Assessing the value relevance of total comprehensive income under IFRS: an empirical evidence from European stock exchanges

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Abstract: This paper compares the value relevance of the net income and the total comprehensive income reported under IFRSs. The total comprehensive income represents a key measure of the overall company performance, and it is extremely topical after the revision of the IAS 1. The paper aims at verifying whether the total comprehensive income is more value relevant than the net income. To this purpose, accounting and market data regarding companies listed on the UK, French, German, Spanish and Italian stock exchanges have been collected for the years 2005–2007. Valuation models have been used to assess the differences in value relevance by using total comprehensive income or net income. Findings show that total comprehensive income has not resulted in an unquestionable increase in value relevance compared with net income. This research contributes to defining the relevance of the total comprehensive income and to the international debate about which overall company performance should be reported in the IFRS financial statement.

Keywords: comprehensive income; value relevance; IFRS; performance evaluation; Europe.

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1 Introduction

Since 1 January 2005, European listed companies have been required to prepare their consolidated financial statement in accordance with IAS/IFRS: pressures to integrate capital markets in Europe have prompted the European Commission to introduce uniform financial reporting standards for listed EU companies (Van Hulle, 2003). The application of IAS/IFRS involves the use of fair value, even though it is not exclusive (Cairns, 2006), and it leads to a measurement of an income, and its correlated equity, which presents a greater volatility than in the past, in particular in the Continental Europe Accounting Group (Devalle, 2008) as well as an increasing earnings asymmetry after IFRS adoption (Jeanjean and Stolowy, 2008). The relation between the adoption of the fair value criterion and the earnings volatility has been also demonstrated by Hodder et al. (2006) who found that "the volatility of full-fair-value income is more than three times that of comprehensive income and more than five times that of net income". Making reference to the consolidated financial statements reported in compliance with IAS/IFRS of the listed groups belonging to the five major European stock exchanges (London, Paris, Frankfurt, Madrid and Milan) in 2005, 2006 and 2007 it is now possible to verify 'on the field' whether the application of IAS/IFRS makes it necessary to define different measures of performance related to accounting data. This paper focuses in particular on the value relevance of total comprehensive income versus net income. In fact, IAS 1 establishes that, in addition to the net income, other comprehensive income that comprises items of income and expense that are not recognised in profit or loss as required or permitted by other IFRSs must be shown. These gains and losses recognised directly in equity represent the 'dirty' surplus. There has been a huge debate on the usefulness of the comprehensive income (see Thinggaard at al., 2006). In fact, in response to the exposure draft of proposed amendments to *IAS 1 Presentation of Financial Statements* published by the IASB in March 2006, the authors also note that "besides the lack of a common conceptual basis for the items included in other recognised income and expense some of these items are mandatory whereas others are consequences of measurement options, which adds to the lack of a theory in the standards". Moreover, Thinggaard et al. (2006) underline that the surveyed research in the paper is often carried out in countries reporting under different standards (different from IFRS) and environments and which cover different time periods.

Thus, the paper aims at verifying whether the comprehensive income reported under IFRSs is more value relevant than the net income as a measure of company performance within groups listed on the UK, French, German, Spanish and Italian stock exchanges and belonging to the main indexes (FTSE100, CAC40, DAX30, IBEX35, S&PMIB40). Our study is carried out with respect to IFRSs and therefore comprehensive income is calculated as stated by IAS 1 and only companies reporting their consolidated financial statement under IFRS are considered.

Our paper aims at contributing to value relevance literature on comprehensive income by providing results which have been obtained by using accounting data reported under IFRSs. Investors may find this study of particular interest to discover whether comprehensive income provides a more significant company performance measure than net income when making investment decisions. Furthermore, the paper provides policy makers with empirical findings which may support any future decisions regarding comprehensive income. The paper does not intend to discuss the IASB position but only aims at evaluating whether comprehensive income is more value relevant than net

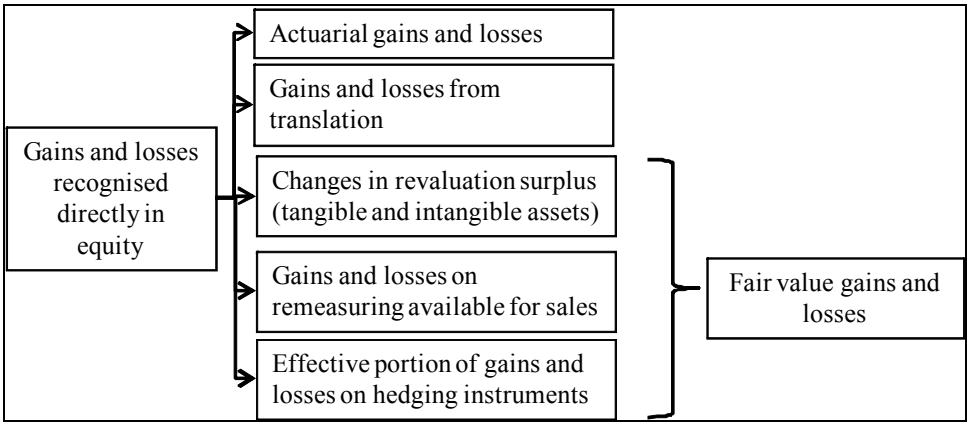
income. Thus, this paper aims at contributing to the large debate on performance with an analysis of the value relevance of comprehensive income under the IFRSs.

The remainder of this paper is organised as follows: Section 2 explores the background and justification for this paper and the research questions generated; Section 2 describes the data and methodology; Section 3 reports the results; our conclusions are reported in the final section.

2 Background and research questions

Literature has always highlighted the importance of an all-inclusive income performance concept where the income is a variation of the book value of the equity at the beginning of a period less the book value of the equity at the end of a period. The all-inclusive income is based on 'clean surplus accounting'. Under IFRSs, instead, the increase or decrease of equity is determined by the variations of two measures[1]: the net income and the gains and losses recognised directly in equity that represent the 'dirty surplus'. The sum of these two measures is the comprehensive income. IAS 1 par. 10 states that a complete set of financial statements also comprises a statement of comprehensive income made up of the profit and loss of the period and the total comprehensive income. Furthermore, IAS 1 (revised in September 2007 and applied from 1 January 2009, with earlier application permitted) identifies different components of 'the dirty surplus' that are not recognised in profit or loss as reported in Figure 1 [changes in revaluation surplus (IAS 16 and IAS 38), actuarial gains and losses on defined benefit plans recognised in accordance with paragraph 93.a of IAS 19, gains and losses arising from translating the financial statements of a foreign operation (IAS 21), gains and losses on re-measuring available-for-sales financial assets (IAS 39), the effective portion of gains and losses on hedging instruments in a cash flow hedge (IAS 39)]. As can be seen from Figure 1, three components of the gains and losses recognised directly in equity are related to the fair value measurement.

Figure 1 Other comprehensive income components



Thus, we can state that IFRSs have chosen to represent in the financial statement the total comprehensive income as the measure of performance related to accounting data. A

highly controversial debate has risen in the academic and professional worlds regarding the definition of the best performance measure for stakeholders between comprehensive income, net income or other accounting figures[2]. The debate has been fuelled by the revision of IAS 1 and also by the discussion paper entitled 'Performance reporting, an European discussion' issued by EFRAG and the European Standard-Setters in April 2009. Comprehensive income was supposed to increase its usefulness for investors, but a great amount of research has demonstrated that there is no evidence of better value relevance of accounting data when comprehensive income is used. With reference to other comprehensive income there has also been criticism regarding the choice of comprehensive income components, arising from the lack of a conceptual framework (as Thinggaard et al., 2006). Besides, some argue that goodwill impairment charges ought not to be in net income (EFRAG, 2009). Many studies have been carried out on the value relevance of comprehensive income but none of these have used data reported under IFRSs.

Kanagaretnam et al. (2009) analysed whether the mandatory adoption of the comprehensive income for Canadian companies (non-IFRS adopter) provides more value relevant accounting data and which comprehensive income component is more value relevant. Findings of the paper show that the regression model estimated by using the comprehensive income instead of the net income provide higher explanatory power. Among comprehensive income components, both cash flow hedge and available for sale components turns out to be to be value relevant.

Ernstberger (2008) compares the value relevance of comprehensive income and net income within German companies which have voluntarily adopted IFRS or US GAAP. Results suggest that comprehensive income is not more value relevant than net income, but comprehensive income under IFRS provides more value relevant information than comprehensive income under US GAAP. With respect to comprehensive income components, only unrealised gains and losses from available-for-sale financial assets in the IFRS sample are clearly incremental value relevant.

Dastgir and Velashani (2008) used value relevance models to assess whether comprehensive income is more value relevant than net income. The results do not support that comprehensive income is more value relevant than net income with respect to companies listed at Tehran Stock Exchange. Chambers et al. (2007) used an association approach to provide evidence of the pricing of other comprehensive income. Findings suggest that investors pay more attention to comprehensive income information reported in the statement of changes in equity, rather than in a statement of financial performance. Cauwenberge and De Bleede (2007) used the residual income model to assess the value relevance of net income and comprehensive income and results suggest that policy maker should consider the mandatory publication of two EPS numbers: one for net income and one for comprehensive income. Wang et al. (2006) analysed the value relevance of the 'dirty surplus accounting flows' through return regression models. Comprehensive income as reported under SFAS 130 is more value relevant than net income and other comprehensive income definitions and also each SFAS 130 comprehensive income component is more incrementally decision relevant beyond net income for returns. Pinto (2005) studied the value relevance of foreign currency translation adjustments component. The foreign currency translation adjustments component is value relevant and it is expected to provide useful information to investors. Maines and McDaniel (2000) assessed through a psychology-based approach the effects of financial statements format on the non-professional investors valuation of comprehensive income

performance measure. Comprehensive income is considered by non-professional investors regardless of the financial statement format, but the presentation form affects the weighing and performance judgments. Cahan et al. (2000) assessed the value relevance of comprehensive income and each component using a sample of New Zealand companies. Comprehensive income is more value relevant than net income, but there is no evidence that individual components are more value relevant than the aggregate comprehensive income. O'Hanlon and Pope (1999) analysed the value relevance of UK ordinary profit and extraordinary items. There is no evidence that extraordinary items provide better value relevance. Dhaliwal et al. (1999) made an association study on the relation between market return or cash flow prediction and comprehensive income. There is no evidence that comprehensive income is a better measure of firm performance and that it predicts operating cash flows better. Cheng et al. (1993) compared the value relevance of operating income, net income and comprehensive income. Operating income is the most value relevant, while comprehensive income the least. As shown above, the main studies have been carried out under US GAAP and there are often conflicting results.

Table 1 summarise the literature review on the value relevance of comprehensive income. Column 1 reports the name of the author(s) and year of publication, column 2 the sample period, column 3 the objective of the study[3] and finally, column 4 the main findings.

In order to assess whether the comprehensive income under IFRS is more or less significant for investor decisions, we have used a *value relevance* approach, due to the fact that it can be simply defined as "[…] the ability of financial statement information to capture or summarise information that affects share values" (Hellström, 2006). To reach the objectives described above the research questions are:

1 (Q1) to evaluate whether the comprehensive income is more value relevant than net income under IFRS in the three-year period 2005–2007, of the groups listed on the UK, French, German, Spanish and Italian stock exchanges and belonging to the main indexes (FTSE100, CAC40, DAX30, IBEX35, S&PMIB40)

2 (Q2) to analyse the value relevance of the different components of comprehensive income in order to evaluate the usefulness of these components.

Table 1 Literature review on comprehensive income studies using value relevance

Paper	*Sample period*	*Methodology*	*Results*
Cheng et al. (1993)	1972 to 1989	Comparison of value relevance of operating income, net income and comprehensive income.	Operating income is the most value relevant, while comprehensive income the least.
Dhaliwal et al. (1999)	1994 to 1995	Association study on the relation between market return or cash flow prediction and comprehensive income.	There is no evidence that comprehensive income is better measure of firm performance and that better predicts operating cash flows.
O'Hanlon and Pope (1999)	1972 to 1992	Analysis of the value relevance of UK ordinary profit and extraordinary items.	There is no evidence that extraordinary items provides better value relevance.

Table 1 Literature review on comprehensive income studies using value relevance (continued)

Paper	*Sample period*	*Methodology*	*Results*
Cahan et al. (2000)	1992 to 1997	The study assess the value relevance of comprehensive income and each component.	Comprehensive income is more value relevant than net income, but there is no evidence that individual components are more value relevant than the aggregate comprehensive income.
Maines and McDaniel (2000)	n.a.	Through a psychology-based approach, the study assesses the effects of financial statements format on the non-professional investors valuation of comprehensive income performance measure.	Comprehensive income is considered by non-professional investors regardless the financial statement format, but the presentation form affects the weighing and performance judgements.
Pinto (2005)	1991 to 1996	Association study assessing the value relevance of foreign currency translation adjustments component.	The foreign currency translation adjustments component is value relevant and it is expected to provide useful information to investors.
Biddle and Choi (2006)	1994 to 1998	Value relevance study based on abnormal return regression model.	Comprehensive income as SFAS 130 is more value relevant than net income and other comprehensive income definitions and also each SFAS 130 comprehensive income component is more is incrementally decision relevant beyond net income for returns.
Wang et al. (2006)	1988 to 1997	The value relevance of dirty surplus accounting flows is assessed through return regression models.	Results suggest that aggregated dirty surplus flows are not value relevant, while asset revaluations and currency-translation differences are incrementally associated to returns.
Cauwenberge and De Bleede (2007)	n.a.	Residual income model is used to assess the value relevance of net income and comprehensive income.	Results suggest that policy maker should consider the mandatory publication of two EPS numbers: one for net income and one for comprehensive income.
Chambers et al. (2007)	1998 to 2003	The study use an association approach to provide evidence of the pricing of other comprehensive income.	Findings suggest that investors pay more attention to comprehensive income information reported in the statement of changes in equity, rather than in a statement of financial performance.
Dastgir and Velashani (2008)	2001 to 2003	Value relevance models are used to assess whether comprehensive income is more value relevant than net income.	The results do not support the claim that comprehensive income is more value relevant than net income with respect to companies listed at Tehran Stock Exchange.

Table 1 Literature review on comprehensive income studies using value relevance (continued)

Paper	*Sample period*	*Methodology*	*Results*
Ernstberger (2008)	2001 to 2004	The study compare the value relevance of comprehensive income and net income within German companies which have voluntarily adopted IFRS or US GAAP.	Results suggest that comprehensive income is not more value relevant than net income, but comprehensive income under IFRS provides more value relevant information than comprehensive income under US GAAP. With respect to comprehensive income components, only unrealised gains and losses from available-for-sale financial assets in the IFRS sample are clearly incremental value relevant.
Kanagaretnam et al. (2009)	1998 to 2003	The study analyses whether the mandatory adoption of the comprehensive income for Canadian companies provides more value relevant accounting data and which comprehensive income component is more value relevant.	Findings show that the regression model estimated by using the comprehensive income instead of the net income provides higher explanatory power. Among comprehensive income components, both cash flow hedge and available for sale components result to be value relevant.
Devalle et al. (2010)	2002 to 2007	The study analyses the value relevance of net income before and after the application of IFRS.	Results suggest than net income under IFRS is more value relevant than net income before the application of IFRS even if there are differences depending on the country analysed in the sample.

Table 2 Number of financial statements included in the final balanced sample

Stock indexes	*Number of firms in the index*	*Years*						*Total sample*
		2005		*2006*		*2007*		
CAC40	40	35	88%	35	88%	35	88%	105
DAX30	30	21	70%	21	70%	21	70%	63
FTSE100	100	75	75%	75	75%	75	75%	225
IBEX35	35	29	83%	29	83%	29	83%	87
S&PMIB40	40	35	88%	35	88%	35	88%	105
Total	*245*	*212*	*87%*	*212*	*87%*	*212*	*87%*	*585*

3 Data and methodology

3.1 Data and sample

Our analysis is based on accounting data hand collected from the annual consolidated financial statements reported by companies belonging to the CAC40, DAX30, FTSE100,

IBEX35 and S&PMIB40 stock indexes. Table 2 reports the numbers of financial statements included in the final balanced sample.

The net income and equity were taken from the consolidated balance sheet and consolidated income statement and the gains and losses recognised directly in equity were collected from the consolidated statement of changes in equity or from the consolidated statement of recognised income and expenses. The changes shown by IAS 1 revised (changes in revaluation surplus, actuarial gains and losses on defined benefit plans, gains and losses arising from translating the financial statements of a foreign operation, gains and losses on re-measuring available-for-sales financial assets and the effective portion of gains and losses on hedging instruments in a cash flow hedge) were collected. As the analysis requires a common currency, data have been converted in euros according to the exchange rate at the closing year date. Market data have been collected from *Thomson analytics*. The data collected refers to the first year of IAS/IFRS adoption (2005) and the subsequent two years (2006 and 2007). The total amount of financial statements analysed was 636, but a number of firms have been excluded because of the missing values. Companies reporting under US GAAP or other accounting principles, different from IFRS, have been excluded from our sample, as well as companies missing values in one of the three years considered. In order to collect as much data as possible, we have not defined any truncation rule. The market value has been collected with respect to the third month after fiscal year end (as Cormier et al., 2009; Kanagaretnam et al., 2009; Oswald, 2008; Van der Meulen et al., 2007; Hellström, 2006; King and Langli, 1998).

3.2 Methodology

In order to assess whether comprehensive income is more meaningful for investors than net income, a value relevance approach has been used in this study. Most of studies concerning changes in the value relevance of accounting data are based on the *associative* approach (Holthausen and Watts, 2001) and on the measurement perspective (Hellström, 2006) which evaluates the degree of association between accounting and market data. This study uses the abovementioned to assess whether comprehensive income, reported under IFRSs, may enhance the value relevance of accounting data in Europe. Accordingly, value relevance is represented by the explanatory power of some valuation model capable of relating market to accounting data. The value relevance approach might be affected by market inefficiencies (Aboody et al., 2002) that can bias the results of value relevance model estimation when different periods are compared. But, as our research is based on the comparison of the value relevance of accounting data belonging to the same period, the findings are not affected by potential market inefficiencies (as price fluctuations not linked with company performance).

Commonly, value relevance studies on comprehensive income use various versions of the price regression model (Kanagaretnam et al., 2009; Barth et al., 2008; Dastgir and Velashani, 2008; Pinto, 2005; Cahan et al., 2000). The price regression model (PRM), as explained by Ota (2003), derives from Ohlson's (1995) linear information model (LIM), which considers abnormal earnings as a first-order auto-regressive [AR(1)] process. The PRM is found in the value relevance literature with the following simplified specification:

$$P_{it} = \alpha_0 + \beta_1 B_{it} + \beta_2 E_{it} + \varepsilon_{it} \qquad \text{(PRM)}$$

where P_{it} is the market value of equity, B_{it} the book value of equity and E_{it} the earnings relating to firm i and period t.

The price regression model is likely to be affected by scale effects (Wu and Xu, 2008; Easton and Sommers, 2003), which can be mitigated by deflating all variables by the market value of the previous period (Barth et al., 2008; Lang et al., 2006; Aboody et al., 2002; Cahan et al., 2000; Brown et al., 1999; Easton, 1998). Moreover, according to Ali and Hwang (2000), the deflation of both dependent and independent variables is expected to control for heteroscedasticity. Thus, in this study, the PRM is specified as follows (M1):

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad \text{(M1)}$$

where MV_{it} is the market value of the equity collected at the third month after closing year date, BV_{it} the book value of the equity and NI_{it} the net income of the firm i at the period t.

The total comprehensive income, as specified by IFRSs, is the sum of the net income and the other comprehensive income components. Keeping TCI_{it} equal to the total comprehensive income, then:

$$TCI_{it} = NI_{it} + OCI_{it}$$

where OCI_{it} is the sum of the other comprehensive income components. Thus, (M1) is extended to include also the other comprehensive income components (Cahan et al., 2000) and is specified as follows:

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{OCI_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad \text{(M2)}$$

where MV_{it} is the market value of the equity collected at the third month after closing year date, BV_{it} the book value of the equity, NI_{it} the net income and OCI_{it} the sum of the other comprehensive income relating to firm i and period t.

In order to test the robustness of the results arising from the price regression model, another variant of the Ohlson's LIM has been estimated. Under the clean surplus relation, the following transformation of the first differences of the terms of the price regression model is allowed:

$$MV_{it} - MV_{i(t-1)} = BV_{it} - BV_{i(t-1)} + NI_{it} - NI_{i(t-1)} \quad (1)$$

$$\text{Clean surplus relation: } BV_{it} = BV_{i(t-1)} + NI_{it} - D_{it} \quad (2)$$

where $D_{it} > 0$ denotes a dividend and $D_{it} < 0$ denotes a share repurchase.

$$MV_{it} - MV_{i(t-1)} = (BV_{i(t-1)} + NI_{it} - D_{it}) - BV_{i(t-1)} + NI_{it} - NI_{i(t-1)} \quad (3)$$

$$MV_{it} - MV_{i(t-1)} + D_{it} = NI_{it} + NI_{it} - NI_{i(t-1)} \quad (4)$$

if $R_{it} = MV_{it} - MV_{i(t-1)} + D_{it}$ and $\Delta NI_{it} = NI_{it} - NI_{i(t-1)}$ the following equation express a synthetic form of (4):

$$R_{it} = NI_{it} + \Delta NI_{it} \quad (5)$$

The equation (5) is known as the return regression model (RRM) and it is usually specified by deflating both sides by the market value of the previous period ($MV_{i(t-1)}$) to adjust for scale effects (Gjerde et al., 2008; Dastgir and Velashani, 2008; Ali and Hwang, 2000; Brown et al., 1999; Dhaliwal et al., 1999).

The following are the specifications of the RRM used in this research to assess the incremental value relevance of the comprehensive income.

$$R_{it} = \alpha_0 + \beta_1 ER\_ni_{it} + \beta_2 CR\_ni_{it} + \varepsilon_{it} \quad \text{(M3)}$$

where

$$R_{it} = \frac{(MV_{it} - MV_{i(t-1)}) + D_{it}}{MV_{i(t-1)}}, \quad ER\_ni_{it} = \frac{NI_{it}}{MV_{i(t-1)}} \quad \text{and} \quad CR\_ni_{it} = \frac{\Delta NI_{it}}{MV_{i(t-1)}}$$

and

$$R_{it} = \alpha_0 + \beta_1 ER\_ni_{it} + \beta_2 CR\_ni_{it} + \beta_3 ER\_ci_{it} + \beta_4 CR\_ci_{it} + \varepsilon_{it} \quad \text{(M4)}$$

where

$$ER\_ci_{it} = \frac{OCI_{it}}{MV_{i(t-1)}} \quad \text{and} \quad CR\_ci_{it} = \frac{\Delta OCI_{it}}{MV_{i(t-1)}}$$

(M4) is the extended version of (M3), including also the other comprehensive income.

The primarily aim of the research is to verify whether the comprehensive income is more value relevant than net income. To reach this purpose it is necessary to assess whether the explained variance (R^2) increases when the other comprehensive income (OCI_{it}) are added to the net income in order to obtain the comprehensive income[4]. The question can be solved by testing the hypothesis that the OCI coefficient is not null.

$$H_0 : \beta_{OCI} = 0$$

An incremental F-test is used to test 'null' hypothesis is that H_0: $\beta_{OCI} = 0$, i.e., the 'nested' model is superior, in term of explained variance, to the 'full' model[5]. The F-test is specified as follows[6]:

$$F = \frac{(RSS_1 - RSS_2) / (k_2 - k_1)}{RSS_2 / (n - k_2 - 1)}$$

where

RSS_1 residual sum of squares of the nested model

RSS_2 residual sum of squares of the full model

k_1 number of estimated coefficients (including constant) for the restricted model

k_2 number of estimated coefficients (including constant) for the unrestricted model

n total number of observations.

Finally, in order to identify which comprehensive income components are more value relevant, we have broken down the total comprehensive income into its components (as stated by IAS 1). The PRM is modified to include the new independent variables

(as Mitra and Hossain, 2009; Kanagaretnam et al., 2009; Ernstberger, 2008; Goncharov and Hodgson, 2008) and it is specified as follows (comprehensive price regression model – CPRM):

$$MV_{it} = \alpha 0 + \beta_1 BV_{it} + \beta_2 NI_{it} + \beta_3 CFH_{it} + \beta_4 AS_{it} + \beta_5 REV_{it} + \beta_6 TA_{it} + \beta_7 AGL_{it} + \varepsilon_{it} \quad (6)$$

where MV_{it} is the market value of the equity collected at the third month after closing year date, BV_{it} the book value of the equity, NI_{it} the net income of equity, CFH_{it} the changes in cash flow hedge component, AS_{it} the changes in available for sale component, REV_{it} the changes in revaluation component, TA_{it} the changes in the translation adjustment component and AGL_{it} the changes in the actuarial gains and losses component.

The following regression models are estimated and the incremental value relevance is compared with (M1):

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{CFH_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad (M5)$$

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{AS_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad (M6)$$

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{REV_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad (M7)$$

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{TA_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad (M8)$$

$$\frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{AGL_{it}}{MV_{i(t-1)}} + \varepsilon_{it} \quad (M9)$$

4 Results

4.1 Preliminary analysis

Table 3 reports descriptive statistics for the variables included in the regression models. A two-group means comparison test (t-test) has been run to assess whether the differences among country means are significant. With reference to the variables used in the PRM (M1 and M2), there are few cases where the country mean significantly differs from the mean of the other countries. Then, we expect a limited country effect when the M5 and the M6 are estimated. Differences between country means appear to be more significant with reference to the return regression model (M3 and M4), but the t-test does not report a country for which the null hypothesis ($H0$: diff = 0) is constantly rejected. A country effect might be expected, but the results do not provide any clear indication about the countries or the variables affected by this effect. The sample means comparison t-tests suggest that the analysis should be carried out on a per-country basis, rather than for the entire sample (as Barth et al., 2008).

Table 3 Descriptive statistics (by country)

Variable	*Country*	*n*	*Mean*	*Std. dev.*	*95% confidence interval*	
$\frac{MV_{it}}{MV_{i(t-1)}}$	France	105	1.5093^	0.2604	0.992912	2.025783
	Germany	63	1.0399^	0.0368	0.966468	1.113405
	UK	225	2.0523**	0.3314	1.399267	2.705404
	Spain	87	1.6846^	0.1879	1.311054	2.058061
	Italy	105	1.0254*	0.0409	0.944190	1.106519
$\frac{BV_{it}}{MV_{i(t-1)}}$	France	105	1.2509***	0.2804	0.694857	1.806845
	Germany	63	0.6361^	0.0360	0.564063	0.708070
	UK	225	0.7584^	0.1213	0.519230	0.997489
	Spain	87	0.8206^	0.1921	0.438691	1.202549
	Italy	105	0.6639^	0.0868	0.491673	0.836041
$\frac{NI_{it}}{MV_{i(t-1)}}$	France	105	0.2776***	0.0879	0.103263	0.451937
	Germany	63	0.0960^	0.0105	0.074998	0.117020
	UK	225	0.1639^	0.0296	0.105527	0.222358
	Spain	87	0.2013^	0.0400	0.121860	0.280742
	Italy	105	0.0612**	0.0091	0.043263	0.079185
$\frac{OCI_{it}}{MV_{i(t-1)}}$	France	105	0.0049^	0.0216	–0.038014	0.047728
	Germany	63	–0.0036^	0.0038	–0.011169	0.004017
	UK	225	0.0065^	0.0044	–0.002191	0.015092
	Spain	87	–0.0034^	0.0202	–0.043547	0.036772
	Italy	105	–0.0003^	0.0044	–0.009070	0.008450
R_{it}	France	70	0.0398^	0.0363	–0.032659	0.112243
	Germany	42	0.1091^	0.0434	0.021352	0.196801
	UK	150	0.0395^	0.0529	–0.065084	0.144105
	Spain	58	0.2367**	0.1427	–0.049049	0.522406
	Italy	70	–0.0014^	0.0395	–0.080131	0.077302
ER_ni_{it}	France	70	0.2280***	0.0891	0.050249	0.405759
	Germany	42	0.1048^	0.0150	0.074506	0.135127
	UK	150	0.0843*	0.0068	0.070877	0.097636
	Spain	58	0.1722^	0.0257	0.120670	0.223777
	Italy	70	0.0557*	0.0114	0.032912	0.078512
CR_ni_{it}	France	70	0.0215^	0.0442	–0.066754	0.109684
	Germany	42	0.0263^	0.0148	–0.003589	0.056095
	UK	150	0.0124^	0.0063	0.000050	0.024804
	Spain	58	0.0997***	0.0223	0.054992	0.144432
	Italy	70	0.0035^	0.0106	–0.017594	0.024570

Notes: ^Indicates that the null hypothesis of no significant differences between the country mean and the mean of the other countries is accepted (Ho: diff = 0).
*Indicates that the country mean differ at the 10% significance level from the mean of the other countries (Ha: diff ≠ 0).
**Indicates that the country mean differs at the 5% significance level from the mean of the other countries (Ha: diff ≠ 0).
***Indicates that the country mean differs at the 1% significance level from the mean of the other countries (Ha: diff ≠ 0).

Table 3 Descriptive statistics (by country) (continued)

Variable	*Country*	*n*	*Mean*	*Std. dev.*	*95% confidence interval*	
ER_ci_{it}	France	70	–0.0358**	0.0187	–0.073052	0.001495
	Germany	42	–0.0132^	0.0043	–0.021805	–0.004569
	UK	150	0.0073**	0.0018	0.003811	0.010783
	Spain	58	–0.0331*	0.0258	–0.084830	0.018585
	Italy	70	–0.0122^	0.0052	–0.022586	–0.001765
CR_ci_{it}	France	70	–0.0468**	0.0287	–0.104048	0.010401
	Germany	42	–0.0159^	0.0061	–0.028189	–0.003628
	UK	150	0.0059***	0.0023	0.001341	0.010440
	Spain	58	–0.0401^	0.0260	–0.092119	0.011981
	Italy	70	–0.0206^	0.0062	–0.032978	–0.008214

Notes: ^Indicates that the null hypothesis of no significant differences between the country mean and the mean of the other countries is accepted (Ho: diff = 0).
*Indicates that the country mean differ at the 10% significance level from the mean of the other countries (Ha: diff ≠ 0).
**Indicates that the country mean differs at the 5% significance level from the mean of the other countries (Ha: diff ≠ 0).
***Indicates that the country mean differs at the 1% significance level from the mean of the other countries (Ha: diff ≠ 0).

Table 3 also provides the standard deviation and the 95% confidence interval of the mean for each variable used in both the PRM and the return regression model.

Table 4 Number of valid observations of comprehensive income components

Comprehensive income components	*FR*			*DE*			*UK*		
	2005	*2006*	*2007*	*2005*	*2006*	*2007*	*2005*	*2006*	*2007*
Cash flow hedge	30	29	21	20	19	16	56	56	59
Available for sale	24	22	16	15	15	14	35	34	44
Revaluation	3	2	2	2	2	3	7	8	8
Translation adjustment	34	33	30	20	20	21	65	66	63
Actuarial gains and losses	8	8	13	11	11	12	56	56	57
No. of available observations	35	35	35	21	21	21	75	75	75

Comprehensive income components	*ES*			*IT*		
	2005	*2006*	*2007*	*2005*	*2006*	*2007*
Cash flow hedge	24	24	24	22	24	24
Available for sale	15	15	17	20	22	22
Revaluation	3	4	3	3	1	1
Translation adjustment	26	26	24	18	19	20
Actuarial gains and losses	5	7	9	4	5	5
No. of available observations	29	29	29	35	35	35

As each comprehensive income component is not always reported by companies, Table 4 reports the number of valid observations collected by country and year for each component. Revaluation component, as well as actuarial gains and losses component (with the exception of the UK), is rarely reported to be different from zero. With reference to the revaluation component, that is the first evidence that companies do not usually adopt the fair value criterion when it is not mandatory. In order to get significant and robust results, descriptive statistics are reported with reference to the whole sample and some country regression estimations are skipped when the number of observations is not significant.

Table 5 summarises the descriptive statistics for the variables referring to each comprehensive income component (M5, M6, M7, M8, and M9).

Table 5 Descriptive statistics

Variable	*N*	*Mean*	*Std. dev.*	*95% confidence interval*	
$\frac{CFH_{it}}{MV_{i(t-1)}}$	448	–0.0005	0.0014	–0.003203	0.002176
$\frac{AS_{it}}{MV_{i(t-1)}}$	330	0.0073	0.0041	–0.000851	0.015412
$\frac{REV_{it}}{MV_{i(t-1)}}$	62	0.0057	0.0031	–0.000431	0.011814
$\frac{TA_{it}}{MV_{i(t-1)}}$	485	–0.0042	0.0056	–0.015179	0.006768
$\frac{AGL_{it}}{MV_{i(t-1)}}$	267	0.0040	0.0029	–0.001778	0.009763

4.2 Regression results

Regression models have been estimated to assess whether the comprehensive income is more value relevant than the net income (Q1) and to verify which comprehensive income component(s) is(are) value relevant (Q2). The price regression model (PRM) and the return regression model (RRM) have been used to answer the first question research (Q1), while the CPRM provides evidences for the second question research (Q2).

4.2.1 Results for the price regression model

Table 6 reports the results of the within-group estimation[7] of the price regression model as specified in the regression model M1. Italy is the only country for which the hypothesis test of null coefficients (H_0: $\beta_1 = \beta_2 = 0$) is not significantly rejected. Table 7 lists the results of the within-group estimation of M2. β_3 is the coefficient of the independent variable referring to the sum of the other comprehensive components. Findings show that the β_3 is statistically significant only in France (p-value < 0.01) and in Italy (p-value < 0.05). Moreover, the results of the incremental F-test leads to the rejection of the null hypothesis (H_0; $\beta_3 = 0$) for France and Italy and also for the entire sample (as reported in Table 8). The rejection of the null hypothesis suggests that the

alternative hypothesis that the other comprehensive income components increase the value relevance of accounting data should be accepted (i.e., the comprehensive income is more value relevant than the net income). But, as the null hypothesis is accepted with reference to Germany, UK and Spain and the rise of R^2 for the entire sample is limited to 0.0208, the other comprehensive income components do not seem to provide an unquestionable increase in value relevance.

Table 6 M1 estimation results

Variables	*All countries*	*FRA*	*GER*	*GBR*	*SPA*	*ITA*
β_1	–0.2416	–0.3699	0.9084***	–1.6185***	0.9048***	0.1084*
β_2	7.0139***	4.0345	–0.6894	14.2556***	–1.5349	0.4598
N	585	105	63	225	87	105
R^2 (within)	0.4044	0.2044	0.2042	0.5799	0.3901	0.0518
F (H_0: $\beta_i = 0$)	131.71***	8.73***	5.13**	102.15***	17.91***	1.86

$$M1: \frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$$

Notes: ***Denotes p-value < 0.01, **denotes p-value < 0.05, *denotes p-value < 0.1

To summarise, the findings of our price regression model within-group estimation do not provide a clear evidence of an increase of the value relevance when the comprehensive income is used instead of net income, but rather suggest that the sum of the other comprehensive income components are rarely statistically significant. Our results are consistent with Dhaliwal et al. (1999), but contradict that of Kanagaretnam et al. (2009), but both papers are based on non-EU companies reporting under accounting principles different from IFRSs.

4.2.2 Results for the return regression model

As a robustness test, the M3 and M4 return regression models have been estimated. The results of the within-group estimation of M3 are reported in Table 9. The null hypothesis of independent variables coefficients equal to zero has to be accepted with reference to Germany and Italy and so the findings relating to these countries are dropped. Table 10 reports the results of the within-group estimation of the return regression model extended to include the sum of the other comprehensive income components (M4). Coefficients β_3 and β_4 refers to the independent variables relating to sum of the comprehensive income components. These coefficients are reported to be statistically significant (p-value < 0.01) in Italy only, but this finding has to be skipped because of the non-significance of the M3 coefficients. Thus the coefficients analysis suggests that the independent variables related to the sum of the comprehensive income components are not significant and do not provide any increase of the value relevance. This assertion is supported by the results of the incremental F-test of the null hypothesis H_0: $\beta_3 = \beta_4 = 0$. As reported in Table 11, the null hypothesis is accepted for all the countries and for the entire sample, with the exception of Italy. But, as the results referring to Italy were dropped because of the non-significance of the coefficients of M3, the results of the return regression model estimation confirm and strengthen the findings of the price regression model estimation.

With reference to the first question research, which aims at verifying whether the comprehensive income is more value relevant than net income, it might be asserted that there is no evidence that the other comprehensive income components increase the explained variance and the value relevance of accounting data. Our finding is consistent with Ernstberger (2008) and Dhaliwal et al. (1999) who found that comprehensive income is not more value relevant than net income.

Table 7 M2 estimation results

Variables	*All countries*	*FRA*	*GER*	*GBR*	*SPA*	*ITA*
β_1	–0.1604	1.5094	0.9389***	–1.4977***	0.8700***	0.0944
β_2	7.177***	1.1108	–0.7657	13.9258***	–1.3952	0.2345
β_3	–3.6032	–4.8749***	0.5061	–4.7009	0.3859	2.1070**
N	585	105	63	225	87	105
R^2 (within)	0.4252	0.2989	0.2072	0.5834	0.3916	0.1116
F (H_0: $\beta_i = 0$)	95.44***	9.52***	3.40**	68.61***	11.80***	2.81**

$$M2: \frac{MV_{it}}{MV_{i(t-1)}} = \alpha_0 + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{OCI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$$

Notes: ***Denotes p-value < 0.01, **denotes p-value < 0.05, *denotes p-value < 0.1

Table 8 Incremental F-test of M1 nested in M2

DPRM incremental F-test: H_0: $\beta_3 = 0$ (M1 nested in M2)				
	F	*Pr > F*	*Change in R^2*	*H_0: $\beta_3 = 0$*
All countries	14.0344	0.0002	0.0208	Rejected at 0.01 level
FRA	9.0363	0.0047	0.0945	Rejected at 0.01 level
GER	0.1457	0.7061	0.003	Accepted
GBR	1.2189	0.2729	0.0035	Accepted
SPA	0.1430	0.7078	0.0015	Accepted
ITA	4.5110	0.0404	0.0598	Rejected at 0.05 level

Table 9 M3 estimation results

Variables	*All countries*	*FRA*	*GER*	*GBR*	*SPA*	*ITA*
β_1	6.6037***	8.3842***	–3.6999*	9.8564***	24.8466***	1.3553
β_2	–4.0040***	–5.1137***	1.7191	–5.4821***	–25.8281***	–0.7212
N	391	70	42	152	58	69
R^2 (within)	0.2328	0.3872	0.1855	0.2709	0.5958	0.0138
F (H_0: $\beta_i = 0$)	29.29***	10.42***	2.16	13.75***	19.90***	0.22

$$M3: R_{it} = \alpha_0 + \beta_1 ER\_ni_{it} + \beta_2 CR\_ni_{it} + \varepsilon_{it}$$

Notes: ***Denotes p-value < 0.01, **denotes p-value < 0.05, *denotes p-value < 0.1

Table 10 M4 estimation results

Variables	*All countries*	*FRA*	*GER*	*GBR*	*SPA*	*ITA*
β_1	6.5131***	6.9573***	–3.5106*	9.6518***	23.6512***	2.0254
β_2	–3.8979***	–4.1704**	1.9825	–5.2114***	–24.2844***	–0.5183
β_3	1.1741*	–0.7291	3.1505	1.8402	2.4570	7.7642***
β_4	–0.6517	–0.2663	–3.4471*	–4.5431	–2.2789	–6.1096***
N	391	70	42	152	58	69
R^2 (within)	0.2463	0.4126	0.3746	0.3039	0.5981	0.2583
F (H_0: $\beta_i = 0$)	15.61***	5.44***	2.55*	7.86***	9.30***	2.61*

$$M4: R_{it} = \alpha_0 + \beta_1 ER\_ni_{it} + \beta_2 CR\_ni_{it} + \beta_3 ER\_ci_{it} + \beta_4 CR\_ci_{it} + \varepsilon_{it}$$

Notes: ***Denotes p-value < 0.01, **denotes p-value < 0.05, *denotes p-value < 0.1

Table 11 Incremental F-test of M3 nested in M4

RRM incremental F-test: H_0:$\beta_3 = \beta_4 = 0$ (M3 nested in M4)				
	F	*Pr > F*	*Change in R^2*	*H_0:$\beta_3 = \beta_4 = 0$*
All countries	1.7169	0.1916	0.0135	Accepted
FRA	0.6920	0.4106	0.0254	Accepted
GER	2.7204	0.1120	0.1891	Accepted
GBR	1.7290	0.1923	0.033	Accepted
SPA	0.0728	0.7889	0.0023	Accepted
ITA	5.1096	0.0296	0.2445	Rejected at 0.05 level

4.2.3 Results for the comprehensive price regression model

The second research question aims at verifying which comprehensive income components are more value relevant. To reach this purpose the regression models M5, M6, M7, M8 and M9 are estimated and their explained variance is compared with that of the nested model M1[8]. According to descriptive statistics reported in Table 4, it is expected that the number of observations will not be sufficient to estimate the regression model for the Revaluation component (M7).

Table 12 reports the results of the within-group estimation of M5 and of the price regression model estimated on the sub-sample made of the *i*-observation for which the variable CFH is not missing (M1_5). The hypothesis test of null coefficients (H_0: $\beta_3 = \beta_4 = 0$) is not significantly rejected for Italy and so these results are dropped. According to the results reported in Table 12, the cash flow hedge component does not appear to increase the value relevance of accounting data in three cases out of five. Only France and Spain report the cash flow hedge component to be significantly value relevant.

Results of the within-group estimation of M6 and of the nested model M1_6 are reported in Table 13. As for the previous comprehensive income components, regression models referring to Italy are dropped because of the non-significance of the estimated coefficients. With the exception of Spain, the incremental F-test results suggest that Available for sale is not value relevant, as the null hypothesis H_0: $\beta_3 = 0$ is accepted.

Table 12 M5 and M1_5 estimation results and incremental F-test of M1_5 nested in M5

	Models	β_1	β_2	β_3	*N*	R^2 *(within)*	*F* (H_0: $\beta_1 = 0$)	*F*	*Pr > F*	*Change in* R^2	H_0: $\beta_1 = 0$
All countries	M1_5	–0.8626***	13.6527***	-	448	0.6323	238.13***				
	M5	–0.8573***	13.6007***	–2.0194	448	0.6326	158.38***				
	M1_5 nested in M5							0.2193	0.6400	0.0003	Accepted
FRA	M1_5	1.1749***	10.1831***	-	80	0.9656	659.30***				
	M5	1.3463***	9.3078***	–3.5373***	80	0.9706	506.17***				
	M1_5 nested in M5							7.8466	0.0084	0.0050	Rejected at 0.01 level
GER	M1_5	0.9328***	0.5270	-	55	0.3395	8.48***				
	M5	0.8267**	1.3565	–2.5326	55	0.3642	6.11***				
	M1_5 nested in M5							1.2424	0.2770	0.0247	Accepted
GBR	M1_5	–1.1422***	19.0456***	-	171	0.8358	269.79***				
	M5	–1.0567***	18.9642***	16.8451	171	0.8393	182.79***				
	M1_5 nested in M5							2.2817	0.1357	0.0035	Accepted
SPA	M1_5	0.4537	0.2720	-	72	0.3119	9.97***				
	M5	0.2665	0.9968	34.5261**	72	0.3780	8.71***				
	M1_5 nested in M5							4.5701	0.0414	0.0661	Rejected at 0.05 level
ITA	M1_5	0.0881	0.0652	-	70	0.0338	0.68				
	M5	0.0860	–0.0433	–8.4261	70	0.0466	0.62				
	M1_5 nested in M5							Regression models dropped because of non-significance of estimated coefficients			

M1_5: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$ if $CFH_{it} \neq na$ M5: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta 3 \frac{CFH_{it}}{MV_{i(t-1)}} \varepsilon_{it}$

Notes: *** denotes p-value < 0.01; ** denotes p-value < 0.05; * denotes p-value < 0.1

Table 13 M6 and M1_6 estimation results and incremental F-test of M1_6 nested in M6

	Models	β_1	β_2	β_3	*N*	R^2 *(within)*	*F* (H_0: $\beta_i = 0$)	*F*	*Pr > F*	*Change in* R^2	H_0: $\beta_3 = 0$
All countries	M1_6	–0.3180	11.7064***	-	330	0.5700	128.57***				
	M6	–0.4021	11.8145***	1.2422	330	0.5704	85.41***				
	M1_6 nested in M6							0.1807	0.6714	0.0004	Accepted
FRA	M1_6	2.1746***	–6.2217***	-	62	0.3669	10.43***				
	M6	2.1786***	–6.1779***	–1.5583	62	0.3689	6.82***				
	M1_6 nested in M6							0.1117	0.7408	0.0020	Accepted
GER	M1_6	0.8774**	0.3015	-	44	0.2936	4.57**				
	M6	0.8510**	0.4518	2.8578	44	0.3269	3.40**				
	M1_6 nested in M6							1.0396	0.3189	0.0333	Accepted
GBR	M1_6	–1.8332***	20.6493***	-	113	0.8609	194.96***				
	M6	–3.0239***	22.8614***	8.1497	113	0.8649	132.26***				
	M1_6 nested in M6							1.8160	0.1838	0.0040	Accepted
SPA	M1_6	1.7269***	–0.3752	-	47	0.8112	58.01***				
	M6	2.7358***	–0.6774	–10.9828***	47	0.9580	197.46***				
	M1_6 nested in M6							90.7421	0.0000	0.1468	Rejected at 0.01 level
ITA	M1_6	0.0978	0.4976	-	64	0.0604	1.22				
	M6	0.0748	0.1476	5.3964**	64	0.1773	2.66*				
	M1_6 nested in M6							Regression model dropped because of non-significance of estimated coefficients			

M1_6: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$ if $AS_{it} \neq na$ M6: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta 3 \frac{AS_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$

Notes: *** Denotes p-value < 0.01; ** denotes p-value < 0.05; * denotes p-value < 0.1.

Table 14 M8 and M1_8 estimation results and Incremental F-test of M1_8 nested in M8

	Models	β_1	β_2	β_3	*N*	R^2 *(within)*	*F* (H_0: $\beta_i = 0$)	*F*	*Pr > F*	*Change in* R^2	H_0: $\beta_3 = 0$
All countries	M1_8	1.1301***	4.4174***	-	485	0.4280	115.99***				
	M8	1.2366***	5.1640***	–6.2767***	485	0.4918	99.69***				
	M1_8 nested in M8							38.7972	0.0000	0.0638	Rejected at 0.01 level
FRA	M1_8	–1.0352	5.8182	-	97	0.2100	7.97***				
	M8	0.1013	3.9939	–2.8530	97	0.2328	5.97***				
	M1_8 nested in M8							1.7538	0.1935	0.0228	Accepted
GER	M1_8	1.3751***	–1.4319*	-	61	0.3568	10.54***				
	M8	1.3533***	–1.4120*	–0.6356	61	0.3607	6.96***				
	M1_8 nested in M8							0.2273	0.6380	0.0039	Accepted
GBR	M1_8	0.5140	10.8845***	-	194	0.6509	114.69***				
	M8	–0.2050	12.0120***	–16.6095***	194	0.6751	84.51***				
	M1_8 nested in M8							9.0832	0.0035	0.0242	Rejected at 0.01 level
SPA	M1_8	1.7447***	–.04530	-	76	0.7839	87.04***				
	M8	1.7696***	–0.5778	–0.5206	76	0.7879	58.18***				
	M1_8 nested in M8							0.8830	0.3554	0.0040	Accepted
ITA	M1_8	1.1648***	–0.1345	-	57	0.4330	12.60***				
	M8	1.1491***	–0.1464	0.1740	57	0.4337	8.17***				
	M1_8 nested in M8							0.0416	0.8400	0.0007	Accepted

M1_8: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$ if $TA_{it} \neq na$ M8: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{TA_{it}}{MV_{i(t-1)}} \varepsilon_{it}$

Notes: *** denotes p-value < 0.01; ** denotes p-value < 0.05; * denotes p-value < 0.1

Table 15 M9 and M1_9 estimation results and incremental F-test of M1_9 nested in M9

	Models	β_1	β_2	β_3	N	R^2 (within)	F (H_0: $\beta_i = 0$)	F	$Pr > F$	Change in R^2	H_0: $\beta_3 = 0$
All countries	M1_9	–2.3402***	17.2498***	-	267	0.6559	157.28***				
	M9	–2.3419***	17.2072***	2.2667	267	0.6566	104.51***				
	M1_9 nested in M9							0.3054	0.5816	0.0007	Accepted
FRA	M1_9	2.2301***	5.6730	-	29	0.5917	8.70***				
	M9	2.1437***	4.9148	–2.7509	29	0.6141	5.83**				
	M1_9 nested in M9							0.6376	0.4355	0.0224	Accepted
GER	M1_9	1.4798***	–1.6662*	-	34	0.4419	7.92***				
	M9	1.4867***	–1.6496*	2.1552	34	0.4771	5.78***				
	M1_9 nested in M9							1.2774	0.2773	0.0352	Accepted
GBR	M1_9	–2.9007***	19.6743***	-	169	0.7046	128.82***				
	M9	–2.9060***	19.6282***	3.0518	169	0.7057	85.52***				
	M1_9 nested in M9							0.3892	0.5350	0.0011	Accepted
SPA	M1_9	1.9686***	–1.5037**	-	21	0.9062	48.30***				
	M9	1.8285*	–1.0381	–3.9201	21	0.9065	29.07***				
	M1_9 nested in M9							0.0259	0.8749	0.0003	Accepted
ITA	M1_9	1.0730	–0.5265	-	14	0.3259	1.69				
	M9	0.9979	–0.7455	–3.4718	14	0.3302	0.99				
	M1_9 nested in M9							Regression models dropped because of non-significance of estimated coefficients			

M1_9: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \varepsilon_{it}$ if $AGL_{it} \neq na$ M9: $\frac{MV_{it}}{MV_{i(t-1)}} = \propto_0 \frac{1}{MV_{i(t-1)}} + \beta_1 \frac{BV_{it}}{MV_{i(t-1)}} + \beta_2 \frac{NI_{it}}{MV_{i(t-1)}} + \beta_3 \frac{AGL_{it}}{MV_{i(t-1)}} \varepsilon_{it}$

Notes: *** denotes p-value < 0.01; ** denotes p-value < 0.05; * denotes p-value < 0.1

The results referring to the revaluation comprehensive income component are dropped because Italy and Germany have insufficient number of observations to run the within-group estimation due to the unusual adoption of the fair value criterion. Moreover, the coefficients estimated with reference to the whole sample and to Spain are reported as not significant (i.e., the null hypothesis that coefficients equal to zero is not significantly rejected).

Table 14 reports the results of the within-group estimation of M8 and of the nested model M1_8. The β_3 coefficient is significant at 0.01 level with reference to the entire sample and to the UK. These two cases are the same (and the only) reporting translation adjustments to be a value relevant comprehensive income component (as reported in Table 14).

Table 15 reports the results of the within-group estimation of M9 and M1_9. The hypothesis test of null coefficients (H_0: $\beta_1 = \beta_2 = 0$) is not significantly rejected for Italy and so these results are dropped. With reference to all the other cases, the null hypothesis of the incremental F-test (H_0: $\beta_3 = 0$) is accepted, as reported in Table 15.

To summarise, cash flow hedge and translation adjustments are the only comprehensive income components resulting value relevant for two sub-samples. Available for sales and actuarial gains and losses, on the other hand, do not seem to be value relevant in most of the cases. Concerning the revaluation component, regression models were not estimated because of the low numbers of observations available. To compare our results, it is necessary to refer to researches carried out on samples of non-EU companies, as Kanagaretnam et al. (2009) who found the cash flow hedge and the available for sales components to be both value relevant.

5 Conclusions

In this article, we analyse whether the adoption of the comprehensive income reported under IFRSs increases the value relevance of accounting data, the value relevance being a proxy for the investors' usefulness of this new performance measure. To this end, we estimate panel-data regressions using a sample of listed companies belonging to the main European stock indexes (CAC40, DAX30, FTSE100, IBEX35, S&PMIB40) for the period 2005–2008. We also employ an incremental F-test to verify whether the use of the comprehensive income instead of the net income significantly increases the explanatory power of the value relevance models.

To the best of our knowledge, there are no other studies comparing the net income and the comprehensive income reported under IFRS [both Dhaliwal et al. (1999) and Kanagaretnam et al. (2009) are based on non-EU companies]. The topic is of interest for both scholars and practitioners especially after the revision of IAS 1.

Our findings do not provide evidence that the use of the comprehensive income as the overall economic performance measure results in an unquestionable increase of the value relevance of accounting data. In a regression of market value on book value of equity and the earnings component (net income and comprehensive income alternately), for all companies in the sample the comprehensive income appears to provide more useful information for investors, even though the rise of the explanatory power of the regression model is very low. For individual countries, the effects of the use of the comprehensive income are mixed. France and Italy report that comprehensive income is more value relevant than net income, but opposite findings arise from the model estimation using

data of companies belonging to Germany, UK and Spain. The return regression model, estimated as a robustness test for the findings arising from the former regression model (PRM), supports the conclusion that comprehensive income is not more value relevant than income, with reference to both the whole sample and each country sample. Concerning each comprehensive income component, cash flow hedge and translation adjustments have only occasionally been reported to increase the value relevance of accounting data, when added to the regression model as independent variables. Results arising from the analysis of each comprehensive income component confirm that the fair value criterion is rarely adopted when it is not mandatory and also there is no evidence that the mandatory use of the fair value increases the value relevance of accounting data.

The following questions arise from our research:

- Is the comprehensive income really necessary as an overall company performance measure?
- Are investors ready to move towards a new concept of overall company performance measure?
- Are the IFRS comprehensive income components the best to increase the investors' usefulness of the overall company performance measure?
- Is the fair value really value relevant? Why is the fair value criterion so rarely adopted?

It is our opinion that both the standard setters and the scholars should deal with these questions in order to define a better measure of overall company performance.

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Notes

1 Excluding transactions with owners in their capacity of owners.

2 For e.g., EBIT, EBITDA, etc.

3 Some of the studies have multiple objectives aside from those regarding value relevance. For simplicity and consistence with the aim of this paper, only the specific aim relating to value relevance is reported in the table.

4 A methodology based on nested regression models and F-tests been already used by Cheng et al. (1993) to evaluate the relative information content of the comprehensive income, by Barth et al. (1996) to evaluate the value-relevance of banks' fair value disclosures reported under US GAAP, by Cahan et al. (2000) to assess the incremental value relevance of the FASB comprehensive income components, by Gjerde et al. (2008) to assess the marginal or incremental value-relevance of IFRS earnings and by Hollister et al. (2008) to evaluate the incremental information content of accounting accruals in predicting future cash flows.

5 In our paper the 'nested' model is that including BVit and NIit only, while the 'full' model is the one including also OCIit.

6 Stock, J. and Watson, M. (2007) *Introduction to Econometrics*, Pearson Education.

7 The choice between a fixed-effect or random-effect estimation has been driven by the Hausman test.

8 Model M1 is estimated again for each comprehensive income component model (M5, M6, M7, M8, M9) and, in order to keep the sample balanced, every M1 re-estimation is run on the same observations valid for each comprehensive income component model (i.e., the sub-sample of M5 equals the sub-sample of M1_5).