The Information Content of Fixed Assets Revaluations in Greece: Implications from the use of IFRS

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1. Introduction

The present study examines the information content of fixed asset revaluations in Greece. Over the past years accounting practice in Greece has undergone a large regime change which among others has also affected fixed asset revaluations. In specific, the implementation of the International Financial Reporting Standards (IFRS) in 2005 led to significant changes in the valuation of fixed assets. Before the implementation of the IFRS fixed assets of Greek firms listed in the Athens Stock Exchange were recorded at their depreciated historical cost with the requirement of a mandatory revaluation every four years. After the introduction of the IFRS, listed firms have the option of continuing using the cost model (historical cost accounting) or adopting the revaluation model (fair value accounting), which assumes that revaluations are carried out regularly so as to ensure that the fixed assets' carrying amount does not differ from its fair value at the balance sheet date.

The relevant literature offers a large body of studies that examine if and to what extent the choice to revaluate is related to basic characteristics of the firm. For example, Missonier-Pierra (2007) argues that the choice to revaluate signals to the users of the financial statements the true economic and financial condition of the firm. An additional finding shows that certain firm characteristics are found to relate with the choice to revaluate like leverage and investment opportunities.

Leverage is very important for creditors since it is strongly associated with the possibility of bankruptcy. Therefore, as Missonier-Pierra (2007) argues managers may use the option to revalue (upwards) the fixed assets in order to reassure the creditors about the credibility of the firm. In this vein, firms with high leverage are more likely to choose the revaluation model in relation with firms with low leverage. Therefore, a positive relation is expected between leverage and the choice to revalue.

When turning to investment (growth) opportunities the evidence is mixed. As Missonier-Pierra (2007) argues growth firms have less fixed assets with an estimable value and more growth opportunities and thus the need to revalue is small. On the other hand, low growth firms have more assets than high growth firms which can be easily valued. Moreover, growth firms are subject to information asymmetry since the outsiders may not be able to assess the growth opportunities better than the manager of the firm. Therefore, the manager may use the revaluation as a signal to the

investors to reduce information asymmetry. However, Whittred and Chan (1992) who examine the relation between growth opportunities and choice to revaluate show that the motivation to revalue is higher for high growth firms. In general the most important motive for a firm to revalue may be to signal its true economic performance in order to reduce the equity cost (for example Cotter and Zimmer, 1995; Cotter, 1999, Black et al., 1998; Jaggi and Tsui, 2001, Missonier-Pierra, 2007).

The use of revaluations of fixed assets has been criticized by academics i.e., Aboody et al. (1999) who claim that the values of long-term non-financial assets cannot be reliably estimated. Accordingly, this can be attributed to the inherent uncertainty that is present in any similar estimation and to the exercise of discretion from managers. On the other hand the choice to revalue may reflect certain firm characteristics and may be useful to investors. Therefore, it is expected that investors apprehend the changes in the firm characteristics that are transmitted through the fixed assets' revaluations.

The purpose of the present paper is to examine if the choice of a fixed asset revaluation is related to certain firm characteristics and signals of the firm's true financial position. These firm characteristics are leverage, investment growth, asset intangibility and size. Moreover, it examines if investors perceive the information content of fixed assets' revaluations and whether the choice to revalue is positively valued by investors.

The remainder of the present paper is organized as follows: Section 2 develops the research framework and describes the dataset, Section 3 analyzes the empirical results and finally Section 4 concludes the paper and offers implications for future research.

2. Research Framework and the Dataset

2.1 The Models

Following, Missonier-Pierra (2007) we use a logit regression that examines the relation between the choice to revalue and leverage, growth opportunities and size of the firm. In specific, leverage shows the probability of choosing to revalue in relation with the level of total leverage, Growth Opportunities (GO) shows the relation between the dependent variable and either, the growth options of a firm or the signal hypothesis, intangibility ratio is another variable that proxies for growth options and last size is a control variable. In algebraic form the model is as follows:

$$\mathrm{Re}val_{i,t} = \alpha_0 + \alpha_1 Leverage_{i,t} + \alpha_2 GO_{i,t} + \alpha_3 In\tan gibility\_Ratio_{i,t} + \alpha_4 Size_{i,t} + \varepsilon_{i,t} \quad (1)$$

where Revali,t is a dummy variable that is equal to 1 if the firm i chooses the revaluation model for year t and zero otherwise, Leverage is the ratio of total long term debt to total assets, GO is the MtB ratio, Intangibility Ratio is the ratio of tangibles to intangibles assets and Size is defined as the natural logarithm of sales.

Concerning the magnitudes and signs of the coefficients it is expected that in line with previous literature Leverage will have a positive relation with the choice to revaluate since firms with high leverage are more likely to bankrupt and thus they use the revaluation option in order to reassure creditors about their financial condition. GO will be negative unless growth firms use the choice to revalue in order to convey private information to investors. To examine this hypothesis we also incorporate in the regression the Intangibility Ratio, which is the ratio of non-fixed assets to fixed assets and it is expected to have a negative coefficient. Last, Size has been found to have a positive relation with revaluations although that some i.e., Missonier-Pierra (2007) show otherwise offering the explanation that small firms do not get credit easily. Thus, the smaller the firm the greater the need for revaluation in order to show improved financial condition to creditors.

In an attempt to examine if investors perceive the information content of fixed assets' revaluations we use the portfolio methodology proposed by Francis and Schipper (1999). In this respect we rank firms according to the choice to revalue or not and calculate the average stock return in each case. Then, a hedge portfolio is formed (Reval Hedge) that goes long to firms that choose to revalue and short on non-revaluing firms. Moreover, to examine if this hedge portfolio can earn abnormal returns we also calculate a control market portfolio. This is performed by first sorting firms according to their stock returns and then by forming a second hedge portfolio (Market Hedge) that goes long to the firms with the higher returns and short to the firms with the lower return. Finally, the total return of the Reval hedge portfolio is divided by the total return of the Market Hedge portfolio. If the total return of this portfolio is positive it means that investors perceive the information content of revaluations as positive. Moreover, if this return is lower than 1 it means that investing decisions based on the information content of revaluations cannot generate abnormal returns.

2.2 The Dataset

The dataset used in the study comes from two sources. First, data on consolidated financial statements for the period 2005-2008 is drawn from the Hellastat database and second, data on stock prices is drawn from the database of the Athens Stock Exchange. To avoid the effects of extreme observations the variables are truncated at the upper and lower 1.5% level. Moreover, firms of the financial sector are excluded due to differences in reporting while firms that have been placed under supervision or suspension are also excluded.

The variables' definitions are as follows: Revali,t is a dummy variable that is equal to 1 if the firm i chooses the revaluation model for year t and zero otherwise, Leveragei,t is defined as the ratio of long term debt to total assets of firm i at year t, GO is the Market to Book ratio (MtB) of firm i at year t, Intangibility Ratio is the ratio of non-fixed assets (NFA) to fixed assets (FA) of firm i at year t and Size is the natural logarithm of sales.

Descriptive statistics of the variables used in the models for the period 2005-2008 are presented in Table 1. It appears that apart from the case of Intangibility ratio all other variables seem to be free of extreme observations.

Table 1: Descriptive Statistics

	REVAL	LEVERAGE	GO	INTANGIBILITY	SIZE
Mean	0.24	0.21	1.71	0.18	18.44
Median	0.00	0.20	1.11	0.02	18.37
Maximum	1.00	0.60	12.66	6.28	22.36
Minimum	0.00	0.01	0.16	0.00	15.30
Std. Dev.	0.43	0.13	1.73	0.55	1.34

Notes: The dataset contains 191 firms with 546 observations for the period 2005-2008. The variables' definitions are as follows: $Reval_{i,t}$ is a dummy variable that is equal to 1 if the firm *i* chooses the revaluation model for year *t* and zero otherwise, $Leverage_{i,t}$ is defined as the ratio of long term debt to total assets of firm *i* at year *t*, *GO* is the Market to Book ratio (MtB) of firm *i* at year *t*, *Intangibility Ratio* is the ratio of non-fixed assets (NFA) to fixed assets (FA) of firm *i* at year *t* and *Size* is the natural logarithm of sales.

Table 2 presents the correlation matrix of the variables. It is quite clear that there is no indication of multicolinearity between the variables.

Table 2: Spearman Correlations

	REVAL	LEVERAGE	GO	INTANGIBILITY	SIZE
REVAL	1.00	0.07	-0.14	-0.07	-0.12
LEVERAGE	0.07	1.00	-0.07	-0.20	0.22
GO	-0.14	-0.07	1.00	0.14	0.04
INTANGIBILITY	-0.07	-0.20	0.14	1.00	-0.02
SIZE	-0.12	0.22	0.04	-0.02	1.00

Notes: The dataset contains 191 firms with 546 observations for the period 2005-2008. The variables' definitions are as follows: $Reval_{i,t}$ is a dummy variable that is equal to 1 if the firm *i* chooses the revaluation model for year *t* and zero otherwise, $Leverage_{i,t}$ is defined as the ratio of long term debt to total assets of firm *i* at year *t*, GO is the Market to Book ratio (MtB) of firm *i* at year *t*, Intangibility Ratio is the ratio of non-fixed assets (NFA) to fixed assets (FA) of firm *i* at year *t* and Size is the natural logarithm of sales.

3. The results

The estimation results are tabulated in Table 3. Panel A of Table 3 presents the results of the estimation of the logit model of equation (1). It is shown that all of the slope coefficients are statistically significant at least at the 10% level of significance. As regards the signs of the slope coefficients the following issues are worth noting.

Table 3: Estimation Results

Panel A: Results of the Logit Model

$$\mathrm{Re}val_{i,t} = \alpha_0 + \alpha_1 Leverage_{i,t} + \alpha_2 GO_{i,t} + \alpha_3 Intangibility\_Ratio_{i,t} + \alpha_4 Size_{i,t} + \varepsilon_{i,t}$$

α_0	p-val	α_0	p-val	α_0	p-val	α_0	p-val	α_0	p-val	McFadden R-squared	Prob(LR statistic)
3.33	0.02	1.44	0.07	-0.15	0.04	-0.70	0.08	-0.24	0.00	0.04	0.00

Panel B: Results of the Francis and Schipper Aproach

	Reval=0	Reval=1	Low Return	High return
Mean	0.10	-0.04	-0.37	0.51

Hedge Reval	Hedge return
-0.15	0.87

Hedge Total
-0.17

Notes: The dataset contains 191 firms with 546 observations for the period 2005-2008. The variables' definitions are as follows: $Reval_{i,t}$ is a dummy variable that is equal to 1 if the firm *i* chooses the revaluation model for year *t* and zero otherwise, $Leverage_{i,t}$ is defined as the ratio of long term debt to total assets of firm *i* at year *t*, GO is the Market to Book ratio (MtB) of firm *i* at year *t*, Intangibility Ratio is the ratio of non-fixed assets (NFA) to fixed assets (FA) of firm *i* at year *t* and Size is the natural logarithm of sales.

First, as expected the sign of the leverage coefficient is positive implying that highly leveraged firms choose to revalue their fixed assets in order to reduce their leverage ratio. This result is in line with other studies in the area (also Cotter and Zimmer, 1995; Black et al., 1998; Missonier-Pierra, 2007). Moreover, the slope coefficient of GO has a negative sign. This result supports the results of Missonier-Pierra (2007) but contradicts other studies such as that of Whittred and Chan, (1992) who argue that since growth firms consist to a large extent of assets that their value cannot be estimated accurately (growth opportunities) they don't have the option to revalue them. In order to test his argument we also include the intangibility ratio which shows

the percentage change of non-fixed assets in relation with the fixed assets of the firm. It can easily be seen that the slope coefficient of this variable (α3) has a negative sign which confirms the above assumption. Spesifically, it shows that firms with a high intangibility ratio are less likely to choose to revalue their assets. Last, the slope coefficient of the size variable is also negative. This result may relate to the fact that small firms are more leveraged than large firms and therefore choose to revalue their fixed assets in order to reduce their leverage ratio. This assumption is partially confirmed by the results of the Spearman correlation matrix in Table 2 which show that the correlation between leverage and size is one of the highest.

Next, we move to the results of the portfolio approach of Francis and Schipper (1999). The results are tabulated in panel B of Table 3 and show that a hedge portfolio formed by buying firms that choose to revalue and selling firms that use the cost model earns negative returns. Moreover, the respective return of the market portfolio is higher, which means that the formed portfolio (Hedge Total Portfolio) cannot earn abnormal returns. Therefore, the results show that the investors do not perceive the information content of revaluations as positive. Ghicas et al. (1996) were the first to examine the information content of fixed asset revaluations in Greece, and they argue that a positive association between revaluations and stock prices would be a sign of investors recognizing net benefits from increased-depreciation-tax-shields. Since, the choice to revalue is negatively associated with stock returns it can be argued that the Greek investors do not recognize net benefits from increased-depreciation-tax-shields. Moreover, these results may imply that investors perceive asset revaluations as the firms attempt to reduce their leverage. However, more research is needed in order to reach a sound conclusion on this matter.

4. Conclusions

This study examines the information content of fixed assets revaluations for a sample of listed firms in the Athens Stock Exchange after the implementation of the IFRS. The scope of this article is twofold: first, to examine if certain firm characteristics are related to the choice of the firm to revalue its fixed assets and second, to examine if investors perceive these information as positive. The findings which are in line with the relevant literature show that the choice to revalue is mainly related to the leverage of the firm, the growth opportunities and the size of the firm. In particularly, highly leveraged firms, or firms with growth opportunities are found to have increased possibility of choosing to revalue their fixed assets.

Moreover, the results show that investors do not value positively the choice to revalue. This result may be an implication that investors perceive asset revaluations as the firms attempt to reduce their leverage by using the option to revalue. However, this is merely a speculation and guaranties further analysis and research.

References

Aboody, D., M. E. Barth, and R. Kasznik. 1999. Revaluations of Fixed Assets and Future Firm Performance: Evidence from the UK. Journal of Accounting and Economics 26:149-178.

Black, E. L., K. F. Sellers, and T. S. Manly. 1998. Earnings Management using Asset Sales: an International Study of Countries Allowing Noncurrent Asset Revaluation. Journal of Business Finance and Accounting 25 (9-10):1287−1317.

Cotter, J. 1999. Asset Revaluation and Debt Contracting. Abacus 35 (3):268-285.

Cotter, J., and I. Zimmer. 1995. Asset Revaluations and Assessment of Borrowing Capacity. Abacus 31 (1):136-151.

Francis, J., and K. Schipper. 1999. Have Financial Statements Lost Their Relevance? Journal of Accounting Research 37 (2):319-352.

Ghicas, D. C., D. L. Hevas, and A. J. Papadaki. 1996. Fixed Assets Revaluations and their Association with Stock Returns. European Accounting Review 5:651-670.

Jaggi, B., and J. Tsui. 2001. Management Motivation and Market Assessment: Reevaluations of Fixed Assets. Journal of International Financial Management & Accounting 12 (2):160-167.

Missonier-Piera, F. 2007. Motives for fixed-asset revaluation: An empirical analysis with Swiss data. The International Journal of Accounting 42 (2):185-205.

Whittred, G., and Y. K. Chan. 1992. Asset Revaluations and the Mitigation of Underinvestment. Abacus 28 (1):58-73.