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The relevance and the reliability of IAS 39 financial instruments categories

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ABSTRACT: *The issuance of the new accounting standard IFRS 9 will replace IAS 39 for periods beginning on or after 1 January 2018. The process of replacement has been slow and has been initiated because users of financial statements and other interested parties complained that the requirements in IAS 39 were difficult to understand, apply and interpret [IFRS 9, IN 2]. This study verifies whether the single IAS 39 categories are relevant and reliable. The review of the accounting literature indicates that few papers, if any, address a similar research question. Actually, investigating the value relevance of financial instruments, scholars compare the value relevance of fair value and amortised cost with relative or incremental value relevance studies (BARTH, 1994; BARTH et al., 1996; ECCHER et al., 1996; NELSON, 1996; CARROLL et al., 2003; KHURANA and KIM, 2003) or estimate the value relevance of the different levels of the IFRS 7 fair value hierarchy (BOSCH, 2012; BAGNA and DI MARTINO, 2013). Despite criticisms against IAS 39, our first hypothesis is that all of the categories of financial instruments are relevant (that is, useful) for investors' strategies, thanks to the ability to interpret the IASB standards or general familiarity with their use. According to our second research hypothesis, they are also reliable. Methodologically, an IAS 39 category is relevant if the regression coefficient of the price model is statistically significant at 5%. If the coefficient is equal to its theoretical value (+1 for financial assets and -1 for financial liabilities), it is also reliable. To test these hypotheses, we use a modified version of the price model (OHLSON, 1995), analysing data downloaded from the Bankscope database of a sample of 55 financial intermediaries that complied with IAS 39 over the period of 2010-2013. The entities analysed are listed in 12 countries that belonged to the EU at the time of issuance of the EU Regulation 1606/2002. Upon decomposing book value of equity and distinguishing the single IAS 39 categories measured at fair value and at amortised cost, our findings validated our research hypotheses. Findings contribute to the literature because the paper fills a lack concerning the relevance and reliability of the IAS 39 categories. They also have implications for practitioners because they provide evidence about the usefulness of all of the IAS 39 categories for investments' strategies and eliminate reliability concerns for accounting amounts.*

Keywords: *relevance, reliability, financial instruments, Ohlson (1995) model, financial intermediaries*

1. Introduction

In July 2014, the IASB completed its reform of financial instruments, issuing the new accounting standard IFRS 9 that will became mandatorily effective for periods beginning on or after 1 January 2018. IFRS 9 addresses issues related to classification and measurement, impairment and hedge accounting of financial instruments. In doing so, it will replace those of IAS 39 that entities still currently adopt for financial instruments.

The objective of this research is to test whether the categories in which financial instruments could be classified, according to the requirements of IAS 39, are value relevant, and particularly relevant and reliable. Relevance regards usefulness of accounting amounts for investors' strategies; reliability involves the verifiability of the accounting amount that should be free from biases.

The motivation behind our research questions regards all concerns addressed by many users of financial statements and other interested parties against IAS 39 that have been formalised in a discussion paper published in 2008 titled "Reducing Complexity in Reporting Financial Instruments". In the introduction of IFRS 9, we can read that users told the International Accounting Standards Board (IASB) that the requirements in IAS 39 were difficult to understand, apply and interpret [IFRS 9, IN 2]. Despite such concerns, in this study we hypothesise that investors – several years after its first adoption – consider the categories disclosed in the balance sheet according to the requirements of IAS 39 relevant and also reliable.

Methodologically, we investigate relevance using a modified version of the price model (OHLSON, 1995) and we assume its regression coefficients as a measure of usefulness of accounting amounts (VAN CAUWENBERGE and DE BEELDE, 2007). Similarly to Song *et al.* (2010), we investigate reliability by testing whether the regression coefficients of the single IAS 39 categories, estimated with the price model, are statistically different from their theoretical values (± 1).

Data have been collected from the consolidated annual reports of 55 financial entities listed in the EU over the period of 2010-2013 (e.g., 220 firm-year observations) that comply with the IAS 39 requirements.

Our findings confirm the research hypotheses and provide a theoretical contribution, enriching the literature about the relevance and the reliability of the IAS 39 categories disclosed by financial entities. Other than contributing to the literature, our results also have implications for practitioners. Despite the fact the requirements in IAS 39 were difficult to understand, apply and interpret, investors have useful information for their investment strategies, probably thanks to the familiarity with IAS 39; in addition, investors should have no reliability concerns for accounting amounts. This is very interesting in the light of the first worries for the complexity of the new accounting standard on financial instruments (IFRS 9) and of effectiveness of the replacement process.

This paper proceeds as follows. Section 2 reviews the literature on the topics investigated and states our research hypotheses. Section 3 explains the research protocol adopted to test our hypotheses. The following two sections deal with the sample selection and descriptive statistics (Section 4) and the research results (Section 5). Finally, the paper ends with a discussion of the implications, limitations and possible future developments of the study (Section 6).

2.   Literature review

The relationship between earnings and book value and the information used by economic operators in their investment decisions is one of the most widely considered issue in the accounting literature. A common feature of the research on value relevance is to identify, at an empirical level, statistically significant associations between accounting amounts and a measure of the value of the company, often synthesized by stock market prices (HUNG and SUBRAMANYAM, 2007, p. 639; MECHELLI, 2013, p. 3). Barth *et al.* (2001, p. 79),

whose works are of particular importance in this field of study [1], assert that the first survey on the existence of statistically significant associations between book value with equity market values dates to about 50 years ago. The beginning is found in the work of Miller and Modigliani (1966), even if the primary contribution that explicitly used the term "value relevance" [2] to test the existence of these associations was that of Amir *et al.* (1993). There is no doubt, however, that a milestone in this type of study is made in the work of Ball and Brown (1968) and Beaver (1968), historically considered as the ones who opened the positive accounting theory [3]. The same scholars argue that, by using well-accepted valuation models, value relevance research attempts to operationalize two key dimensions, relevance and reliability of accounting amounts.

Despite the difficulty in testing relevance and reliability of accounting amounts separately (BARTH *et al.*, 2001, p. 81), our paper focuses on these characteristics (relevance and reliability) with specific reference to the IAS 39 financial instruments categories. Using the EBSCO host database and, for national journals, the ESSPER database, we adopted several criteria for selecting the studies for potential inclusion in our literature review, and we found that there are no papers published in peer-review scientific journals that have investigated similar issues. The use of these databases informs us that scholars that investigated the value relevance of financial instruments tested research hypotheses different from those of this study. However, we reference below some of the papers that we found in the EBSCO and ESSPER databases, because they are useful to formulate our hypotheses.

We can start from the research that assessed and compared the value relevance of fair value and amortised cost.

Scholars that used a relative value relevance study (e.g., KHURANA and KIM, 2003) found mixed results as to the value relevance of financial instruments measured at fair value rather than at historical/amortised cost. Khurana and Kim (2003) investigated whether fair value is more informative than historical cost for financial instruments, comparing the relative explanatory power of fair value (made under SFAS No. 107 and SFAS No. 115) and historical cost in explaining the equity values of bank holding companies over the 1995-1998 period. The most interesting findings have shown that fair value is more value relevant when objective market-determined fair value measures are available, like in the case of AFS securities, which are more actively traded in well-established markets. On the contrary, fair value is less value relevant than historical cost when objective fair value measures are not available than for small bank holding companies and those entities with less transparent information environment in which loans and deposits are not actively traded in well-established markets.

Similarly, scholars that used an incremental value relevance study found mixed results. Some of them found that fair value adds incremental information for investment strategies compared with historical cost (e.g., BARTH, 1994; BARTH, BEAVER and LANDSMAN, 1996; ECCHER, RAMESH and THIAGARAJAN, 1996; CARROLL, LINSMEIER and PETRONI, 2003;

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[1] On this point, see also the works of Beaver (1968 and 1998), Barth (1991, 1994 and 2000), Barth et al. (1996 and 2001).

[2] Value relevance, earnings management and timely loss recognition are three dimensions of the so-called accounting quality (BARTH *et al.*, 2008; CHEN *et al.*, 2010). The introduction of international accounting standards has aroused the interest of scholars to verify empirically whether their adoption has helped to improve accounting quality (SODERSTROM and SUN, 2007; BARTH *et al.*, 2008; AHMED *et al.*, 2013).

[3] On this point, more widely, see the works of Watts and Zimmerman (1986 e 1990).

DRAGO, MAZZUCA and COLONEL, 2013) [4]. Other scholars found that fair value is not incremental value relevant compared with amortised cost (e.g., NELSON, 1996) [5].

All of the above-mentioned studies addressed research questions different from that of our paper and achieved contradictory findings regarding the value relevance comparison of fair value model versus cost model. However, a common trait of these studies could be useful in formulating a plausible research hypothesis about the value relevance of the single IAS 39 categories. Actually, in the referenced articles, we find that, in the large majority of cases, the financial instruments categories are value relevant both when measured at fair value and at historical cost/amortised cost. For instance, regression results of relative informativeness of historical cost and fair value found by the above-mentioned work of Khurana and Kim (2003) suggests that all the financial instruments categories are value relevant at 1% level in the cost model. In the fair value model, except for the residual category of financial liabilities that is not value relevant, all of the other financial instrument categories are value relevant at 1% (two categories), at 5% (three categories) and at 10% (two categories).

Grounded in the accounting literature, the value relevance of all of the categories of financial instruments could be also due to the familiarity that investors have with GAAPs. In this regard, Sami and Zhou (2004) found that the value relevance of accounting information increased (even if modestly) when domestic investors became familiar with the accounting information. Correspondingly, Liu and Liu (2007) expected that the value relevance of accounting information reported under IFRS changes as the market becomes more established and investors become more familiar with the availability of information

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[4] Barth (1994), focusing on a primarily U.S. banks sample observed over the period 1971-1990, found that historical costs provided no significant incremental explanatory power compared with fair values, while fair value estimates of investment securities, disclosed before the effective date of SFAS 107, were significantly associated with the market value of equity. A similar study was carried out simultaneously by Eccher, Ramesh and Thiagarajan (1996), which considered the value relevance of fair value data disclosed under SFAS 107 by about 300 bank holding companies over the period 1992-1993. The research findings indicated that fair value estimates for securities, net loans, long-term debt, and market-related off-balance-sheet instruments were generally incrementally value-relevant. More specifically, as for securities, findings were consistent with the study of Barth (1994), highlighting that fair value had significant incremental explanatory power regarding the market value of equity, while for the other variables (net loans, long-term debt, etc.) empirical evidence has provided mixed results (for example, fair value variables had significant explanatory power in 1992 but not in 1993).

Barth, Beaver and Landsman (1996) instead demonstrated that fair value estimates of loans for fiscal years 1992-1993 provided significant incremental explanatory power for bank share prices beyond that provided by related book values. More generally, the findings of the latter have shown that the differences between disclosed fair values and book values of securities, loans and long-term debt were value relevant, while those for deposits and off-balance sheet items were not.

Carroll, Linsmeier and Petroni (2003) found that, on average, investment securities fair values of mutual funds provided incremental information than amortised cost to closed-end fund investors, documenting both a significant association between stock prices and the fair value of investment securities and a significant association between stock returns and fair value securities gains and losses.

More recently, Drago, Mazzuca and Colonel (2013) found that book values and earnings affect banks' market values. Investors appreciate the difference between loans book and fair values, and attribute the expected negative value to this difference.

[5] Nelson (1996) investigated the association between the market value of banks' common equity and fair value estimates disclosed under SFAS No. 107. The findings of this study, conducted on most of the 150 largest U.S. banks over the 1992-1993 period, suggest that fair value disclosures are not incrementally value relevant to book value. The only exception is observed for investment securities, in relation to which it is possible to observe a significant association with market value; the scholar has defined this as an apparent outcome, considering it to be generated by the omission of proxies for the future profitability from the model.

about the listed firms. Alali and Foote (2012) validated the expectation of Liu and Liu (2007).

These elements suggest that, despite criticisms against IAS 39, both financial instruments measured at fair value and at amortised cost should be value relevant and led us to formulate our first research hypothesis:

H₁: *All of the single IAS 39 categories are value relevant and thus provide useful information for investors' decisions.*

Other than focusing on the relevance of the IAS 39 categories, we would like to test their reliability. To understand how to do so, we start from the price model formulated by Ohlson (1995) that, according to Lo and Lys (2000, p. 1), represents a formal linkage between valuation and accounting numbers useful for investors. The idea behind this model is that accounting amounts incorporate the information useful for investors to predict future earnings and cash flows and thus also the value of the firm. A modified version of this model, largely used in the accounting literature, assumed as a dependent variable the market value of equity – a proxy of the value of the firm – and as regressors both the reported book value and earnings. In this sense, such a model "can be viewed as a weighted average of the earnings model and a book value model" (OHLSON 1995, p. 671). Splitting the book value into the different IAS 39 categories, we can test whether their regression coefficients are statistically different from the theoretical value of +1 for financial assets and -1 for financial liabilities. According to Ohlson (1995), if regression coefficients are equal to their theoretical values, the entity will not experiment abnormal earnings. According to several scholars (e.g., SONG *et al.*, 2010; BOSCH, 2012), observing a regression coefficient equal to the predicted theoretical value means also that investors have no reliability concerns for accounting amounts because, for instance, they rely on high-quality corporate governance mechanisms that reduce earnings management behaviours. In their work, the scholars assessed the value relevance of the different levels of the so-called fair value hierarchy and tested the hypothesis that the single regression coefficients of level 1, level 2 and level 3 were statistically equivalent to the theoretical value of ±1. Among scholars that investigated the U.S. context, Song *et al.* (2010) found that coefficients of levels 1 and 2 are not different from the predict value of +1 (-1). So, they found all the levels relevant, but while estimation of fair value by using observable inputs (levels 1 and 2) is reliable, fair value estimated by using unobservable inputs (level 3) is not. Among scholars that investigated the EU context, analysing the European countries, Bosch (2012) found that all of the fair value levels are reliable. In fact, the regression coefficients that identify the different levels of the hierarchy (e.g., level 1, level 2 and level 3 fair value assets) are statistically equivalent to the theoretical value of +1.

In most of the cases, fair value accounting produces in financial intermediaries a regression coefficient of fair value assets and liabilities statistically equivalent to the theoretical values hypothesised by Ohlson (1995); this suggests that accounting amounts should be reliable. Actually, despite the possibilities of earnings management practices behind fair value estimates, the entities analysed rely on governance features that reduce the possibility of opportunistic behaviours of managers that impair the reliability of accounting amounts. In addition, fair value has intrinsic characteristics that, compared with historical cost, reduce

the possibility of future unexpected returns thanks to its pro-cyclicality [6]. This is the main reason we expect to find that the regression coefficients of financial instruments measured at fair value are not statistically different from the theoretical values of ± 1.

As to the amortised cost, empirical evidence about the theoretical values of regression coefficients is lacking. Scholars that investigated issues related to the annual report of financial intermediaries could be useful in formulating a hypothesis. According to Paolucci and Menicucci (2008, pp. 109-110), amortised cost is not an alternative but a complement with respect to fair value. Actually, the discounted cash flow is the methodology that is useful in assessing amortised cost. In the meantime, this methodology is also used to estimate the fair value (level 3) of financial assets and liabilities. In this sense, the arguments that led us to hypothesise that the regression coefficients of IAS 39 categories measured at fair value are equal to the theoretical value indicated by Ohlson (1995) could be extended also to categories measured at amortised cost.

All of these arguments led us to formulate our second research hypothesis:

H₂: *All of the regression coefficients of the single IAS 39 categories have theoretical values equal to ± 1, and so investors have no reliability concerns for accounting amounts.*

3. Research design

Testing of our research hypotheses requires two methodological choices that involve the sample selection strategy and the model useful to assess and compare the value relevance of accounting amounts.

Within the sample-selection strategy, in our opinion, focusing on financial entities listed in the European Union maximises the power of our tests. Actually, the choice to focus on financial intermediaries has been due to the consideration that, in these entities there is a larger amount of financial instruments than in the companies belonging to the other industries, in relation to their core business (Maffei, 2009). Instead, the choice to limit our analysis to European entities is quite common in the literature, both among scholars who investigated the value relevance of fair value estimates (Fiechter and Novotny-Farkas, 2011) and those who analysed the value relevance of the different levels of the IFRS 7 hierarchy (BOSCH, 2012; BAGNA and DI MARTINO, 2013).

Within the model, the choice involves the use of a specification that allows measuring the value relevance of accounting amounts, that is, the weight that investors place on earnings and book value disclosed in annual reports to support their investment strategies. In this regard, the modified version of the price model (OHLSON, 1995) is the most suitable to test our research hypotheses.

The specification that we used is as follows:

$$MV_{it} = \alpha_0 + \alpha_1 HFTA_{it} + \alpha_2 DERA_{it} + \alpha_3 AFS_{it} + \alpha_4 HTM_{it} + \alpha_5 REC_{it} + \alpha_6 HFTL_{it} +$$
$$+ \alpha_7 DERL_{it} + \alpha_8 LOANS_{it} + \alpha_9 \overline{BV}_{it} + \alpha_{10} CI_{it} + \alpha_{t-1} T_{t-1} + \alpha_{c-1} C_{c-1} + \varepsilon_{it} \qquad (1)$$

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[6] Pro-cyclicality is a property of fair value accounting. It refers to the changes in the underlying economic parameters (e.g., book value and earnings), which increase when the economy is good and drop during periods of financial distress.

where MV$_{it}$ is the market value at the reporting date; HFTA$_{it}$ are the held for trading assets measured at fair value; DERA$_{it}$ are the derivatives measured at fair value and disclosed between financial assets; AFS$_{it}$ are the available-for-sale securities measured at fair value; HTM$_{it}$ are the held to maturity securities measured at amortised cost; REC$_{it}$ are the receivables measured at amortised cost and disclosed between financial assets; HFTL$_{it}$ are the held for trading liabilities measured at fair value; DERL$_{it}$ are the derivatives measured at fair value and disclosed between financial liabilities; LOANS$_{it}$ are the loans measured at amortised costs; $\overline{BV}_{it}$ is the book value purged by financial assets and liabilities; CI$_{it}$ is the comprehensive income; and T and C are the time and the country-fixed effects [7].

The equation that we presented above has three peculiarities.

The first is that its variables are undeflated [8], since Barth and Clinch (2009) demonstrated that these models perform the best regardless of the kind of scale effect [9]. Their paper also revealed that the share-deflated models [10] seem to overcome problems due to the scale effects; however, we have not used this specification because of the possible discretion exercised by insiders over the number of outstanding shares. Criticisms toward this deflator led several scholars to consider the market value as the best proxy to control the scale effect. To mitigate the scale effect, some used the market value at the beginning of the period as a deflator (BROWN *et al.*, 1999), while others used the market value at the reporting date (EASTON and SOMMERS, 2003). In the last part of our research, we used the market value at the closing date to test the robustness of our findings and to verify whether the scale effect biased the research results found in the main analysis.

The second peculiarity is that, between regressors, we have not included net income as a measure of earnings – as most of the scholars did – but the reported comprehensive income, in accordance with the clean-surplus relation [11] behind the modified version of the Ohlson (1995) model. European entities issue comprehensive income as of fiscal year 2009, complying with a modified version of the IAS 1 (2007). However, we have collected data from the consolidated annual reports of the entities analysed since fiscal year 2010 to avoid biases due to transition effects. In addition, the choice to collect "as reported" data avoided potential biases due to the use of "as if" data for this item (CHAMBERS *et al.*, 2007; KANAGARETNAM *et al.*, 2009).

The third peculiarity of the model is that standard errors of equation (1) have been calculated according to the White (1980) procedure.

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[7] Including dummies T and C in the regression model avoids omitted variables (that are constant between entities or over time) could bias the research results. In detail, while the time effects control for characteristics that are constant over time but that change cross-section, the country effects control for characteristics that are constant cross-section but that change over time.

[8] The price models with undeflated variables use the market value of equity as a dependent variable and the reported earnings and book value as regressors. These models do not control for possible biases due to the presence in the sample analysed of entities with different size. In the sensitivity analysis, we check the robustness of our findings using a deflated specification of the price model.

[9] Scale effect is a term used to describe biases due to the presence in the sample analysed of entities of different size.

[10] These models have variables (dependent and independent) divided by the number of outstanding shares to mitigate the scale effect.

[11] According to the clean-surplus relation, all changes in equity, different from transactions with owners (e.g., share repurchase, dividends), are recorded in the income statement. On the contrary, the dirty-surplus relationship occurs when some changes in equity are recorded in the book value reserves.

According to our research protocol, our first research hypothesis is validated if, using equation (1), all of the regression coefficients of financial assets and liabilities are value relevant; that is, they are statistically significant at 5% (VAN CAUWENBERGE and DE BEELDE, 2007). If so, the IAS 39 categories are relevant and so useful for investors' strategy. For our second research hypothesis, we test whether the regression coefficients of our model are statistically equivalent to the theoretical value of ±1, in accordance with the theoretical framework of the Ohlson (1995) model. In this regard, using a test statistic (e.g., t-test), our hypothesis is validated whether:

a) for financial assets (liabilities) measured at fair value, we cannot reject the null hypothesis that coefficients are equivalent to +1 (-1);

b) for financial assets (liabilities) measured at amortised cost, we cannot reject the null hypothesis that coefficients are equivalent to +1 (-1).

If so, the IAS 39 categories are reliable (SONG *et al.*, 2010).

In the last part of our research, to test the robustness of our findings, we perform two sensitivity analyses. In the first one, we use a price model with variables deflated by the market value at the reporting date, following the procedure of Easton and Sommers (2003) that uses a weighed least square (WLS) regression with weights equal to the square of the inverse of market capitalization instead of the ordinary least square (OLS) regression. In the second test, since firms with negative earnings could bias our research results (HAYN, 1995), we re-run our regression model, excluding from the sample the entities with negative comprehensive income.

4. Sample selection and descriptive statistics

To assess the value relevance of the different categories of financial assets and liabilities, we analyse a sample of IFRS-compliant financial intermediaries listed over the period of 2010-2013 in European countries in which entities are obliged to adopt the IASB standards in their consolidated accounts. Moving from an initial sample of 1136 firm-year observations (FYO) [e.g., equivalent to 284 entities [12]], after eliminating those with missing data due to the lack of the required information useful to test our hypotheses, the final sample is composed of 220 firm-year observations [e.g., equivalent to 55 entities].

Table 1 splits these entities into the European countries analysed.

Table 1. Geographical portrait of the FYO analysed

Countries	FYO	Countries	FYO
Austria	4	Netherland	8
Belgium	8	Portugal	12
Denmark	4	Spain	20
France	48	Sweden	12
Germany	12	U.K.	20
Greece	8		
Italy	64	Total	220

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[12] According to the Bankscope database, 284 financial intermediaries are listed over the period 2010-2013 in the 15 countries belonging to the EU at the time of issuance of Regulation 1606/2002, that obliged the adoption of IASB standards.

The table shows that a significant number of FYO are listed in Italy. This is due to the greater facility to collect data from the annual reports of the Italian financial entities. In fact, they provide data related to the single IAS 39 categories directly in the balance sheet, according to the requirements of the Circular 262 of 22 December 2005, "Banks' financial statements: layout and preparation". According to these requirements, the Italian financial entities are obliged to disclose in the statements of their annual reports the items required by the Bank of Italy that are more articulated in comparison with the ones of the IAS 1, applied by the financial entities listed in the other EU countries. Consequently, if researchers hand-collect data or download them from a database, the probability of missing data for the Italian financial entities is lower by far compared to the ones listed in the other European countries that generally disclose data related to the IAS 39 categories in notes. In our case, we collect data using the Bankscope database, which is commonly used in the finance and accounting fields of research (e.g., BISCHOF, 2009).

Table 2 tabulates the percentiles, the mean and the standard deviation of the market value of equity and of the accounting amounts used to assess the value relevance of the different categories of financial instruments.

Table 2 – Descriptive statistics

Th/€	Percentiles					Mean	Std. dev.
	5%	*25%*	*50%*	*75%*	*95%*		
MV_{it}	62040	649089	3239754	$1.34e^{+07}$	$4.01e^{+07}$	$1.15e^{+07}$	$2.17e^{+07}$
$HFTA_{it}$	5000	254700	2592971	$2.54e^{+07}$	$2.52e^{+08}$	$4.03e^{+07}$	$8.45e^{+07}$
$DERA_{it}$	0	125905	1468147	$1.58e^{+07}$	$2.71e^{+08}$	$4.64e^{+07}$	$1.30e^{+08}$
AFS_{it}	267235	1404723	8069994	$3.51e^{+07}$	$2.09e^{+08}$	$3.51e^{+07}$	$6.50e^{+07}$
HTM_{it}	0	17951	443950	3732650	$1.77e^{+07}$	3646609	6955207
REC_{it}	833770	$2.02e^{+07}$	$7.03e^{+07}$	$1.75e^{+08}$	$6.28e^{+08}$	$1.50e^{+08}$	$1.95e^{+08}$
$FVFL_{it}$	28800	406750	2950210	$3.95e^{+07}$	$4.59e^{+08}$	$6.94e^{+07}$	$1.58e^{+08}$
$HFTL_{it}$	381	29275	1379525	$2.14e^{+07}$	$1.21e^{+08}$	$2.32e^{+07}$	$5.34e^{+07}$
$DERL_{it}$	2878	137850	1738107	$1.70e^{+07}$	$2.72e^{+08}$	$4.63e^{+07}$	$1.28e^{+08}$
$LOANS_{it}$	2824093	$2.03e^{+07}$	$6.91e^{+07}$	$2.62e^{+08}$	$1.56e^{+09}$	$2.82e^{+08}$	$4.60e^{+08}$
$\overline{BV}_{it}$	$-3.92e^{+07}$	-494187	4269100	$5.41e^{+07}$	$6.92e^{+08}$	$9.33e^{+07}$	$2.37e^{+08}$
CI_{it}	-2825800	-28850	111200	1125650	5151000	534646	3412291

A general observation regards the high variability of data. This is suggested by both the high values of the standard deviations and the differences between the mean and median values of the single variables. This confirms our choice to test the robustness of our findings deflating all the variables by the market value at the reporting date, following the Easton and Sommers (2003) procedure.

Comparing the percentiles of the single categories of financial instruments identified by the IAS 39, the table shows that receivables and loans, measured at amortised cost, have values higher by far compared with the financial instruments measured at fair value. Through these findings, we can assume that most of the entities included in the sample

have a business model typical of commercial banks that, due to their core business, have a significant portion of their financial assets and liabilities measured at amortized cost and not so many financial instruments measured at fair value like investment banks. The limited number of Anglo-Saxon (investment) banks and the significant number of (commercial) financial intermediaries listed in Italy and France should explain the significant presence of financial instruments measured at amortised cost.

For comprehensive income, descriptive statistics show that, even though the mean is positive, at least 25% of the entities register negative earnings. This is why, in the second sensitivity analysis, we will control for the presence of financial intermediaries with negative earnings, re-running our regression model and considering only entities with positive comprehensive income. This allows us to verify whether, in the main analysis, a significant amount of reported losses could have biased the relationships between market values and accounting amounts.

5. Results

Table 3 tabulates our empirical findings achieved in the main analysis and in our robustness tests. In the first column of the table, we tabulate the regression coefficients and use asterisks to indicate their significance, estimated using equation (1) with the OLS.

Table 3 – Empirical findings (fiscal years 2010-2013)

	Equation (1)	Market value as deflator	Subsample with positive earnings
No FYO	220	220	150
Intercept	5709519**	5554125**	4981588**
$HFTA_{it}$	1.14***	1.16***	1.01***
H_0: $\alpha_1 = 1$	*Accept*	*Accept*	*Accept*
$DERA_{it}$	1.12***	1.15***	1.74***
H_0: $\alpha_2 = 1$	*Accept*	*Accept*	*Accept*
AFS_{it}	1.02***	1.03***	0.91***
H_0: $\alpha_3 = 1$	*Accept*	*Accept*	*Accept*
HTM_{it}	0.74***	0.75***	0.89***
H_0: $\alpha_4 = 1$	*Accept*	*Accept*	*Accept*
REC_{it}	0.97***	0.98***	0.90***
H_0: $\alpha_5 = 1$	*Accept*	*Accept*	*Accept*
$HFTL_{it}$	-1.25***	-1.27***	-1.10***
H_0: $\alpha_6 = -1$	*Accept*	*Accept*	*Accept*
$DERL_{it}$	-1.27***	-1.31***	-1.88***
H_0: $\alpha_7 = -1$	*Accept*	*Accept*	*Accept*
$LOANS_{it}$	-0.99***	-1.01***	-0.93***
H_0: $\alpha_8 = -1$	*Accept*	*Accept*	*Accept*
$\overline{BV}_{it}$	1.04***	1.05***	0.98***
H_0: $\alpha_9 = 1$	*Accept*	*Accept*	*Accept*
CI_{it}	0.59***	0.59***	1.88***

(***) Values statistically significant at 1%; (**) Values statistically significant at 5%

Running equation (1), findings validate our first research hypothesis. Actually, all the accounting amounts are relevant, being all the regression coefficients of financial assets and liabilities statistically significant at the 1% level (p-value<1%). This suggests that, despite the complaint that IAS 39 was difficult to understand, apply and interpret [IFRS 9, IN 2], investors consider accounting amounts disclosed by entities that comply with its requirements to be useful for investors' decisions. This is true both for categories measured at fair value and at amortised cost.

The table tabulates also the results of our test statistics used to verify whether the single components of book value (e.g., financial assets and liabilities) are reliable. Because we cannot reject the null hypothesis that the regression coefficients are equal to the theoretical value of ±1, our second research hypothesis is also validated. This suggests that investors other than considering the IAS 39 categories to be useful have no reliability concerns of accounting amounts.

The table provides also findings that go beyond our research hypotheses that regard the major value relevance of financial instruments measured at fair value rather than at amortised cost. Using the regression coefficients as measures of value relevance (VAN CAUWENBERGE and DE BEELDE, 2007), we found that the held-for-trading assets (regression coefficient equal to 1.14) are more value relevant than the derivatives (1.12) that in turn are more value relevant than the AFS securities (1.02) [13]. The above-mentioned IAS 39 financial assets categories measured at fair value are more value relevant than the financial assets measured at amortised cost, being the regression coefficients of the former higher and statistically different from those of the latter. In fact, the regression coefficients of the financial instruments held to maturity and of receivables are 0.74 and 0.97, respectively.

For financial liabilities, our findings suggest that those measured at fair value are more value relevant than financial liabilities measured at amortised cost. In fact, both the regression coefficients of held for trading (-1.25) and derivatives (-1.27) are higher, in absolute value, and statistically different from the regression coefficient of loans (-0.99).

All of these findings suggest that investors place significant weight on accounting amounts and particularly on financial assets and liabilities measured at fair value. In particular, the trading assets and liabilities are those that, more than others, help them in their investment strategies. This is probably due to the presence of financial instruments whose fair value has been estimated by using observable inputs rather than empirical models whose use increases the probability to make intentional or unintentional mistakes in fair value estimates.

In the last two columns of Table 3, upon adopting equation (1), we provide evidence that our research hypotheses continue to be validated also in our robustness tests. Actually, deflating all the regression parameters by the market capitalization at the reporting date and re-running regression over the sample of entities with positive earnings, we find that all of the financial instruments categories are relevant and reliable.

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[13] The lower value relevance of AFS securities is probably due to the presence within this category of strategic investments, that is, financial instruments that, if not traded in active markets, could be measured at historical cost, according to IAS 39. In other words, the presence in this category of financial instruments that could be measured at cost could impair both the relevance and reliability of accounting amounts classified in this category. In the new accounting standard of financial instruments (IFRS 9), for equity instruments that are in scope of IFRS 9, there will be no "cost exception" for unquoted equities, like in IAS 39.

6. Concluding remarks

In July 2014, the IASB completed reform of financial instruments issuing a new accounting standard, the IFRS 9, which will replace IAS 39 for periods beginning on or after 1 January 2018. Many users of financial statements told the IASB that the requirements in IAS 39 were difficult to understand, apply and interpret [IFRS 9, IN2]. This assertion motivated us to conduct a value relevance study in order to verify whether the single IAS 39 categories are relevant and reliable. This issue is substantially novel in the literature, as the scholars who investigated the value relevance of financial instruments have addressed research questions mainly on value relevance comparisons between fair value and historical/amortized cost or have compared the value relevance of the different levels of fair value hierarchy.

The contribution of our research starts by demonstrating the validity of two hypotheses that regard the relevance and reliability of IAS 39 categories. Our findings allow us to conclude our study with a question that opens the debate and that could motivate future research on these topics. In light of the first concerns against the complexity of IFRS 9, the question is whether IFRS 9 will really be better compared to IAS 39 regarding the classification and measurement of financial instruments and their effects on the relevance and reliability of accounting amounts.

As far as we are concerned, our findings contribute to the literature and have implications for standard setters. However, the study has limitations that provide opportunities for additional research. The first is related to the difficulties in testing separately the relevance and the reliability of accounting amounts also found by authoritative scholars (e.g., BARTH *et al.*, 2001). While for relevance we use the price model, commonly adopted in the accounting literature, for reliability we follow Song *et al.* (2010), who tested the reliability of fair value estimates and whether the regression coefficients of a price model are statistically different from the theoretical value of ±1. Second, our research does not operate controls on the quality of corporate governance of the financial institutions. Future development could assess the impact of corporate governance mechanisms on the transparency of financial reporting data that several scholars (ENG and MAK, 2003; ELSHANDIDY and NERI, 2015) have shown to be strictly related. Last but not least, limitations of the research are the sample composition and the number of observations in which it was possible to carry out the empirical investigation. The expectation of achieving reliable results, to maximise the power of our test, forces us to restrict the analysis only to the observations that offer all of the required data to test our research hypotheses. The need to eliminate missing data has determined the composition of a sample in which some nations (for example, Italy) have been over represented because of its ready availability of data. The circumstance mentioned above is, in our view, a stimulus for future surveys, which, relying on greater availability of observations, will test our research hypotheses again.

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