Value Relevance of Accounting Information in the Pre- and Post-IFRS Accounting Periods

Dimitrios V. KOUSENIDIS[a], Anestis C. LADAS and

Christos I. NEGAKIS[b]

Abstract:

This paper examines the value relevance of accounting information in the pre- and post-periods of International Financial Reporting Standards implementation using the models of Easton and Harris (1991) and Feltham and Ohlson (1995) for a sample of Greek companies. The results of the paper indicate that the effects of the IFRS reduced the incremental information content of book values of equity for stock prices. However, earnings' incremental information content increased for the post-IFRS period. The results can be explained by the introduction of the fair value principle under the IFRS that brought major changes in book value but not in earnings.

1. Introduction

The implementation of the International Financial Reporting Standards (IFRS) has been probably one of the most important events in European accounting history. Under this serious undertaking, all member countries of the European Union (EU) simultaneously adapted a single accounting framework after 1.1.2005. The implementation of the new standards induced significant changes in the accounting practices of all member-states.

However, these changes are more serious in countries that had a code-law accounting system (Ball et al., 2000) before the implementation of the IFRS, where severe government and legalistic influences on the accounting systems existed. In contrast, in a common-law accounting system, which is a proper description of the IFRS, accounting is mainly affected by the market practitioners (Ball et al., 2000). Since the IFRS resemble the Anglo-Saxon accounting system (common-law), the adoption by member-states that had a code-law accounting system may be a fruitful investigation, regarding the superiority of the Anglo-Saxon system over the code-law accounting system (Schipper, 2005).

Greece is one of the member countries that had a code-law accounting framework, which was strongly affected by government influence and tax laws (Ballas, 1994). The Greek Accounting System (GAS) is mainly oriented in serving the rights of firm creditors. Accordingly, conservatism and historic cost principles

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[a] *Aristotle University of Thessaloniki, Greece*
[b] *University of Macedonia, Greece*

ensure that the firm value will not be higher than the "intrinsic" value. Therefore, under the GAS, the firm value reflected in the financial statements appears to be lower than or equal to the "intrinsic firm value" (Ntzanatos, 2008).

In contrast, the IFRS aim to provide financial statements that enhance the information available to the shareholders. Moreover, the conservatism principle is not mentioned in the basic principles of the IFRS, while in most cases (apart from the inventory valuation) the historic cost principle is substituted with the fair value principle (FVP). These changes may alter the valuation properties of accounting data reported in financial statements. The implementation of the FVP leads to firm values that are closer to the "intrinsic" values. The target is to provide investors with more value-relevant accounting data. This in turn implies that the accounting data reported under the IFRS will be more value-relevant than the accounting data reported under the GAS.

In order to examine the above implication, the present study employs a sample of Greek firms for the period 2003-2006, that is used as input for Easton and Harris's (1991) and Feltham and Ohlson's (1995) valuation models. The difference between the two models is that the first is a return model, while the second is a price model (Kothari and Zimmerman, 1995). The return model measures the mean annual information content of the returns of the explanatory variables for the return of the dependent variable. In contrast, the price model measures the mean annual information content of the explanatory variables for the dependent variable in levels. Kothari and Zimmerman (1995) argue that the price model may produce biased results, if the variables used follow a random walk. According to the efficient market hypothesis, stock prices follow a random walk if the market is efficient (Fama, 1970). Moreover, according to Kothari and Zimmerman, earnings may also follow a random walk. To avoid spurious relationships in the regression analysis, we deflate Feltham and Ohlson's (1995) model using the stock price at the end of the previous year as the deflating variable. Therefore, both models represent a return model specification, and any changes in the information content of the book values of equity and earnings in the post-IFRS period can be seen as incremental changes.

The aim of the present paper is to present some preliminary evidence for the information content of book values and earnings for the pre- and post-IFRS periods. The results of the paper indicate that the effects of the IFRS reduced the incremental information content of the book values of equity but not earnings for stock prices. This research outcome can be explained by the increased volatility in book values of equity that emerged as a result of the FVP implementation, which brought some major changes in the assessment of book values of equity and increased their volatility.

The remainder of the study is organized as follows. In Section 2, the valuation models used in this study are developed. Section 3 presents the data, and Section 4 describes the empirical results. Last, Section 5 concludes the paper and offers implications for future research.

2. The Valuation Models and the Research Hypotheses

2.1 The Easton and Harris (1991) Valuation Model

Easton and Harris's (1991) valuation model expresses stock returns as a function of earnings levels and earnings changes, with both variables deflated by the stock price at the end of the previous year. In statistical notation, the model is as follows:

$$\mathrm{Re}\,t_{i,t} = \alpha_0 + \alpha_1 \frac{NI_{i,t}}{\mathrm{Pr}\,i_{i,t-1}} + \alpha_2 \frac{\Delta NI_{i,t}}{\mathrm{Pr}\,i_{i,t-1}} + \varepsilon_{i,t} \tag{1}$$

where $Ret_{i,t}$ is the stock return of firm i at time t, measured three months after the fiscal year end (Easton and Harris, 1991), $\dfrac{NI_{i,t}}{\mathrm{Pr}\,i_{i,t-1}}$ the net income (NI) of firm i at time t, before taxes and extraordinary items ($NI_{i,t}$) divided by the number of common shares outstanding and deflated by the market price at the end of the previous year ($Pri_{,t-1}$) and $\dfrac{\Delta NI_{i,t}}{\mathrm{Pr}\,i_{i,t-1}}$ the change in the net income of firm i at time t, before taxes and extraordinary items ($\Delta NI_{i,t}$) divided by the number of common shares outstanding and deflated by the market price at the end of the previous year ($Pri_{,t-1}$). Last, $\varepsilon_{i,t}$ is an error term that follows a normal distribution with mean zero and standard deviation σ_ε.

The Easton and Harris model measures the information content of earnings levels and changes for stock returns and thus can be described as providing evidence on the differential relationship between earnings and prices. The model can be used to assess annual differences in the information content of the accounting variables between the pre- and post-IFRS periods. However, Easton (1999) provides some additional insights on the interpretation of the slope coefficients α_1 and α_2. Specifically, assuming that the clean surplus relation (CRS) holds, he argues that slope coefficient α_1 is a proxy for the statistical association between the stock price and the book values of equity per share. In addition, slope coefficient α_2 measures the statistical association between stock prices and earnings per share.

2.2 The Feltham and Ohlson (1995) Valuation Model

Feltham and Ohlson (1995) presented a valuation model that, in contrast to Easton and Harris's, explicitly relates the book values of equity and earnings with stock price. The idea behind the model is not new, since the first evidence appears in Preinreich (1938). However, Feltham and Ohlson provided a concrete theoretical analysis of the model. In statistical notation, the model is as follows:

$$\mathrm{Pr}\,i_{i,t} = \beta_0 + \beta_1 BVPS_{i,t} + \beta_2 EPS_{i,t} + \omega_{i,t} \tag{2}$$

where $Pri_{i,t}$ is the stock price of firm i at time t, $BVPS_{i,t}$ is the book value of equity of firm i at time t, divided by common shares outstanding, and $EPS_{i,t}$ is NI divided by common shares outstanding of firm i at time t. Last, $\omega_{i,t}$ is an error term with mean zero and standard deviation σ_ω.

The Feltham and Ohlson model measures the mean annual level of statistical association between book values of equity, earnings, and stock prices. The model can be used to assess the overall value relevance of the accounting variables between the pre- and post-IFRS periods. Also, according to Easton (1999), slope coefficient α_1 should be equal to slope coefficient β_1, and slope coefficient α_2 should be equal to slope coefficient β_2. However, to avoid spurious regression problems that may arise with the use of the variables in levels, equation (2) is estimated in a deflated form, using the stock price at the end of the previous year as the deflator. Thus, the Feltham and Ohlson model in this form can be seen as an alternative return model specification.

2.3 The Research Hypotheses

According to the aim of the IFRS, which is to provide quality information to investors, it is expected that the value relevance of both earnings and book values of equity will increase irrespective of the model used. Using the level of the adjusted R^2, as the measure of value relevance (Francis and Schipper, 1999), the following research hypothesis is formulated:

Hypothesis A_1: The incremental value relevance of earnings and book values of equity, as measured by the adjusted R^2 of the Easton and Harris (1991) and Feltham and Ohlson (1995) models, should be higher in the post-IFRS period than in the pre-IFRS period.

The second implication of the changes brought by the implementation of the IFRS is that the replacement of the historic cost principle with the fair value principle in valuation should lead to more value-relevant book values of equity, since now the book values of equity should reflect changes in firm value in a more timely fashion than in the pre-IFRS period. Measuring timeliness using the slope coefficient β_1 of the Feltham and Ohlson model, the second research hypothesis of the study is as follows:

Hypothesis A_2: The incremental information content of book values of equity, as measured by slope coefficient β_1 of the Feltham and Ohlson (1995) model, should be higher in the post-IFRS period.

3. The Dataset

The dataset employed in this study is drawn from the Profile Database and covers the period 2003-2006. We choose to use equal-length periods for the pre- and post-IFRS subsamples. Therefore, due to the limited number of data after the IFRS implementation (years 2005 and 2006), the entire dataset spans only 4 years. The final sample resulted after using 3 deletion filters. First, all firms falling in the

financial sector were deleted due to the different reporting approach. Second, all firms that were placed under supervision or suspension during the period of investigation by the Greek Capital Market Committee were also deleted. Last, following Easton and Harris (1991), the upper and lower 1.5% bounds of the variables were winsorized to avoid the effects of extreme observations. The final sample after the deletion procedure includes 159 firms listed on the Athens Stock Exchange with 497 firm-year observations.

The variables are defined as follows. $Pri_{i,t}$ is the stock price of firm i at time t, and $Ret_{i,t}$ is the stock return of firm i at time t. Both variables are measured three months after the fiscal year end following Easton and Harris (1991). $BVPS_{i,t}$ is the book value of equity of firm i at time t, divided by common shares outstanding, and $EPS_{i,t}$ is earnings before extraordinary items, divided by the common shares outstanding of firm i at time t. Both variables are deflated by the stock price at the end of the previous year ($OPri$). Last, $\Delta EPS/OPRI$ is the change in earnings before taxes and extraordinary items of firm i at time t, divided by the number of common shares outstanding and deflated by the stock price at the end of the previous year ($OPri$).

Table 1 presents descriptive statistics of the key variables. Panel A presents the results for the entire sample, while Panels B and C provide results for the pre- and post-IFRS periods sample. The first observation is that the magnitude of the book value of equity is higher in the post-IFRS period for both the mean and the median, which may be attributed to the introduction of the FVP. However, a t-test for the difference in the mean cannot reject the null hypothesis of the mean equality of book value in the two periods. In contrast, EPS seems to be reduced for the same period, which may be attributed to the increase of conditional conservatism for the post-IFRS period, and this reduction is significant using a t-test for the difference in means at the 5% level of significance. Last, an F-test for variance equality that is carried out using the variables in their undeflated form reveals that both variables have increased volatility in the post-IFRS period.

TABLE 1: Descriptive Statistics

Panel A: Entire Sample					
	Pri	Ret	BVP	EPS	ΔNI/OPRI
Mean	1.20	0.10	0.93	0.08	0.01
Median	1.10	0.10	0.78	0.08	0.01
Maximum	4.00	1.39	2.99	0.31	0.33
Minimum	0.29	-1.25	0.05	-0.42	-0.43
Std. Dev.	0.51	0.41	0.62	0.09	0.09

Panel B: Pre-IFRS Period

	Pri	Ret	BVPS	EPS	ΔNI/OPRI
Mean	1.13	0.02	0.91	0.08	0.03
Median	1.03	0.03	0.76	0.08	0.01
Maximum	3.26	1.18	2.99	0.31	0.33
Minimum	0.29	-1.25	0.05	-0.42	-0.20
Std. Dev.	0.54	0.47	0.61	0.08	0.07

Panel B: Post-IFRS Period

	Pri	Ret	BVPS	EPS	ΔNI/OPRI
Mean	1.26	0.17	0.94	0.07	0.00
Median	1.15	0.14	0.79	0.07	0.01
Maximum	4.00	1.39	2.96	0.27	0.26
Minimum	0.37	-1.00	0.05	-0.35	-0.43
Std. Dev.	0.47	0.33	0.63	0.10	0.10

Notes: The sample includes 159 firms listed in the Athens Stock Exchange with 497 firm year observations for the period 2003-2006. The variables' definitions are as follows. Pri is the stock price of firm i at time t, and Ret is the stock return of firm i at time t. Both variables are measured three months after fiscal year end following Easton and Harris (1991). BVPS is the book value of equity of firm i at time t, divided by common shares outstanding, and EPS is earnings before extraordinary items, divided by common shares outstanding of firm i at time t. Both variables are deflated by the stock price at the end of previous year (OPri). Last, ΔEPS/OPRI is the change in earnings before taxes and extraordinary items of firm i at time t, divided by the number of common shares outstanding and deflated by the stock price at the end of previous year (OPri).

4. The Empirical Results

Table 2 presents the results of the Easton and Harris model (1991) for the entire period as well as for the two sub-periods. It can be seen that the explanatory power of the earnings levels for stock returns seems to decrease in the post-IFRS period. In contrast, the explanatory power of the earnings changes is insignificant in the pre-IFRS period, but this result reverses in the post-IFRS period, where the earnings changes' slope coefficient is significant and higher than that of the pre-IFRS period. Keeping in mind Easton's (1999) interpretation of the slope coefficients, the results imply that the book values of equity but not earnings lost some of their explanatory power for stock prices in the post-IFRS period. Thus, research Hypothesis A_2 that book values of equity are more statistically associated with stock prices (due to the FVP implementation) is rejected. However, the measure of value relevance (adj. R^2), increases in the post-IFRS period, which indicates that the combined explanatory power of book values of equity and earnings is higher in the post-IFRS period. Therefore, research Hypothesis A_1 cannot be rejected.

TABLE 2: Results of the Easton and Harris Model

$$\mathrm{Re}\, t_{i,t} = \alpha_0 + \alpha_1 \frac{NI_{i,t}}{\mathrm{Pr}\, i_{i,t-1}} + \alpha_2 \frac{\Delta NI_{i,t}}{\mathrm{Pr}\, i_{i,t-1}} + \varepsilon_{i,t}$$

Period	α_0	t-stat	a_1	t-stat	α_2	t-stat	Adj. R^2	Obs.
2003-2006	0.09	2.77***	1.24	4.11***	0.43	1.34	0.06	467
2003-2004	-0.01	-0.23	1.36	3.10***	0.55	1.08	0.05	222
2005-2006	0.19	4.21***	1.04	2.50***	0.78	1.81*	0.08	245

Notes: *, ** and *** denote the 10%, 5% and 1% level of significance. The sample includes 159 firms listed in the Athens Stock Exchange with 497 firm year observations for the period 2003-2006. The Variables' Definitions are as in Table 1.

To be more confident in our conclusions, we also estimate a deflated version of the Feltham and Ohlson model (1995), using price at the end of the previous year as the deflator. The results are shown in Table 3, and a number of points are worth noting. First, in agreement with the results of Table 2, research Hypothesis A_1 cannot be rejected, since the adj. R^2 of the Feltham and Ohlson model seems to increase in the post-IFRS period. However, this increase seems to be an outcome of the increased association between earnings and prices, rather than between book values of equity and prices. The argument is based on the values of the slope coefficients, which is a measure of their statistical association with stock prices. Therefore, once again research Hypothesis A_2 is rejected.

TABLE 3: Results of the Deflated Feltham and Ohlson Model

$$\frac{\mathrm{Pr}\,i_{i,t}}{\mathrm{Pr}\,i_{i,t-1}} = \beta_0 + \beta_1 \frac{BVPS_{i,t}}{\mathrm{Pr}\,i_{i,t-1}} + \beta_2 \frac{EPS_{i,t}}{\mathrm{Pr}\,i_{i,t-1}} + \omega_{i,t}$$

Period	β_0	t-stat	β_1	t-stat	β_2	t-stat	Adj. R^2	Obs.
2003-2006	0.91	21.75***	0.19	5.59***	1.31	5.51***	0.11	497
2003-2004	0.82	11.96***	0.22	3.99***	1.27	3.16***	0.10	225
2005-2006	0.98	19.07***	0.16	3.89***	1.43	4.97***	0.13	272

Notes: *, ** and *** denote the 10%, 5% and 1% level of significance. The sample includes 159 firms listed in the Athens Stock Exchange with 497 firm year observations for the period 2003-2006. The Variables' Definitions are as in Table 1.

The decreased incremental value relevance of the book values of equity in the post-IFRS period seems puzzling given the fact that the introduction of the FVP aims at providing accounting data that are closer to the market values. This odd result may be attributed to three factors. The first factor is the preceding accounting system, the second is the small time span of the dataset, and the third is the deflation procedure. Concerning the small time-span of the dataset, it is expected to affect the results, since the period under investigation represents a transition period with greater volatility in the accounting data. Therefore, the results of the changes that were implemented in the post-IFRS period may need some time until they are fully appreciated by investors. Unreported results support this argument and show that using a rolling regression framework reveals an ascending trend of the slope coefficient of book values of equity in the Feltham and Ohlson model. Moreover, the transition to a common-law accounting system from a code-law one may generate volatility in the fair value estimates during the first years of its implementation, especially in the book values of equity. The reason is the completely different principles in valuation (historic and conservatism principles).

To examine this possibility, we estimate F-tests for the difference in the variance of undeflated book values of equity that indeed reveal excess variability in the post-IFRS period. This result is in agreement with Hung and Subramanyam (2005) and Bellas et al.'s (2007) findings, who also find increased variation in the accounting data in the post-IFRS period. Last, using deflation to avoid spurious results in the regression may generate additional noise in the estimated coefficient of the book value of equity that originates from the deflator. Therefore, the results of this study can serve only as initial evidence of the value relevance of book value, and more data are needed in order to reach a safe conclusion.

At the same time, however, the results show that the loss of information content of the book values of equity is counterbalanced by the increase of the value relevance of the earnings. This result can be the combined effect of their increased timeliness due to the increase of accounting conservatism (Hellman, 2008) and the fact that the two variables behave as substitutes in the valuation model (Penman, 1998). Moreover, another important result is that the combined value relevance of

book values of equity and earnings increases in the post-IFRS period, irrespective of the model used.

5. Conclusion

The present study aims at providing some initial evidence of the results of the IFRS on the value relevance of book values of equity and earnings. The study employs a dataset that includes 159 firms with 497 observations for the period 2003-2006. This dataset is used as an input in Easton and Harris's (1991) and Feltham and Ohlson's (1995) valuation models.

The results of the study indicate that the value relevance of the book value of equity is decreased in the post-IFRS period. This result may be attributed to the higher volatility of the book value of equity in that period. The higher volatility may be a result of two factors. The first is the small period under investigation due to the availability of only two years of data under the IFRS. Moreover, this period is in fact a transition period, and the results may also contain noise. On the contrary, earnings seem to increase their explanatory power for stock prices in the post-IFRS period. This may be a reaction to the decrease in the information content of the book value of equity, since earnings and book values behave as substitutes in the valuation model. Last, despite the limitations of the small time span of the dataset, the result that persists is the increased combined value relevance of book values of equity and earnings.

The study offers implications for future research. First, as more data for the post-IFRS period becomes available, more powerful tests will be available. Moreover, a line of research that may be fruitful is to disentangle the effects of the IFRS on the valuation properties of book values of equity and earnings.

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