Is IFRS 9 better than IAS 39 for investors' decisions? Evidence from the European context at the beginning of the transition year

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Abstract

The first-time adoption of International Financial Reporting Standard (IFRS) 9 at the beginning of fiscal year 2018 has offered the opportunity to test whether the information provided by this new accounting standard on financial instruments is more useful for investors than International Accounting Standard (IAS) 39. This paper assesses and compares the value relevance of book value calculated according to the requirements of the two accounting standards on financial instruments at the beginning of the transition year for a sample of 110 financial entities listed in 20 stock markets that have recorded transition effects between retained earnings. Findings provide evidence that both IAS 39 and IFRS 9 are value relevant and that the second one adds more information than that previously supplied by the first one. The paper contributes to the literature by providing the first evidence of the usefulness of the new accounting standard on financial instruments. About its practical implications, the paper provides insights regarding the high quality of the International Accounting Standard Board (IASB)'s standard setting process.

Keywords: IFRS 9, IAS 39, value relevance, European Union, financial entities.

JEL: M40

First submission: 24 July 2019, accepted: 23 January 2020

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DOI: 10.3280/FR2020-001004

1. Introduction

In July 2014, the IASB completed its reform of financial instruments, issuing the new accounting standard IFRS 9, which has become mandatorily effective for periods beginning on or after 1st January 2018, replacing the rules of IAS 39.

This paper is involved in the value relevance field of study in the mainstream of accounting quality. While accounting quality might be operationalised investigating value relevance, earnings management and conservatism (Barth et al., 2008), value relevance is only a dimension of accounting quality whose studies analyse the association between accounting amounts and a measure of the value of the company, often synthesised by stock market prices. Miller and Modigliani (1966) could be considered one of the first surveys to investigate the existence of statistically significant association between book value and equity market value, conducted more than 50 years ago.

This study aims at answering the following research question: is IFRS 9 better for investors' decisions than the old IAS 39?

Although value relevance is a mature field of study, to the best of our knowledge, there are not papers that have yet answered this research question regarding the incremental value relevance of IFRS 9 with respect to IAS 39. The first-time adoption of IFRS 9 in the European Union (EU) is an opportunity to assess and compare the value relevance of the two accounting standards. To do so, this paper uses a price model (Ohlson, 1995) with a focus on the value relevance of the book value of equity calculated according to the requirements of different accounting standards on financial instruments.

The analysis of the literature allows hypothesising that both accounting standards on financial instruments are value relevant even if the new standard is effectively better than the old one.

By analysing 110 European financial entities that have recorded the transition effects directly in retained earnings, the findings of this study provide a significant contribution to the literature and have at least two key implications for the practice.

First, the value relevance of accounting amounts estimated according to the rules of the two accounting standards on financial instruments provides insight about the quality of the standard setting process. Thanks to the effort of the IASB to issue high-quality accounting standards, we guess that its documents not only represent a benchmark for the other standard setters but also accelerate the global accounting convergence and the potential adoption of IAS/IFRS (Krishnan and Zhang, 2019) all over the world.

Second, findings offer a first evidence about the major value relevance of accounting amounts estimated in compliance with the new accounting standard on financial instruments with respect to those estimated according to the requirements of the old principle. In particular, the result that IFRS 9 is more value relevant than IAS 39 supports reasons that led the IASB to start the replacement process.

Following the introduction, the next section reviews the literature and provides arguments that support the research hypotheses. Then, the paper describes the methodology, the sample selection strategy, descriptive statistics and the results. The last section concludes the paper, along with the study's limitations and possible future developments.

2. Literature review and hypothesis development

IFRS 9 has replaced IAS 39 as of the beginning of fiscal-year 2018. Few papers (if any) have assessed the value relevance of these accounting standards on financial instruments and have compared the usefulness of their information provided for investors' decisions.

Regarding value relevance comparison, the analysis of the literature on both the quality of IAS/IFRS and the familiarity with GAAP allows hypothesising that IAS 39 and IFRS 9 should be value relevant.

As to the quality of accounting standards, IAS/IFRS represent a single set of high-quality, globally accepted accounting principles that have the potential to significantly improve financial reporting comparability among companies on a worldwide basis (Jacob and Madu, 2009). In addition, IAS/IFRS allow using fair value, an accounting policy that provides useful information to investors for their choices. In this regard, previous authors have generally found the value relevance of fair value of financial instruments when they are traded in an active market (Ahmed and Takeda, 1995; Barth et al., 1996; Eccher et al., 1996; Nelson, 1996), with conflicting results in the case of an inexistence of prices from active markets (Barth et al., 1996; Eccher et al., 1996; Nelson, 1996) due to the different source of information used to estimate it (Mechelli et al., 2018). Indeed, all these features should be enough to guarantee the value relevance of accounting amounts estimated according to the requirements of international accounting standards.

Regarding IAS 39, about 15 years after its first-time adoption, at the beginning of the transition year to IFRS 9, we are confident that the familiarity of investors should have increased the value relevance of accounting amounts calculated in compliance with this standard. This is because in the literature

familiarity is considered a knowledge-based variable, which facilitates greater confidence in accountants and hence improves the quality of their judgments (Mala and Chand, 2015: 57). There are a lot of other examples regarding the positive effect that familiarity can have on value relevance judgements. Sami and Zhou (2004) find that the value relevance of accounting amounts increases (even if modestly) when domestic investors become familiar with the accounting information. Correspondingly, Liu and Liu (2007) expect 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 about the listed firms. Alali and Foote (2012) validate the expectation of Liu and Liu (2007). With specific reference to IAS 39's financial instruments, Sforza and Cimini (2015) find that all of the categories of financial instruments are relevant for investors' strategies, thanks to the ability of users to interpret the IASB standards or general familiarity with the use of such standards. This result is found in an analysis of 55 financial intermediaries listed in 12 EU countries over the period of 2010-2013, despite the fact that the requirements of IAS 39 were difficult to understand, apply and interpret [IFRS 9, IN 2].

Regarding IFRS 9, the 5 years delay of application with respect to its issuance allows hypothesising its value relevance. In this regard, literature suggests that the possibility to delay the application of a standard allows both preparers and users to familiarise themselves with its rules. This is demonstrated by Gan et al. (2016) with a case study on Malaysia, a country whose standard setter has imposed the IFRS but under different names. For instance, FRS139 is the accounting standard on financial instruments. The scholars consider it a complicated document, since its application has required changes to systems, processes, documentation and communication of results (Gan et al., 2016: 707). However, in their value relevance study, the scholars find that accounting amounts after the adoption of the Malaysian accounting standard on financial instruments are more value-relevant than in the previous period. According to the authors, the deferment of its introduction might be a factor that could explain the value relevance of accounting amounts in the extent to which it has increased the familiarity with this GAAP.

A further factor that might explain the value relevance of IFRS 9 for investors' decisions is the fact that the expected loss model reflects the economic value of the loan better than the incurred loss model of IAS 39 (Gebhardt and Novotny-Farkas, 2011).

All these arguments lead us to formulate a first research hypothesis regarding the value relevance of the two accounting standards on financial instruments as follows:

H_1: Accounting amounts calculated according to the requirements of IAS 39 and IFRS 9 are expected to be value relevant for investors' decisions.

To compare the value relevance of the standards on financial instruments, this paper focuses on the significant innovations of IFRS 9 rules with respect to those contained in IAS 39. Such innovations regard the classification and measurement of financial instruments and the impairment of financial assets. The new rules on hedge accounting should have produced no differences in terms of value relevance. Indeed, even if IFRS 9 introduces revised hedge accounting requirements, it includes an accounting policy option to continue hedge accounting under the requirements of IAS 39 until such time as the IASB's overall hedge accounting strategy is complete. Empirical evidence shows that almost all the European financial entities have elected to apply IFRS 9 hedge accounting at a later date (Cimini, 2019). This is why, at the beginning of the transition year (i.e., 2018), adjustments of book value of equity for hedging rules are expected to be null in the very large majority of the transition reports.

As to classification and measurement, IFRS 9 has introduced a double process for the classification of financial assets based on the business model assessment and on the cash flow characteristics. In detail, financial assets within a 'hold to collect' business model should be classified and subsequently measured at amortised cost if the contractual terms of the financial asset give rise to cash flows which are consistent with that of 'solely payments of principal and interest' (SPPI). Those that belong to a 'hold to collect and sell' business model should be classified at fair value through other comprehensive income (FVOCI) if the contractual terms of the financial asset give rise to cash flows which are consistent with that of SPPI. Financial assets that cannot be classified in such categories belong to a third residual portfolio of instruments at fair value through profit or loss (FVTPL). For financial liabilities, IFRS 9 confirms that the amortised cost is the elective accounting policy but allows, in specific cases, the possibility to measure them at FVTPL. Finally, the new accounting standard confirms the option to classify financial assets and liabilities in the category FVTPL under certain circumstances (e.g., fair value option), but also adds the possibility to classify non-trading strategic investments in the FVOCI category (e.g., OCI option) eliminating for them the possibility to be measured at cost.

According to the requirement summarised above, it is possible to conclude that the introduction of IFRS 9 has reduced the subjectivity behind classification and measurement of financial instruments. This is because the "management intent" used to classify financial instruments under the IAS 39

rules has been replaced by the analysis of both the business model of the entity and the contractual characteristics of the instruments. Despite some scholars argue that business model and management intent capture the same idea (Leisenring et al., 2012), the new IFRS 9 criteria allow by far less discretion in the classification and measurement of the instruments than the IAS 39 "management intent". Taking into consideration that discretion reduces reliability and, thus, attenuates value relevance (Barth et al., 2001), our expectation is to find IFRS 9 more useful for investors' decisions. For instance, this is because the new standard avoids that managers exploit the subjectivity to classify the instruments in the portfolio to which is associated the accounting policy (i.e., fair value, amortised cost or cost) that better fits with their earnings, book value and/or, in financial entities, regulatory capital targets (Elnahass et al., 2018). So, while management intent was criticised as a quite vague rule, where no evidence of intent is disclosed in the footnotes, business model introduced by the IFRS 9 presents more formal criteria for classification (Knežević et al., 2015).

Regarding impairment, according to the IASB's chairman, its rules constitute the biggest change resulting from the replacement process, particularly in banks (Hoogervorst, 2016). The IFRS 9 has replaced the incurred loss model of IAS 39 with the expected credit loss (ECL) model. The assessment of loss allowance is for all financial assets held at either amortised cost or FVOCI. Entities have to calculate either a 12-month expected credit loss allowance where the financial asset has not experienced a significant increase in credit risk since the initial recognition or a lifetime ECL calculation when a significant increase of the credit risk has been observed.

By analysing the literature, it is very difficult to predict the impact the new expected loss model has had on the value relevance of accounting amounts. In this regard, the debate is open around the usefulness of the two impairment models for investors' decisions.

On the one hand, according to Gebhardt and Novotny-Farkas (2011) the expected loss model provides more useful information with respect to the incurred loss model. To demonstrate this, the scholars assume the economic value of the loan calculated by using fair value accounting to be a benchmark in terms of information useful for investors' decisions. Under this regime, not only the change of probability of default (PD) and loss given default (LGD) but also gains and losses due to changes in the market interest rate are recognised in income. Compared with this benchmark, while the expected credit loss changes of PD and LGD are recognised in income, an incurred loss approach only requires the recognition of the subset of expected credit losses for which a credit event has already occurred as of the balance sheet date

(Gebhardt and Novotny-Farkas (2011: 296). Therefore, despite both the models differ with respect to the benchmark, the expected loss model is the one that looks more like it, since it reflects the economic value of the loan better than the incurred loss model. This is for the inner properties of the model that contributes to increase its usefulness for investors' decisions. In this regard, according to Barth and Landsman (2010), the implementation of an expected credit loss model might mitigate the effects of delayed recognition of losses associated with the incurred loss model. Actually, the incurred loss model adopted by IAS 39 produces delayed recognition of losses and does not allow for the writing up of loans, depriving the markets of timely information regarding the value of bank assets (Barth and Landsman, 2010: 415). In the same vein, Gebhardt and Novotny-Farkas (2011) state that the incurred loss approach results in less timely loan loss recognition implying delayed recognition of future expected losses. Finally, by analysing a sample of Korean banks, Kim and Yoon (2019: 161) claim that the use of the incurred loss model creates a concern that IFRS-based income may not be as informative as it could be, that is, not optimally value-relevant. The same scholars argue that the incurred loss model used to estimate loan losses under IFRS is incompatible with the expected loss model used to assess capital adequacy ratios for banks under Basel Committee standards and would likely result in recognition of fewer loan-losses. This is especially true for European financial entities subject to IAS 39 rules due to the absence in the financial statement notes of a mandatory report that reconciles loan-loss accounting between IFRS and Supervisory Regulations on Banking Business. As far we are concerned, the introduction of IFRS 9 has reduced the differences between loan loss provisions calculated according to the requirements of IFRS and the international regulations on capital adequacy and, in turn, has increased the usefulness of accounting amounts for investors strategies. This is because investors can find in annual reports credit loss allowance by far more similar to those calculated according to the harmonised reporting framework for banks and investment firms throughout the European Union. As of 1st January 2018, the similarity of rules and of accounting amounts should make the supervision activity exercised by the European Banking Authority simpler and probably more effective than in prior periods. Indeed, this might increase the confidence of investors toward the credit loss allowance calculated according to the requirements of IFRS 9 compared to those assessed according to the IAS 39 rules.

On the other hand, there are arguments in favour of the thesis that the impairment rules of IFRS 9 might make it less value relevant than IAS 39. The complexity of the impairment model as well as the risk of opportunistic behaviour might undermine the positive effect of this model on accounting

quality and, in particular, on value relevance. About complexity, in a principal-based set of accounting standards such as the IAS/IFRS, it is a serious problem that might negatively affect investors' judgements due to the lack of clarity of the evaluation criteria or the significant amount of information to be evaluated (Bonner and Walker, 1994). IFRS 9 and IAS 39 are accounting standards on financial instruments that Gumb et al. (2018) consider complicated principles. The particular complexity of the impairment expected credit loss model is due to the absence of specific guidelines about expected loss estimates. About opportunistic behaviour, management can exercise more discretion when measuring impairment losses (Gebhardt, 2016) under the IFRS 9 than under the IAS 39 incurred loss model, mainly due to the different horizon expected losses have to be calculated. For instance, apart from non-performing loans classified into the third stage, management has incentive to limit classifications or transitions of financial assets into the second stage from the first one to avoid the estimation of losses over the life of the loan. By hiding the change of the credit risk associated with a specific financial asset, they prefer the classification in the first stage, where losses are calculated over a horizon of 12 months. Indeed, the decision of the IASB to avoid a full lifetime expected credit loss model like the one adopted by the FASB has increased the risk in the EU context of opportunistic behaviour of managers that might hide significant deterioration in credit risk to avoid lifetime expected losses. In addition, in case of exposure's classification in the second or in the third stage, there is a risk of both voluntary and involuntary mistakes in the estimation of parameters useful to calculate loss allowances. Fortunately, the negative effect of possible earnings management behaviour behind the expected credit loss estimates should be diminished in listed financial entities whose annual reports are audited by independent external auditors and whose activities are under the surveillance of both national and international authorities.

In the accounting field, there are also other studies that allow strengthening the arguments in favour of the hypothesis that IFRS 9 is better than IAS 39. For instance, findings of Onali and Ginesti (2014) might be useful to predict a major value relevance of IFRS 9 with respect to IAS 39. With a focus on 13 announcement dates related to IFRS 9 for more than 5,400 European listed firms, Onali and Ginesti (2014) have found an overall positive reaction to the introduction of IFRS 9, suggesting that investors perceive the new regulation as shareholder-wealth enhancing and support the view that stronger comparability across accounting standards of European firms is beneficial to international investors and outweighs the costs of poorer firm-specific information. The positive reactions of investors provide evidence of an

interest toward IFRS 9 respect to the accounting standard in effect at the time of the different announcements.

Reflections above mentioned allow hypothesising that accounting amounts calculated according to the requirements of IFRS 9 are more value relevant than the same calculated according to the IAS 39 rules even if there are opposite forces that affect the weigh placed by investors on accounting amounts. Thus, our second hypothesis is as follows:

H_2: *Accounting amounts assessed according to the requirement of IFRS 9 should be more value relevant than those calculated according to the IAS 39 rules.*

3. Research design

To test the hypotheses, value relevance has been assessed by using a modified version of the price model (Ohlson, 1995). In the original formulation of the price model, firm's value is a function of book value of equity adjusted by the present value of abnormal earnings. The modified version of the model is based on the association between a market variable (e.g., market value, price-per-share) that is a proxy of firm's value and accounting figures like book value and a measure of earnings. The specification has been largely used by researcher. In fact, a long list of studies in the value relevance genre looks at the association of prices with book value and earnings (Lo and Lys, 2000). With respect to the original one, it proposes a formulation with firm value that is a function of accounting variables available in the annual reports of firms (Mechelli, 2013).

The following models allow for assessing and comparing the value relevance of the book value of equity, calculated complying with the IFRS 9 and IAS 39 rules at the beginning of the transition year:

$$P_i = \alpha_0 + \alpha_1 BV_{IAS39i} + \alpha_2 NI_i + \varepsilon \quad (1)$$

$$P_i = \beta_0 + \beta_1 BV_{IFRS9i} + \beta_2 NI_{it} + \varepsilon \quad (2)$$

where:

- P_i are the closing prices at the end of March 2018. The time lag with respect to January 1st 2018 is to fully reflect information contained in earnings and book values (Gregory et al., 2005);
- BV_{IAS39i} is the book value per share calculated by firm *i* on January 1st 2018 according to the IAS 39 requirements;

- BV_{IFRS9i} is the book value per share calculated by firm *i* on January 1st 2018 according to the IFRS 9 requirements;
- NI_{it} is net income per share calculated at the end of fiscal-year 2017 that is the same to the one reported by firm *i* on January 1st 2018;
- ε is the error term.

The models have variables deflated by the number of outstanding shares to overcome biases to regression estimates as a result of the scale effect (Barth and Clinch, 2009). Due to possible heteroskedasticity, the t-statistics of the regression coefficients of our models have been adjusted employing robust standard deviations (White, 1980).

The accounting literature has previously used statistically significant regression coefficients (e.g., Song et al., 2010), t-statistics (e.g., Kousenidis et al., 2009) and R^2 (Biddle and Choi, 2006; Dhaliwal et al., 1999; Goncharov and Hodgson, 2011; Kanagaretnam et al., 2009) as measures of value relevance of accounting amounts. Therefore, to validate our first research hypothesis, our expectation is to find both the regression coefficients α_1 and β_1 statistically significant. To test the second hypothesis that the new standard is better than the old one for investors' decisions, we have compared the regression coefficients, t-statistics and R^2 of equations (1) and (2) estimated by using ordinary least squares (OLS). Regression parameters of equation (2) are expected to be higher than those of equation (1).

As additional test, we also run the following equation to verify if IFRS 9 is better than the old IAS 39:

$$P_i = \delta_0 + \delta_1 BV_{IAS39i} + \delta_2 NI_i + \delta_3 DELTABV_i + \varepsilon \quad (3)$$

where the variable $DELTABV_i$ is the difference between book value estimated according to the requirements of IFRS 9 and IAS 39.

Equation (3) is useful to investigate how investors price the difference between shareholders' equity calculated according to IAS 39 and the new IFRS 9 on financial instruments. Our expectation is to find the regression coefficient of $DELTABV_i$ positive and statistically significant. This should suggest that investors find useful for their economic decisions the difference between book value of equity calculated according to the requirements of the two accounting standards on financial instruments.

To test the robustness of our findings, as robustness checks, we did four different controls.

Due to our sample composition (i.e., financial entities listed in 20 EU countries), the first three sensitivities test if country effects drive or bias our findings. In the first test, we add to equations 1-3 a vector of dummy variables that control for country effects. In the second one, we re-run equations 1-3 over the subsample of EU 15 in order to show whether the presence in the sample of firms listed in countries that have not joined the EU after the introduction of IASB standards biases research results. This test is due to findings of Fiechter and Novotny-Farkas (2011) that indicate investors place higher discounts on fair values of banks from non-EU 15. Financial entities of Bulgaria, Cyprus, Czech Republic, Hungary, Malta and Poland have been excluded from this test. The third test controls for country characteristics following the classification of Nobes (2008) that distinguishes weak-equity, government driven and tax-dominated countries (i.e., those analysed in this paper are Austria, Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Poland, Portugal, Spain and Sweden) from strong equity and commercially driven countries. The cluster of strong equity and commercially driven countries (Denmark, Great Britain, Ireland, Malta and The Netherland) was not considered, because the low number of observations (i.e., 28 financial entities) risks to bias research findings. Therefore, regression parameters of equations 1-3 have been re-estimated only for weak-equity countries.

In the fourth test, we have re-estimated our equations using comprehensive income instead of net income. This is coherent with one of the assumptions of the price model (Ohlson, 1995) that is the clean surplus relation. The choice to use net income in place of comprehensive income in the main analysis overcomes the problem of a reduction of the sample size due to the difficulties to find in the IFRS 9 transition reports comprehensive income at the beginning of 2018. Indeed, because a portion of the FTA reserve is incorporated in accumulated OCI, comprehensive income at the beginning of 2018 might be different from the one at the end of the prior period. However, to avoid a reduction of the sample size, in this last test we have assumed that comprehensive income reported at the end of fiscal-year 2017 is equal to the one reported at the beginning of 2018.

4. Sample selection and descriptive statistics

Financial entities are firms with a significant proportion of financial assets and liabilities in their annual reports. For this reason, to test the hypotheses, we have focused on financial entities and we have hand-collected data

from their consolidated accounts. According to the Orbis Bank Focus database, the number of financial entities listed in EU 28 is 288. After the exclusion of 55 entities that did not consolidate their accounts at the end of the fiscal-year 2018, 14 entities that have not adopted IAS/IFRS, 12 entities not reporting on December 31st (Tsalavoutas et al., 2012) and 97 entities with missing data, our final sample numbers 110 financial entities. All the entities analysed have not elected to restate comparative periods and have recorded the transitional effects in the opened retained earnings.

Table 1 summarises the sample selection strategy (panel a) and presents the distribution of entities by country (panel b). The table shows that, despite our initial intent to study 28 EU countries, our study focuses on financial institutions listed on the stock markets of 20 EU countries because of several exclusions due to missing data.

Table 1 – Sample selection strategy and geographical distribution of the entities analysed

Panel a) Sample selection strategy	No. of financial entities
Active listed banks from Orbis Bank Focus in EU 28	288
Banks with consolidated accounts	233
Banks that adopted IAS/IFRS	219
Banks that reports on December 31st	207
Final sample with no missing data	110

Panel b) Geographical distribution of the entities analysed

Countries	No. of banks	Countries	No. of banks	Countries	No. of banks
Austria	5	France	4	Poland	5
Belgium	3	Germany	9	Portugal	1
Bulgaria	2	Greece	4	Spain	5
Cyprus	1	Hungary	2	Sweden	4
Czech rep.	1	Ireland	1	The Netherlands	5
Denmark	6	Italy	25	U.K.	24
Finland	1	Malta	2		

In panel a), the table describes the sample selection strategy. Moving from an initial sample of 288 financial entities listed in EU 28, after eliminations, the final sample numbers 110 entities. In panel b), the table describes the geographical distribution of the financial entities analysed, splitting them into the European countries that belong to the EU 28. The problem of missing data leads us to focus on financial entities listed in 20 countries.

The financial information (stock prices and number of outstanding shares) has been downloaded from the Orbis Bank Focus database. Accounting figures have been hand-collected from the interim reports, in the 2018 annual reports or, when available, in a separated document dedicated to the transition to IFRS 9 available on the company web sites.

Table 2 provides in panel a) some descriptive statistics and in panel b) the correlation coefficients of variables used to run our regression models.

Table 2 – Descriptive statistics and correlation coefficients

Panel a)	Percentiles							Mean
	5%	10%	25%	50%	75%	90%	95%	
P_i	0.49	1.00	2.57	7.65	20.07	38.88	61.10	15.42
BV_{IAS39i}	0.78	1.40	3.69	7.64	21.56	46.29	77.99	19.90
BV_{IFRS9i}	0.61	1.27	3.38	6.93	21.24	43.82	77.99	18.46
$DELTABV_i$	-2.39	-1.27	-0.35	-0.01	0.00	0.00	0.01	-1.44
NI_i	-0.31	0.00	0.13	0.59	1.75	3.60	6.20	0.20

Panel b)	P_i	BV_{IAS39i}	BV_{IFRS9i}	$DELTABV_i$	NI_i
P_i	1.00				
BV_{IAS39i}	0.33***	1.00			
BV_{IFRS9i}	0.35***	+0.99***	1.00		
$DELTABV_i$	-0.06	-0.61***	-0.47***	1.00	
NI_i	0.19**	-0.70***	-0.70***	+0.35***	1.00

Panel a) tabulates the percentiles and the mean of variables used to run equations 1-3. Panel b) shows the linear correlation coefficients and the level of significance that test the hypothesis that they are equal to zero. (***) denotes that the hypothesis is rejected at 1%, (**) at 5% and (*) at 10% level of significance. Variable definitions: P_i are the closing prices per-share three months after the end of the fiscal-year 2017; BV_{IAS39i} is book value per-share calculated by firm i on January 1st 2018 according to the IAS 39 requirements; BV_{IFRS9i} is book value per-share calculated by firm i on January 1st 2018 according to the IFRS 9 requirements; $DELTABV_i$ is the difference between book value estimated according to the requirements of IFRS 9 and IAS 39; NI_i is net income per-share.

Regarding panel a), comparing the book value of equity calculated according to the different accounting standard requirements, we can observe that shareholders' equity calculated according to the requirements of IFRS 9 is lower than that calculated according to the requirements of IAS 39. This explains why the variable $DELTABV_i$ is negative up to 75th percentile. Over the 75th percentile, the variable assumes positive values. The choice to scale them for the number of outstanding shares as well as the choice to round them to the second decimal place make some values of Table 2 equal to zero. The analysis of the documents used to collect data suggests that the negative signs are due to the effect, when available and in case banks have detailed it separately with respect to other transitional effects, of the introduction of the new impairment model based on expected losses. With respect to the incurred loss model, the one based on expected losses has led banks to account significant credit loss allowances. The effect produced by the new rules on classification and measurement is not so significant with respect to the one

due to the new impairment model. Also, the weight of the new hedging requirement is almost null, because the large majority of financial entities has decided to continue applying IAS 39 hedge accounting rules.

About the correlation coefficients tabulated in panel b), results suggest that variables that figure in equations (1) and (2) are correlated so much with a risk of bias of regression parameters due to multicollinearity. The low values of the variance inflation factor (VIF) reported in the tables of findings will show that multicollinearity does not bias our research results.

5. Research results

The results tabulated in Table 3 validates our hypotheses that accounting standards on financial instruments are value relevant and that IFRS 9 is better than IAS 39 for investors' decisions.

Table 3 – Findings (main analysis)

Panel a)	EQUATION (1)			EQUATION (2)		
	Coefficients	*T-statistics*	*VIF*	*Coefficients*	*T-statistics*	*VIF*
BV_{IAS39i}	+0.45	+9.24***	+1.95	-	-	
BV_{IFRS9i}	-	-		+0.53	+10.33***	+1.98
NI_i	+1.41	+8.42***	+1.95	+1.49	+9.33***	+1.98
Intercept	+6.18	+3.62***		+5.26	+3.20***	
N° FYO	110			110		
R^2	46.48%			51.82%		
Adj. R^2	45.48%			50.92%		

Panel b)	EQUATION (3)		
	Coefficients	*T-statistics*	*VIF*
BV_{IAS39i}	+0.56	+10.25***	+2.75
NI_i	+1.48	+9.30***	+1.98
$DELTABV_i$	+0.84	+3.73***	+1.61
Intercept	+5.20	+3.18***	
N° FYO	110		
R^2	52.67%		
Adj. R^2	51.33%		

Panel a) tabulates the regression parameters (i.e., regression coefficients, t-statistics, VIF, number of FYO, R^2 and adjusted R^2) of equations (1) and (2) useful to compare the value relevance of IAS 39 and IFRS 9. Panel b) shows the same regression parameters for equation (3) useful to test if the new accounting standard adds significant information with respect to the old one. The meaning of the variables is the same of previous table. (***) denotes 1% level of significance.

Panel a) shows that investors consider value relevant information provided by both the accounting standard on financial instruments. With specific reference to IAS 39, this validates results of Sforza and Cimini (2015) according to whom the categories of the old accounting standard on financial instruments are value relevant. The same panel gives evidence that IFRS 9 is more value relevant than IAS 39. Actually, the regression coefficients, t-statistics and R^2 of equation (2) are higher than those of (1).

Panel b) supports the thesis that the new standard adds significant information with respect to the previous one. In fact, the regression coefficient of the variable *DELTABVi* is statistically significant at 1% level. In the same direction, the increase of the adjusted R^2 when we add this variable to equation (1) also indicates that there is statistical evidence that IFRS 9 adds useful information for investors' decisions to the information already provided by IAS 39. In presence of such an incremental significant information provided by IFRS 9 with respect to IAS 39, we can conclude that the quality of IFRS 9 is superior than the one of IAS 39. The result is similar to the one of Barth et al. (2014) that assessing and comparing the value relevance of adjustments at the time of IAS/IFRS first-time adoption in the early 2000s, with the limited exception of French and German firms, have found that net income calculated according to the requirements of IAS 39 provides incremental information with respect to the national GAAP. They have explained this finding claiming that the incremental information is found in contexts characterised by a significant difference between the quality of local GAAP and of IAS/IFRS. Our findings show that both IAS 39 and IFRS 9 are high quality accounting standards but IFRS 9 is superior with respect to IAS 39.

Results of sensitivity analyses tabulated in Tables 4, 5 and 6 provide evidence about the robustness of findings achieved in the main analysis.

Table 4 shows the regression parameters re-estimated after the addition to our value relevance models of dummies that control for country fixed effects.

Table 4 – Findings (first robustness test – country fixed effects)

Panel a)	EQUATION (1)			EQUATION (2)		
	Coefficients	*T-statistics*	*VIF*	*Coefficients*	*T-statistics*	*VIF*
BV_{IAS39i}	+0.36	+6.34***	+2.71	-	-	
BV_{IFRS9i}	-	-		+0.45	+7.05***	+3.01
NI_i	+1.10	+5.81***	+2.54	+1.24	+6.50***	+2.76
Intercept	+2.68	+0.18		+0.06	+0.99	
N° FYO	110			110		
R^2	56.73%			59.72%		
Adj. R^2	46.40%			50.11%		

Panel b)	EQUATION (3)		
	Coefficients	*T-statistics*	*VIF*
BV_{IAS39i}	+0.48	+6.84***	+4.58
NI_i	+1.26	+6.59***	+2.80
$DELTABV_i$	+0.73	+2.78***	+2.16
Intercept	-0.78	-0.06	
N° FYO	110		
R^2	60.26%		
Adj. R^2	50.22%		

Panel a) tabulates the regression parameters (i.e., regression coefficients, t-statistics, VIF, number of FYO, R^2 and adjusted R^2) of equations (1) and (2) useful to compare the value relevance of IAS 39 and IFRS 9. Panel b) shows the same regression parameters for equation (3) useful to test if the new accounting standard adds significant information with respect to the old one for investors' decisions. In this first robustness test, equations 1-3 include dummy variables that control for the country effects. The t-statistics of the regression coefficients have been adjusted employing robust standard deviations (White, 1980). The meaning of the variables is the same of previous tables. (***) denotes 1% level of significance.

Results validate our hypotheses. Both IFRS 9 and IAS 39 are value relevant. However, when comparing regression parameters of equations (1) and (2), the evidence seems to suggest a major value relevance of IFRS 9 with respect to IAS 39. Running equation (3), results confirm that the new standard adds significant information compared with the old one. Actually, the coefficient of the variable *DELTABVi* is statistically significant, and adjusted R^2 increases when moving from equation (1) to equation (3).

In Table 5, we consider 99 financial entities listed in the sub-sample of EU 15. Also in this case, results tabulated for this sub-sample of firms replicate those of the main analysis, validating our research hypotheses.

Table 5 – Findings (second robustness test – sub-sample of EU 15)

Panel a)	EQUATION (1)			EQUATION (2)		
	Coefficients	*T-statistics*	*VIF*	*Coefficients*	*T-statistics*	*VIF*
BV_{IAS39i}	+0.41	+8.28***	+2.06	-	-	
BV_{IFRS9i}	-	-		+0.49	+9.21***	+2.11
NI_i	+1.28	+7.69***	+2.06	+1.36	+8.49***	+2.11
Intercept	+6.64	+3.83***		+5.75	+3.43***	
N° FYO	99			99		
R^2	43.84%			48.86%		
Adj. R^2	42.67%			47.80%		

Panel b)	EQUATION (3)		
	Coefficients	*T-statistics*	*VIF*
BV_{IAS39i}	+0.51	+9.04***	+2.98
NI_i	+1.36	+8.48***	+2.11
$DELTABV_i$	+0.73	+3.27***	+1.66
Intercept	+5.69	+3.39***	
N° FYO	99		
R^2	49.52%		
Adj. R^2	47.93%		

Panel a) tabulates the regression parameters (i.e., regression coefficients, t-statistics, VIF, number of FYO, R^2 and adjusted R^2) of equations (1) and (2) useful to compare the value relevance of IAS 39 and IFRS 9. Panel b) shows the same regression parameters for equation (3) useful to test if the new accounting standard adds significant information with respect to the old one for investors' decisions. In this second robustness test, equations 1-3 have been ran over the sub-sample of EU 15. The meaning of the variables is the same of previous tables. (***) denotes 1% level of significance.

In the following test, we control for the kind of the accounting system. According to the classification of Nobes (2008), the EU countries can be classified into strong equity and commercially driven countries or into weak-equity, government driven and tax-dominated countries. Table 6 tabulates findings achieved by re-running our models over a sample of 72 firms listed in the weak-equity countries of our sample. Findings achieved in the full sample are also replicated in the sub-sample of weak-equity, government driven and tax-dominated countries.

Table 6 – Findings (third robustness test – sub-sample of weak-equity countries)

Panel a)	EQUATION (1)			EQUATION (2)		
	Coefficients	*T-statistics*	*VIF*	*Coefficients*	*T-statistics*	*VIF*
BV_{IAS39i}	+0.44	+7.15***	+2.09	-	-	
BV_{IFRS9i}	-	-		+0.54	+8.65***	+2.10
NI_i	+1.37	+6.68***	+2.09	+1.48	+7.92***	+2.10
Intercept	+6.44	+2.59**		+4.75	+2.06**	
N° FYO	72			72		
R^2	44.79%			53.89%		
Adj. R^2	43.19%			52.56%		

Panel b)	EQUATION (3)		
	Coefficients	*T-statistics*	*VIF*
BV_{IAS39i}	+0.71	+11.78***	+3.50
NI_i	+1.45	+9.26***	+2.10
$DELTABV_i$	+2.38	+7.13***	+2.25
Intercept	+3.16	+1.62	
N° FYO	+99		
R^2	+49.52%		
Adj. R^2	+47.93%		

Panel a) tabulates the regression parameters (i.e., regression coefficients, t-statistics, VIF, number of FYO, R^2 and adjusted R^2) of equations (1) and (2) useful to compare the value relevance of IAS 39 and IFRS 9. Panel b) shows the same regression parameters for equation (3) useful to test if the new accounting standard adds significant information with respect to the old one for investors' decisions. In this third robustness test, equations 1-3 have been ran over the sub-sample of weak-equity countries (Nobes, 2008). The meaning of the variables is the same of previous tables. (***) denotes 1% level of significance; (**) denotes 5% level of significance.

Results of the last test show that including comprehensive income in the price model in place of net income does not alter our conclusions on the value relevance of accounting standards on financial instruments. In other words, research findings are coherent not only under the dirty surplus relation (main analysis) but also under the clean surplus relation (fourth sensitivity).

Findings that validate our research hypotheses are tabulated in Table 7.

Table 7 – Findings (fourth robustness test – comprehensive income as measure of earnings)

Panel a)	EQUATION (1)			EQUATION (2)		
	Coefficients	*T-statistics*	*VIF*	*Coefficients*	*T-statistics*	*VIF*
BV_{IAS39i}	+0.47	+9.31***	+2.07	-	-	
BV_{IFRS9i}	-	-		+0.56	+10.44***	+2.10
CI_i	+1.40	+8.42***	+2.07	+1.49	+9.36***	+2.10
Intercept	+6.02	+3.51***		+5.06	+3.07***	
N° FYO	110			110		
R^2	46.45%			53.89%		
Adj. R^2	45.45%			52.56%		

Panel b)	EQUATION (3)		
	Coefficients	*T-statistics*	*VIF*
BV_{IAS39i}	+0.58	+10.36***	+2.89
CI_i	+1.48	+9.32***	+2.11
$DELTABV_i$	+0.85	+3.77***	+2.25
Intercept	+5.00	+3.05***	
N° FYO	+110		
R^2	+52.77%		
Adj. R^2	+51.43%		

Panel a) tabulates the regression parameters (i.e., regression coefficients, t-statistics, VIF, number of FYO, R^2 and adjusted R^2) of equations (1) and (2) useful to compare the value relevance of IAS 39 and IFRS 9. Panel b) shows the same regression parameters for equation (3) useful to test if the new accounting standard adds significant information with respect to the old one for investors' decisions. In this fourth robustness test, equations 1-3 have been ran complying with the clean surplus relationship that is an assumption of the price model (Ohlson, 1995). CI_i is the comprehensive income that is used in place of NI_i. The meaning of the variables is the same of previous tables. (***) denotes 1% level of significance.

6. Conclusions

The first-time adoption of IFRS 9 has offered an occasion to assess and compare the value relevance of book value of equity estimated according to the requirements of different accounting standards on financial instruments (IFRS 9 vs. IAS 39) at the beginning of the transition year. By analysing a sample of 110 financial entities listed on 20 stock markets of EU countries, this paper provides evidence that IFRS 9 adds useful information for investors' decisions to the information already provided by IAS 39. Even if IFRS 9 seems to be better than IAS 39, the value relevance of both the standards shown in this paper demonstrates also that they are high-quality documents. These results have been confirmed by the different robustness tests. In most of them we used different methods to control for the country effects to show

that such effects do not bias findings achieved in the main analysis. In fact, despite the entities analysed belong to the EU, they differ, for instance, in terms of accounting system or legal traditions.

Despite the research results add to the literature that has never investigated the value relevance of the new accounting standard on financial instruments, the paper suffers of at least three limitations.

The first one concerns issues related to the value relevance methodology. Despite value relevance is one of the most important areas of accounting studies on the capital market (Azzali, 2012) that in the last twenty years has been investigated with theoretical and empirical research (Fornaciari, 2013: 54), the validity of research results depends on the assumption behind the modified version of the price model. Barth et al. (2001) claim that such model assumes perfect capital markets and, in presence of linear information dynamics, firm value can be re-expressed as a linear function of equity book value, net income, and dividends.

The second one regards the difficulties to investigate the value relevance of the single items composing the difference between book value calculated according to the requirements of accounting standards on financial instruments. Assessing and comparing the value relevance of the single transition effects due to the classification and measurement, impairment and hedge accounting, as well as the fiscal effect, has not been possible because the information provided by banks is not homogeneous. For instance, some banks have presented the single items gross of tax effect and other net of the same effect.

The third one regards the possibility that, at the time of the first-time adoption of IFRS 9, the presence of voluntary or involuntary mistakes regarding the application of the rules contained in the new standard on financial instruments might negatively affect the reliability of our findings.

Future studies could test the influence of other factors on the value relevance of book value calculated according to the requirements of different accounting standards on financial instruments. For instance, scholars might investigate if the quality of firm-level corporate governance affects findings achieved in this value relevance study. If so, future study will demonstrate that the quality of the standard setting process is not the only factor affecting value relevance. Scholars might also investigate the association with other dimensions of accounting quality (e.g., accrual quality, earnings management, conservatism) that affect the usefulness of accounting amounts. A further development of the study regards the possibility to replicate the analysis

for samples constituted by non-financial entities. The analysis of non-financial entities does not guarantee the same results achieved in this paper for financial entities for the different nature of their core business.

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