “*change the total mix of information in the marketplace*” (Francis and Schipper, 1999, p. 325); under this interpretation, value-relevant information changes stock price because it makes investor to revise their expectations.

According to interpretation 4, a statistical association between accounting information and market values or returns “*might mean only that the accounting information (...) is correlated with information used by investors*” (Francis and Schipper, 1999, p. 326). Under this last statement, value relevance is defined as the ability of accounting information, to capture or summarize information affecting companies’ share values, regardless of source.

This latter interpretation is the one that Francis and Schipper (1999) used, and we consider it as the clearest in respect to the purpose of the current analysis.

Value relevance could so be identified as the explanatory power of accounting variables, such as earnings and book value of equity (Ali and Hwang, 1999), cash flows (Bartov, Goldberg and Kim, 2001), or other relevant variables selected by other authors (Göttsche and Schauer, 2011).

Starting from these first definitions, accounting information aims to reflect economic income, represented by stock returns, and economic value, represented by market price (Hellstrom, 2006).

Market value relevance indicates a statistical association between financial information and market prices or stock returns. Consequently, under the efficient market hypothesis that share-prices reflect available information, the accounting-based measures could explain market price in an effective way (Francis and Schipper, 1999).

In particular, the value relevance topic has been studied since the 1960s to the present day: within that period, two main phases could be identified. The first period goes from the 1960s to 1995, while the second one goes from 1995 to the present day.

The former studies analyzed the portfolio return regression to obtain the value relevance of accounting earnings (Ball and Brown, 1968; Beaver, 1968). These studies were aimed at understanding the connection between earnings enclosed in the company’s financial report and the reaction of the market and the investors to earnings announcements.

In 1995, Ohlson and Feltham’s study represented a crucial step in the value relevance analysis; they developed a statistical model linking earnings and book value of equity to companies’ market price

(Ohlson, 1995; Feltham and Ohlson, 1995). Their approach was strictly related to Edwards and Bell’s one whose main assumption was that the company’s value is a function of a company’s book value and future residual earnings (Edwards and Bell, 1961).

Many authors based their studies on Feltham and Ohlson model finding that, over the past 40 years, the value relevance of earnings had decreased while the value relevance of book value has increased (Collins, Maydew and Weiss, 1997). In the same year, some studies developed an “*option style valuation model*” discovering that the relevance of earnings and book value varies by ROE (return on equity) (Burgstahler and Dichev, 1997). In other cases, the analysis has been carried out with reference to the different roles of balance sheet and income statement discovering that: 1) for companies in financial distress, the value relevance of book value is higher than that of earnings; 2) the importance of each variable differs across industries; 3) “*the greater the amount of unrecognized assets, the lower the relevance of book value*” (Barth, Beaver and Landsman, 1998).

Other authors also considered in their analysis not only earnings, book values and dividends, but also cash flows; some of them examined “*the relative and incremental abilities of cash flows and earnings to explain equity valuation across countries*” (Bartov, Goldberg and Kim, 2001), while – in other studies – the value relevance of earnings and cash flows were analyzed on the basis of the security return using Japanese companies (Charitou, Clubb and Andreou, 2000).

However, some authors raised doubts about value relevance studies, because of the difficulty to analyze all the factors influencing accounting standards and practice (Watts and Holthausen, 2001); furthermore, some authors argued that explicit links to valuation models are often absent (Hellstrom, 2006). Hellstrom identified two major perspectives to evaluate value relevance: the signalling perspective, that studies whether there is a reaction into the market to the announcement of accounting information, and the measurement perspective assessing the relationship between market indicators of the company’s value and the accounting measures. The present research is based on the second perspective, trying to understand if it is possible to explain stock market values and their variations starting from accounting disclosures (Hellstrom, 2006).

2. Sample’s selection

Our research analyses, for a three years period (2011-2013), the value relevance of accounting information of companies are listed on the Italian and London Stock Exchanges.

An overall sample of 100 companies is considered for the analysis. In particular, the first 50 companies of each Stock Exchange have been selected by market capitalization, as higher market capitalization implies that stocks are more liquid and less subject to price manipulations. Companies' market capitalization has been measured on the last available trade date on August 2014.

Following Hellstrom's (2006) approach, financial companies are excluded from the sample because the "*structure and the accounting practices for these companies differ substantially from non-financial firms*". We also excluded companies which have accessed to the capital market for the first time during the selected period. In detail, with reference to Italy, we start from a pool of 75 companies, excluding 20 entities because of their financial activity and 5 due to their too short listing period. With regard to the United Kingdom, we consider a sample of 67 firms, excluding 15 financial companies and 2 companies due to the too short listing period.

The analyzed data are those shown in the annual reports uploaded by each company on its website; these data are combined with those available on the Thomson Reuters database.

Financial statements of selected companies are prepared, mainly, on a fully consolidated basis (Bartov, Goldberg and Kim, 2001).

Whenever accounting information is expressed in a different currency compared to that of Italy (EUR) and of the United Kingdom (GBP), figures are converted respectively in EUR and GBP, using the exchange rate closest to the year end-date of each financial statement considered.

3. The methodology

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

The following passages summarize the base theory of Ohlson's (1995) work.

The Ohlson's (1995) approach is based on the dividend discount model assuming that the market value/price of a firm is equal to the present value of a firm expected dividends. In detail, Ohlson assumptions are based on the "clean surplus accounting" concept that means: 1) the change in book value of equity between two dates is equal to current earnings minus dividends; 2) dividends reduce current book value of equity, but not current earnings, implying that all changes in a firm's assets and liabilities have to pass throughout its income

statement. By implementing this concept, dividends could consequently be replaced with earnings and book values.

The above-stated analysis leads to the classical expression of the Edwards-Bell-Ohlson model, which has been transformed into the classical OLS regression approach:

$$p_{it} = \beta_0 + \beta_1 e_{it} + \beta_2 bv_{it} + u_{it}, \quad (1)$$

where the definitions of its components are similar to those described in the first model developed in this section.

At a second stage, as the core of the present study, it has been assessed the value relevance of earnings and cash flows. In doing so, we advert to Bartov, Goldberg and Kim's (2001) tests. They propose two tests for relative and incremental information content of earnings and cash flows, considering also the changes in these two variables between two consecutive periods. They tested the relative information content of these two accounting variables by estimating two pooled regressions for each country separately, and the incremental information content, using one model for both the variables together. Our work retraces that of Bartov, Goldberg & Kim (2001), adding also fourth test considering earnings and cash flows. Finally we assess simple regression model including only the book value of equity as regressor.

The first model relates to the OLS approach and it is based on the Edward-Bell-Ohlson study. This model will be indicated, hereafter, with "M1", and it expresses the market capitalization of a company as a function of earnings and book value of equity. In details:

$$M1: MC_{it(4)} = \beta_0 + \beta_1 NIBEI_{it} + \beta_2 BVE_{it} + \varepsilon_{it}, \quad (2)$$

where: $MC_{it(4)}$ is the market capitalisation of a company i available at the end of the fourth month subsequent to the fiscal year-end t of the related financial statement; $NIBEI_{it}$ represents the net income after taxes and before extraordinary items of a company i as it is reported in the income statement referred to the fiscal year-end t . In the current analysis it has been considered only $NIBEI$ assigned to equity shareholders of the parent company, excluding those attributable to non-controlling interests; BVE_{it} represents the book value of equity of a company i as it is reported in the statement of financial position referred to the fiscal year-end t . BVE is the equity attributable to shareowners, excluding that of non-controlling interest; $\beta_0, \beta_1, \beta_2$ are the coefficients of the equation; ε_{it} is the disturbance term (regression error).

We consider market capitalizations (MCs) related to the fourth month subsequent to the fiscal year-end date t of the financial statements of each company. For those companies whose market capitalization values were not available for this period, we consider the values of the third month subsequent to the fiscal year-end date (Hellstrom, 2006).

Market capitalization values are those available on the London Stock Exchange and Milan Stock Exchange websites, within the historical statistics sections.

The value relevance of earnings and cash flows in Italy and the UK is assessed according to Bartov's, Goldberg's and Kim's (2001) model. In particular we use as regressors two variables: net income before extraordinary items (hereafter *NIBEI*) and operative cash flows (hereafter *OCF*). In doing so, we use the following two models:

$$M2: MC_{it(4)} = \beta_0 + \beta_1 NIBEI_{it} + \beta_2 \Delta NIBEI_{it} + \varepsilon_{it} \quad (3)$$

$$M3: MC_{it(4)} = \beta_0 + \beta_1 OCF_{it} + \beta_2 \Delta OCF_{it} + \varepsilon_{it}, \quad (4)$$

where the definitions of $MC_{it(4)}$, $NIBEI_{it}$, β_0 , β_1 , β_2 and ε_{it} remain unchanged, and $\Delta NIBEI_{it}$ represents the change in *NIBEI* of a company i occurred between the fiscal year-end t and $t-1$ and it is equal to $NIBEI_{it}$ minus $NIBEI_{it-1}$; OCF_{it} represents the cash flow from operations (operative cash flows) of a company i as it is reported in the statement of cash flows referred to the fiscal year-end t ; ΔOCF_{it} represents the change in *OCF* of a company i occurred between the fiscal year-end t and $t-1$ and it is equal to OCF_{it} minus OCF_{it-1} .

In order to test the incremental information content of *OCF* and *NIBEI*, we use the following model (Bartov, Goldberg and Kim, 2001):

$$M4: MC_{it(4)} = \beta_0 + \beta_1 NIBEI_{it} + \beta_2 \Delta NIBEI_{it} + \beta_3 OCF_{it} + \beta_4 \Delta OCF_{it} + \varepsilon_{it}, \quad (5)$$

where the definition of the variables included in M4 are the same of models M1, M2 and M3.

The following hypothesis have been consecutively tested.

$H_{0OCF} = \beta_3 = \beta_4 = 0$, the null hypothesis of no incremental information content of cash flows;

$H_{0NIBEI} = \beta_1 = \beta_2 = 0$, the null hypothesis of no incremental information content of earnings.

On the base of M4, we develop a fifth model (M5) considering only *NIBEI* and *OCF* without taking into account their changes between two consecutive years.

$$M5: MC_{it(4)} = \beta_0 + \beta_1 NIBEI_{it} + \beta_2 OCF_{it} + \varepsilon_{it}, \quad (6)$$

where definitions of the variables remain the same as stated in the previous regression models.

After that, we test the information content of book value of equity. In particular we assess the variable singularly, studying one simple regression model (M6), showed below.

$$M6: MC_{it(4)} = \beta_0 + \beta_1 BVE_{it} + \varepsilon_{it}, \quad (7)$$

where definitions of *MC*, *BVE*, β and ε remain unchanged.

A problem that could emerge all along this study is the scale effect. As Easton and Summers (2003) asserted, scale effects generally refers to the phenomenon that the largest companies of a sample often drive the regression results, even though these companies only make up a small part of the whole sample. Consequently, "*undeflated regression results might suffer from a coefficient bias and heteroscedasticity*" (Göttsche and Schauer, 2011, p. 13).

To solve this potential issue, it could be useful to deflate the regression-values. Despite this, a recent research (Barth and Clinch, 2009) underlined that share-deflated and undeflated specifications of the Edwards-Bell-Ohlson model show the best results, regardless of which identified scale effect occurs. The current model will follow the undeflated theory.

In all the implemented regression models, market capitalization is the regressand (or dependent variable), while all other variables are the regressors (or independent variables).

Accordingly with former literature, an accounting figure in general can be considered value relevant if "*its coefficient is statistically significant*" (Göttsche and Schauer, 2011). In assessing the value relevance of the variables included in the regression models, we examine p -values related to them. p -value represents the minimum level to which the null hypothesis of no statistical significance of the variable(s) evaluated into the regression model would be rejected. We test the significance of the variables considering three different levels, respectively equals to 10%, 5% and 1%. According to this approach, a variable is assumed to be significant (consequently rejecting the null hypothesis) if its p -value is smaller than one of the three above stated significance levels.

We also consider the p -value of each entire model in order to assess the existence (or not) of a linear relationship between the regressand and the explanatory variables (regressors) included in them. When the p -value of a model is smaller than the significance levels showed above, it means that a linear relationship exists.

Researchers often investigate value relevance of different samples by comparing R^2 , which expresses the explanatory power of a regression model. R^2

“can be considered as a measurement of value relevance of a set of several accounting figures included in a regression equation” (Göttsche and Schauer, 2011, p. 3). R^2 , in statistical terms, expresses the fraction of the variation in the dependent variable explained by the regression (Simon, 2003).

However, in multiple regressions an adjusted measure of R^2 (R^2_{adj}) is needed. The reason is that R^2 values grow up anyway whether a new variable is added into the model, even if the new accounting information does not improve the model. R^2 is shown only in M5 because it is a simple regression.

4. The findings

Table 1 shows the results obtained from regression models described in the previous paragraph.

The first column of Table 1 shows all the selected variables for all the regression models implemented. These variables are ranked referring to their nature: firstly we consider earnings, cash flows and sales; secondly, the book value of equity; finally, the dummy variable related to sales. For each variable, it is shown the p -value obtained in each regression and the parameters (β_i).

The last three rows of Table 1 show R^2_{adj} , ΔR^2_{adj} and p -value of each entire model ΔR^2_{adj} represents the variance between R^2_{adj} of Italy and the UK.

Values shown in Table 1 are the average of those measured in each one of the three years analyzed (2011, 2012, 2013).

Table 1 firstly reveals that, for each model analyzed, p -values related to the entire model are far below a significance level of 0.01 (1%), implying the existence of a linear relationship between market capitalization (dependent variable, hereafter MC) and independent variables (predictors) taken together in each model.

R^2_{adj} of Italy is almost twice compared to that of the United Kingdom. This means that, generally, accounting information is more value relevant in Italy than in the UK. However, these results might be explained taking into account the incidence of selected companies' capitalization on the total market's one: 50 companies represent approximately the 20% of the total number of companies listed on the Italian Stock Exchange (main market), while they represent only the 4% on the London Stock Exchange (main market). Perhaps, the use of different selection criteria could have reduced the gap between Italian and the UK results.

M1 analyzes the combined effect of net earnings before extraordinary items and after taxes (hereafter

NIBEI) and book value of equity (hereafter *BVE*), and it represents the base model used in lots of studies about value relevance of accounting information. The two regressors are relevant for what concerns Italy (p -values are beneath a significance level of 1%); moreover R^2_{adj} is one of the highest (0.910, the second highest among all the models analyzed for Italy). With regard to the UK, only *BVE* has an influence on the response variable *MC* (p -value of 0.098), while *NIBEI* is not significant (p -value of 0.444). These results indicate that in Italy investors consider relevant both the book value of equity and net earnings in assessing a firm's value, while in the United Kingdom not so much attention is paid on earnings.

M2, M3 and M4 are the regression models used to test the value relevance of *NIBEI* and operating cash flows (hereafter *OCF*). For both Italy and the United Kingdom, *NIBEI* and *OCF* in M2 and M3 are significant (p -values are both always smaller than a significance level of 1%), while it is not so for changes in their accounting values between years t and $t-1$.

In fact, with reference to Italy, it emerges how M2 has the higher R^2_{adj} (0.757 instead of 0.732, with a positive gap of 0.025), even if in both models variables *NIBEI* and *OCF* are significant. This means that in Italy earnings are more value relevant than cash flows. Anyway, for Italy, M2 and M3 represent, respectively the fifth and the sixth model based on decreasing R^2_{adj} values, and consequently the less value relevant.

On the contrary, for what concerns UK it is exactly the opposite: M3 has an R^2_{adj} greater than that of M2 (0.451 instead of 0.389, with a positive gap of 0.062). In particular, M3 represents the model with the greatest R^2_{adj} while M2 is characterized by the smallest R^2_{adj} , underlying that *OCF* is the most value-relevant accounting information for UK investors. We consider these results relevant, because they reveal how, in the UK, cash flow is one of the most value-relevant accounting information for investors. These findings are in contradiction to former literature ones (i.e. Bartov, Goldberg & Kim, 2001), which revealed how in Anglo-Saxon Countries earnings were more value relevant than cash flows.

M4 shows the combined effect of all the independent variables previously included in M2 and M3. In detail, R^2_{adj} is higher than that of M2 and M3 (0.901 instead of respectively 0.757 and 0.732). As a consequence, the combined effect of earnings and cash flows helps in explaining the

variation in stock market values of Italian companies, enhancing models characterized by singular variables.

On the contrary, M3 still remains for the United Kingdom the best model implemented. The higher R^2_{adj} of M3, compared to that of M4 (0.451 instead of 0.448), demonstrates how adding earnings to the model including only cash flow (M3), does not enhance the model itself; this result underlines the higher significance of cash flows on earnings.

Furthermore, in M4 *NIBEI*, $\Delta NIBEI$ and *OCF* are statistically significant for Italy (p -values are respectively below significance levels of 1%, 10% and 5%), while the same can be stated only for *OCF* in the UK (p -value is below a significance level of 10%).

M5 considers only two regressors (*NIBEI* and *OCF*), excluding changes between two consecutive years. With reference to this model, we point out how in Italy both *NIBEI* and *OCF* are significant (p -value lower than a significance level of 1%) while for the UK Operative Cash Flow (*OCF*) still remains the unique significant variable (significant at a level of 10%). This means that for Italian investors both cash flows and earnings are value-relevant, while in the UK the great relevance of cash flows is one more time confirmed.

M6 considers the book value of equity (hereafter *BVE*); for both Italy and the United Kingdom, *BVE* is a significant variable (p -value lower than 0.01 in both cases). R^2 is respectively 0.882 for Italy and 0.443 for the UK.

Table 1. Findings

		M1		M2		M3		M4		M5		M6	
		ITA	UK	ITA	UK	ITA	UK	ITA	UK	ITA	UK	ITA	UK
NIBEI	p -value	0.004*	0.444	0.000*	0.000*			0.000*	0.443	0.000*	0.410		
	β_1	2.863	1.328	9.749	4.282			8.428	1.334	5.713	1.464		
$\Delta NIBEI$	p -value			0.147	0.344			0.082***	0.523				
	β_2			-2.519	-1.480			-5.076	-0.696				
OCF	p -value					0.000*	0.000*	0.050**	0.058***	0.000*	0.067***		
	β_3					3.240	3.005	1.396	2.179	2.380	2.070		
ΔOCF	p -value					0.230	0.129	0.139	0.242				
	β_4					-3.699	0.479	-2.122	0.298				
S	p -value												
	β_6												
ΔS	p -value												
	β_7												
BVE	p -value	0.000*	0.098***									0.000*	0.000*
	β_5	0.853	0.512									1.038	0.673
DS	p -value												
	β_8												
R^2_{adj}		0.910	0.431	0.757	0.349	0.732	0.451	0.901	0.448	0.856	0.409	0.882	0.443
ΔR^2_{adj}		0.479		0.408		0.281		0.453		0.447		0.439	
p -value		0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Note: *, **, *** represent, respectively, p -values below a significance level of 1%, 5% and 10%.

Conclusions

In this study, we test the value relevance of several accounting information with reference to the Italian and UK stock markets.

The analysis is carried out by implementing six different regression models.

Our study underlines the presumed supremacy of the value relevance of accounting information in

Italy on that in the UK. However, it is hasty to draw such a conclusion, because not all the companies listed in each Stock Exchange have been analyzed.

The results show that in the United Kingdom cash flows have a greater explanatory power than earnings, while in Italy it is the opposite. This could be explained by some of the differences above mentioned between Italy and the UK: in Anglo-Saxon countries financial markets are larger, more

efficient and more active than Italian ones, so that investors look at financial statement as a tool that should help them to assess prospective company's net cash inflows. Otherwise in Italy, where financial markets are not so well-developed and they are bank-based, investors probably still pay more attention on income statements and statement of

financial position than on statement of cash flows. Besides, Italian accounting system is traditionally based on the supremacy of income statement and statement of financial position on statement of cash flow, while the United Kingdom has been always focused more on cash flows than on other accounting values.

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