



A Valuation Based Analysis of the Spanish Accounting Reforms*

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Abstract. This paper contrasts the association between security prices and accounting information before and after the Spanish accounting reforms. Spanish regulations were changed during 1989 and 1990 so as to conform with EU requirements, bringing them broadly into line with international standards, although the new system still focuses on compliance with rules rather than reflecting the substance of economic transactions. We model security price as a function of two fundamental accounting variables – book value of equity per share and earnings per share. The model is estimated using a sample drawn from non-financial companies listed on the Madrid Stock Exchange during the period 1986–1995. Whilst the results demonstrate only a modest improvement in value relevance of accounting information following the reform, they show that the influence of the earnings variable becomes somewhat smaller whilst that on equity is increased. This is consistent with earnings containing a larger proportion of transitory elements following the reform, whilst the equity value appears to have more economic relevance than previously.

1. Introduction

In this paper we analyse the impact of the accounting reforms in Spain. These were initiated during the late eighties and affected accounting statements from the early nineties onwards. The changes brought Spanish regulations into line with EU requirements, sought to make them comparable line with international standards of good practice, and introduced the notion of the ‘true and fair view’. Although there remain several differences between the accounting regulations in Spain and in, say, the US or UK, the systems are now broadly similar. It could be argued that new practices have improved information flows and should help economic agents to make better decisions.

We focus on investors, who according to IASC and FASB frameworks are the most important group of users and examine the relation between stock prices

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and accounting data in Spain during the period 1986–1995. As Bernard (1995, p. 740) suggests “one could assess the reliability of various measures through examination of associations with market prices—assuming that the stock market’s estimates provide a sufficiently well-informed benchmark”. The presumption is that, if the reforms are to be judged a success according to the criteria we examine, then a) the explanatory power of the valuation model used should improve, b) the estimated coefficients should more closely conform with theoretical expectations. This last point may need some explanation. In the valuation model current earnings are assumed to be a good basis for predicting future earnings, whilst equity is a measure of the assets in place but also a basis for calculating the costs of capital employed. If the reforms improve the ability of current earnings to indicate future earnings the coefficient on earnings will increase and that on equity will decrease. If the reforms damage current earnings as a measure of permanent earnings the reverse will occur.

In a complementary paper Ballester and Livnat (1997) also examine the association between security prices and accounting numbers for a Spanish sample covering the period of the reform, and point out that “the Spanish market provides a unique opportunity to examine the effects of a change in the accounting system on market participants in an almost laboratory experiment” (p. 116). However instead of adopting a valuation approach they follow Lev and Thiagarajan (1993) and focus on the association between security returns, earnings and other accounting variables. There are advantages and disadvantages with the alternative valuation and returns models. We contrast our results with those of Ballester and Livnat to provide two different perspectives on accounting change in Spain.

The structure of this paper is as follows. After this introduction, Section 2 focuses on the institutional setting. Section 3 is devoted to the analysis of the valuation model to be used. Section 4 contains the empirical research, and Section 5 provides the conclusions.

2. The Institutional Setting

The accounting reform that took place in Spain at the end of the eighties was initiated by the EU directives and the changes are well documented. Here we give a brief outline of the pre-reform situation and the changes that subsequently took place (for further details, see Giner, 1993).

Prior to reform the lack of comprehensive accounting standards was partially offset by commercial and, more importantly, fiscal legislation. The influence of these rules may be clearly appreciated in the two distinguishing characteristics of the pre-reform Spanish accounting system: conservatism and the influence of taxation rules in accounting practices. After the accounting reform fiscal rules are no longer used to account for economic events, but the prudence principle still dominates the Spanish system, and hence conservatism remains one of its main characteristics.

Although the adoption of the company directives through Law 19/1989 brought change to the Spanish accounting system, several important measures had already been taken some twenty years earlier. The enactment of the 1973 Plan General de Contabilidad (PGC-General Accounting Plan) and the establishment in 1979 of a professional body, Asociación Española de Contabilidad y Administración de Empresas (AECA-Spanish Accounting and Business Administration Association) set the bases for a new order in the accounting legislation.

However Law 19/1989 and the new PGC (RD 1643/1990) introduced further changes to bring the Spanish accounting system nearer to the objective of reporting a 'true and fair view' of the company situation, and to update the 1973 PGC. Before explaining these changes it is convenient to clarify the meaning of the 'true and fair view'. As Riccaboni and Di Pietra (1998, p. 6) state "most of the expressions normally found in the research literature achieve total relevance only when they are associated with a particular culture". This certainly applies to the 'true and fair view', and due to the lack of definition in the British literature (Walton, 1993), it is really difficult to be precise about its meaning in a different context. Several interpretations have been offered by Spanish authors (Montesinos, 1980; Tua, 1982; Gabás et al., 1986), but the general opinion is based on the idea that the 'true and fair view' is complied with when the accounting principles and rules established in the PGC are applied in the preparation of the accounting statements. So, in common with many other continental regimes, a legalistic approach is adopted to interpret 'true and fair view'; but as long as GAAP may differ from one country to another and change with the economic and legal circumstances, this interpretation allows for the existence of different 'true and fair views' of the same company. On the other hand, the anglo-saxon approach to accounting is more related to the notion of substance over form when registering economic transactions (International Accounting Standards Committee, 1997), and although the PGC has moved towards this idea (e.g. as with accounting for leases), the system as a whole is still far removed from accepting it.

The main changes in the valuation rules included:

- a) Taxes on profits are now considered as an expense, under the deferred method, whereas before the amount to be paid was considered a distribution of profits.
- b) All assets and debts must be recognised in the financial statements. As a consequence bills discounted, financial leases and pension commitments are now accounted for on the balance sheet.
- c) Monetary items in foreign currency must be valued at the year end, and losses are immediately written off whereas unrealised gains are deferred.
- d) Capital grants are no longer treated as equity but as deferred income.
- e) Goodwill has to be depreciated within 10 years¹ (although additional information must be provided if the period is higher than 5 years), whereas before the reform it was depreciated only if it had suffered a reduction in value.

- f) Research and development expenses may only be capitalised if certain conditions are satisfied, and, in practice, to capitalise research is rather difficult. Before there were no special constraints imposed on including research and development in the balance sheet.

The amount of information that must be divulged has also increased, but listed companies have been less affected than others. According to the Law 19/1989 and the 1990 PGC, annual accounts include the balance sheet, the profit and loss account, and the notes to the accounts. Although the 1973 PGC already included the notes, they were not so developed. These now include a funds statement, another statement containing the proposal of income distribution, more description regarding the company, the valuation criteria employed, segment information by sales, directors compensation and advances and loans to directors, movements of fixed assets, and so on.

The disclosure level was already demanding before the reform. However some aspects were added by the Law 19/1989, which came into force in 1990. These disclosure requirements included:

- a) The proposed profit distribution.
- b) A provisional cash flow statement if the company has paid dividends in advance.
- c) Information on establishment costs.
- d) Information on changes in material and intangible fixed assets.
- e) Information on changes in financial investments.
- f) Information on taxes.
- g) Segmental information on geographic sales.
- h) Extraordinary income and expenses.
- i) Salaries, advances and loans to the members of the administration board.
- j) Post balance events.

This Law also established the duty to provide consolidated accounts. This new requirement has been compulsory since 1991, although the Stock Exchange regulation (Ministerial Order of November, 17, 1981) recommended listed companies to disclose this information. The 1990 PGC, in force in 1991, also added some additional disclosure, such as:

- a) Information on leasing.
- b) The value at year end of listed financial investments of group companies and associate companies.
- c) Transactions with group companies.
- d) Information on inventory.

Therefore the accounting reform was completed in two steps. In 1989 there were many changes in recognition and valuation rules, as well as an increase in the disclosure requirements, and in 1990 a few additional requirements were established. The regulation came in force one year later, in 1990 and 1991 respectively, and in 1991 consolidated accounts became compulsory.

The information reported on the balance sheet has been improved by accounting for finance leases, bills discounted, and pension commitments. There are still some aspects that would need more attention before the Spanish accounting system is close to the 'true and fair view' if this implies attention to substance over form. Examples are the unbalanced treatment given to foreign exchange gains and losses and the compulsory depreciation of goodwill in, usually, five years maximum. For all these reasons our initial point of view is not as optimistic as Ballester and Livnat's (1997) view, who maintain that the adoption of the 'true and fair view' by the Spanish system has increased the relevance of earnings over the rest of the financial statement data. On the contrary we think that the earnings figure may be less useful for predictive purposes as it is more volatile due to the strict application of the prudence principle and the inclusion of transitory elements.

Basu (1997) suggests that the recognition requirements for previously off-balance liabilities, such as pensions, are potential explanations for the increased degree of conservatism in recent years. He shows that the asymmetric treatment of 'bad and good news' in the US makes the market undervalue both negative earnings and decreases in earnings because they are considered less persistent than positive earnings and earnings increases. Collins et al. (1997) suggest book value serves as a better proxy for future earnings when there is 'bad news', because the value relevance of earnings and book value moves inversely to one another. If the value of earnings has decreased that of book value should have increased. Nevertheless, on the whole we consider that the Spanish reforms have increased the quality, or at least the quantity (Giner, 1997), of the accounting information, and the more quality the accounting information system has, all other things being equal, the more credibility and relevance it has for the users.

In addition to the regulatory changes on accounting information, it should be acknowledged that the stock market regulation also underwent certain changes. In 1988 the Law on the Stock Exchange was established, and it created the National Securities and Exchange Commission (CNMV-Comisión Nacional del Mercado de Valores). This law increased the amount of information to be provided to the general public and made it compulsory for all companies to disseminate biannual and quarterly information. It also established the duty to continuously disseminate information about any event which could affect the public opinion about the securities value, such as capital increases, bond issues and changes in the participation on listed companies when it is higher than twenty-five percent. This law and later regulation obliged companies to disclose financial information more promptly than before. In addition in 1989 the electronic market trading system was introduced by the CNMV. Table I shows that neither the number of listed companies nor the

Table I. Statistical information of the Madrid S.E.

Years	No. of non-financial companies	No. of companies	Trading volume (in millions of pesetas)
1986	161	311	1.757.184
1987	176	327	3.695.976
1988	196	368	2.426.532
1989	203	417	3.817.047
1990	206	433	3.706.702
1991	206	436	3.691.564
1992	199	401	3.575.794
1993	187	379	5.528.825
1994	178	378	7.310.259
1995	171	366	6.597.942

Data provided by the Madrid Stock Exchange. Trading volume measures the market value of shares that changed hands during the year.

trading volume of the Madrid Stock Exchange appear to have increased following the implementation of the 1988 Law – i.e. in 1989 or 1990. The biggest increase in the number of companies took place in 1988, but the number has been decreasing since 1992. In 1995 the number of non-financial companies listed (171) is almost equal to that in 1986. Trading volume remained more or less at the same level until 1992, but after 1993 clear increases are apparent.

3. The Empirical Research

In this paper we are interested in the effect of the Spanish accounting reform, not in valuation models *per se*. However, some description of the model employed and the advantages and disadvantages of using this approach is helpful.

3.1. BASIC MODEL SPECIFICATION

The following version of the valuation model is used and is consistent with that employed by Collins et al. (1997) for a US sample, Harris et al. (1994) using a German sample, Joos and Lang (1994) using German, French and British samples and Rees (1997) using a British sample.

$$P_{it} = a_0 + a_1 BV_{it} + a_2 E_{it} + c_{it}$$

where P_{it} is the year end price per share, BV_{it} is the book value of equity per share and E_{it} is the earnings per share, for firm i year t .

Conversely research on the relevance of accounting information has more usually been based on the relationship between unexpected earnings and abnormal returns. This is the approach adopted by Ballester and Livnat (1997). Such work is normally conducted by regressing the stock returns, or abnormal returns, over an event window using earnings level and/or change as the regressors. In some cases the earnings variables are supplemented by accounting ratios – although the justification for the ratios chosen may be *ad hoc* (Lev and Thiagarajan, 1993; Ballester and Livnat, 1997). This type of research encounters several difficulties. The explanatory power of the models is low, the estimated coefficients are also usually lower than expected, and it is not clear what the appropriate event window should be (Lev, 1989). If accounting reform is accompanied by stock market reform, as is the case for Spain, any change in the relationship between accounting numbers and stock returns could be explained by a change in the speed in which the market incorporates accounting information. This might move the market reaction into or out of the chosen event window.

As Christie (1987) points out, both price and return studies present econometric problems, the choice of deflator being one of the main ones. In his opinion: “In the returns studies, the correct deflator is the market value of equity at the beginning of the period”, while “There is no natural deflator in levels models, but deflation by anything other than a function of independent variables can generate specification errors” (Christie, 1987, p. 233). However in choosing between returns and price models Kothari and Zimmerman (1995) argue that price models (such as ours) produce better estimators for the coefficient of the profit figure than the return models (such as Ballester and Livnat, 1997). The intuitive argument they provide is as follows. Current earnings reflect a surprise to the market and also a stale component. This second part is irrelevant for the current return and thus constitutes an error in the independent variable, biasing the slope coefficient on earnings towards zero. By contrast, the current stock price reflects not only the surprise but also the stale component, so there is no bias in the coefficient. However the price models have other econometric problems. Most obviously they suffer from heteroscedasticity and/or model miss-specification more often than the return models, and pooling data across years can lead to correlation between the error terms. To avoid the first problem Kothari and Zimmerman (1995) suggest using the White’s (1980) heteroscedasticity consistent standard errors.

In short both approaches have their advantages and disadvantages.

3.2. THE HYPOTHESES

One important role of accounting information is to provide information on value to shareholders. We expect that the quality of the accounting information has increased as consequence of the reform and is more useful for the investors in the post reform period than before. Therefore the null hypothesis is:

H01: The value relevance of book value and earnings, taken together, is not greater after the reform than before. This is tested by decomposing the whole sample, in several sub-samples, and comparing the explanatory power of the model.

We have also investigated the change in the value relevance of earnings and book value, taken individually, before and after the reform. Following Collins et al. (1997) we analyse the incremental explanatory power of the variables in the different time periods. To this end we decompose the combined explanatory power of book value and earnings into three components: i) the incremental power of book value, ii) the incremental explanatory power of earnings, and iii) the residual, that is the common explanatory power of both variables. Our hypothesis is that the accounting reform has increased the amount of transitory information included in earnings and hence the incremental explanatory power of earnings is expected to have declined while that of book value is expected to increase. The null hypothesis is:

H02: The value relevance of book value and earnings, taken individually, are not significantly changed by the reform. This is tested by decomposing the whole sample in several sub-samples, and comparing the explanatory power of models which use each of the explanatory variables in turn.

In addition we have analysed the differences between the coefficients of the two variables in the model before and after the reform. If earnings were more transient, the coefficient of this variable ought to be smaller, although, conversely, it can be argued that more conservative regimes would result in lower estimates of earnings and therefore higher coefficients. This analysis is firstly done by comparing the model estimates across two sub-samples, but statistical testing of the difference is conducted using the following model:

$$P_{it} = a_0 + a_1 BV_{it} + d_1 (BV_{it} \cdot D_t) + a_2 E_{it} + d_2 (E_{it} \cdot D_t) + e_{it}$$

where $D_t = 0$, for the pre-reform period and 1 otherwise. The coefficients of the two interaction terms, d_1 and d_2 , will indicate if there has been a change in the role of accounting information for valuing share prices after the reform. Therefore the null hypothesis is:

H03: The estimated coefficient on book value and/or earnings have not significantly changed by the accounting reform.

To decompose the sample it is necessary to take into account that the accounting reform took place in two steps, in 1989 and 1990, and this affected the annual accounts of 1990 and 1991 respectively. Therefore we could contrast a pre-reform sub-sample (1986–1989) with post reform (1990–1995), but as the reform was only

completed in 1990, an alternative post-reform sub-sample is 1991–1995, which we contrast with 1986–1990.

It could be argued that any increase in explanatory power, or more useful definition of earnings, is only valuable to investors where these advantages are not available from other information sources. A number of additional variables have been found to be statistically significant in valuation models but these have not tended to be robust and have had little impact on the explanatory power of the model. The one exception is dividends, and Rees (1997) finds that earnings distributed as dividends have a bigger impact on value than does earnings retained within the company. His explanation is that dividends may be more related to the permanent component of the earnings figure than is retained earnings. Consequently we repeat the hypothesis testing using an enhanced model which incorporates dividends. For those familiar with the Ohlson (e.g. 1995) model this may be thought of as a surrogate for other information which has not yet impacted on the reported earnings or book value but has been picked up by security prices. Hence the enhanced model is:

$$P_{it} = a_0 + a_1BV_{it} + a_2E_{it} + a_3DV_{it} + e_{it}$$

where DV_{it} is ordinary dividends per share. For completeness we also run a regression with an interaction term between the post/pre-reform dummy variable and dividends, as with earnings and equity, to consider the impact of the accounting reform. As all the models employed are heteroscedastic all hypothesis tests are based on White (1980) heteroscedastic consistent variance-covariance matrices.

3.3. DATA

The data used are collected from the Extel Financial Company Analysis service. As in most other studies we have excluded financial companies where accounting practices are rather different from those of non-financial firms. The initial sample includes all 899 non-financial companies that appear in the database for the period 1986–1995. Of these 124 cases were missing market value, reducing the sample to 775 cases. Table II gives information on the distribution of this sample across years, industries, and market capitalisation. This sample was further reduced after the elimination of forty outliers. A conventional outlier deletion rule was adopted, that consists in eliminating the top and bottom 1% of cases from each of the basic model variable (i.e. P,BV,E).

3.4. VARIABLES

The model incorporates the following variables:

P_{it} : Market Price. Firm i 's price per share for ordinary equity at the accounting year end t .

Table II. Distribution of sample by industry, year and capitalization decile

Industry	Cases	Year	Cases	Size	Capitalization (million ptas)
Extractive	43	86	20	Min	131
Building	202	87	35	1	2895
Chemicals	48	88	56	2	7084
Electronic	43	89	76	3	11580
Engineering	97	90	101	4	18000
Paper & packing & textiles	29	91	105	5	26500
Transport	30	92	109	6	40800
Food & wine & breweries	84	93	104	7	57660
Diverse	31	94	96	8	84382
Utilities	130	95	73	9	157200
Distribution	38			Max	1790000
Total	775	Total	775		

The sample is taken from all industrial or commercial firms on the Extel Financial Company Analysis database where market value, earnings and book value of equity are available. The industry categories are based on the FT classification but have been consolidated from 22 to 11 sectors for convenience. The distribution of market capitalization at the balance sheet date is shown using the decile boundaries.

BV_{it} : Book Value of Ordinary Equity. Firm i 's equity per share at year end t defined as all equity reserves, and ordinary share capital, but excluding non-ordinary equity such as preference shares.

E_{it} : Earned for ordinary. Firm i 's earnings per share for year t defined as earned for ordinary after interest charges, extraordinary items, taxation etc.

DV_{it} : Ordinary Dividends. Firm i 's dividends per share for year t defined as ordinary dividends.

4. Results

Table III provides the descriptive statistics concerning the variables used. The data exhibits a considerable amount of skewness and kurtosis, as is normal for cross-sectional valuation models but there is no evidence that this affects the reliability of the results. Table IV presents the matrix for the Spearman correlation between all the variables used in the analysis. As it would be expected for a cross-sectional model, the correlation statistics are generally quite high. The three basic variables, market price, book value, and earnings are correlated, so there is potential for some instability in the results and for variance inflation. However as all the models are estimated a number of times across different samples and as the results appear to be reliable this should not give cause for concern.

Table III. Descriptive statistics for basic model

	Mean	Standard deviation	Skewness	Kurtosis	Minimum	Maximum
Sample = 775						
$P_{i,t}$	3849.1	6409.8	5.8	43.7	11.9	66000
$E_{i,t}$	309.1	1366.2	11.3	161.7	-5725.2	22577.8
$BV_{i,t}$	3194.8	7455.7	11.7	171.7	-2440.7	137914.6
$DV_{i,t}$	140.4	456.0	13.6	231.6	0	9124.0
Sample = 735						
$P_{i,t}$	3343.9	3667.7	3.0	15.2	86	36500
$E_{i,t}$	212.4	371.0	2.0	12.3	-1032.8	3040.2
$BV_{i,t}$	2503.8	2192.3	2.6	10.2	56.1	18637.8
$DV_{i,t}$	100.0	123.63	3.3	17.4	0	1103.4

P is the price per share for firm i at the end of the financial year t , E is the earned for ordinary share, BV the book value of equity per share, and DV is the ordinary dividends per share. The full sample of 775 firm/years consists of all industrial or commercial firms on the Extel Financial Company Analysis database with market value, earned for ordinary and book value of equity data available. Outliers deleted were defined as the top and bottom 1% of cases from each of the basic model variable (i.e. P,BV,E). The sample is drawn from the years 1986-1995.

Table IV. Correlation between explanatory variables

	$P_{i,t}$	$E_{i,t}$	$DV_{i,t}$
$E_{i,t}$	0.803		
$DV_{i,t}$	0.687	0.804	
$BV_{i,t}$	0.733	0.696	0.627

P is the price per share for firm i at the end of the financial year t , E is the earned for ordinary share, DV is the ordinary dividends per share and BV the book value of equity per share. Correlation statistics are calculated for the 735 cases that remained after deleting outliers.

The results for the basic model appear on Table V. The model is estimated on each years data, on the full pooled sample of 735 cases, and it is also estimated for the sub-periods 1986–1989 and 1990–1995, as well as 1986–1990 and 1991–1995. The values of the slope coefficients for the pooled sample, 0.59 and 4.59, are of a similar order of magnitude to Rees' (1997) estimates for the UK of 0.57 and 4.04, and marginally higher for both variables than Collins et al.'s (1997) estimates for the US of 0.54 and 3.41. The explanatory power of the model is 0.545, very similar to those obtained by Rees (1997), 0.54, and Collins et al. (1997) 0.536.

In Table V we also report results for models estimated in each year. These annual results typically show relatively high explanatory power with the R^2 varying

Table V. Value modelled by equity and earnings

	a0	a1	a2	R ²	Cases
1986	0.073 (0.148)	0.655 (1.637)	7.560 (4.712)	0.574	18
1987	0.234 (0.294)	1.098 (2.611)	4.045 (3.355)	0.593	35
1988	2.152 (3.017)	0.065 (0.150)	5.554 (3.286)	0.487	53
1989	2.104 (2.846)	0.284 (0.834)	6.213 (2.268)	0.484	73
1990	1.541 (2.820)	-0.090 (0.036)	7.931 (4.758)	0.554	98
1991	1.068 (3.565)	0.388 (2.047)	4.003 (3.321)	0.498	99
1992	-0.383 (0.466)	1.018 (2.547)	2.135 (2.144)	0.624	103
1993	0.580 (0.821)	0.944 (2.479)	3.781 (2.200)	0.555	96
1994	0.845 (3.995)	0.278 (1.984)	8.434 (5.191)	0.749	90
1995	0.962 (2.508)	0.384 (2.923)	4.514 (2.517)	0.572	70
All	0.883 (3.267)	0.593 (3.931)	4.592 (6.661)	0.544	735
86-89	1.593 (3.380)	0.388 (1.467)	5.569 (4.206)	0.516	179
90-95	0.661 (2.182)	0.654 (3.970)	4.067 (5.143)	0.558	556
86-90	1.651 (4.578)	0.180 (0.924)	6.331 (5.600)	0.523	277
91-95	0.558 (1.691)	0.715 (4.041)	3.715 (4.559)	0.571	458

The sample is as defined in Table III with results presented according to accounting year end and grouped into various sub-samples split before and after enactment or implementation of the accounting reforms. a_0 , a_1 and a_2 are the estimated intercept, and slope coefficient on equity and slope coefficient on earnings respectively. Figures in brackets are White adjusted t-statistics and the R^2 is adjusted for sample size.

from 0.484 to 0.749, and the estimated coefficients on book value ranging from -0.090 to 1.098 and on earnings from 2.135 to 8.434. Such instability is to be expected where the regressors exhibit colinearity and the samples are relatively small. Nevertheless the Fama-MacBeth (1973) approach, which calculates mean coefficients based on the estimates from each year, confirms the results of the pooled sample.

Table VI reports the results of the enhanced model including dividends. Rees (1997) has demonstrated that dividends have considerable explanatory power in a valuation model, and this is thought to be due to the scope for predicting future earnings via dividends. Thus to the extent that the influence of book value in the model is as an indicator of future earnings, the presence of a competing indicator, dividends, may depress the influence of book value. The results are consistent with those from the basic model although, as expected, the coefficients on book value and earnings are lower and the explanatory power of the model is somewhat higher than for the basic model.

Given that the results are comparable with those estimated for the US and UK, that the results from Fama-MacBeth approach are consistent with the pooled

Table VI. Value modelled by equity, earnings and dividends

	a0	a1	a2	a3	R ²	Cases
All	0.452 (1.959)	0.471 (4.269)	3.150 (5.565)	10.432 (5.313)	0.628	735
86–89	1.035 (2.628)	0.144 (0.536)	5.052 (5.230)	13.371 (6.143)	0.626	179
90–95	0.184 (0.719)	0.559 (4.710)	2.025 (2.851)	10.912 (4.637)	0.652	556
86–90	1.082 (4.171)	0.016 (0.093)	5.433 (6.943)	11.849 (6.149)	0.621	277
91–95	0.115 (0.419)	0.609 (4.711)	1.686 (2.319)	10.837 (4.159)	0.662	458

The sample is as defined in Table III with various sub-samples split before and after enactment or implementation of the accounting reforms. Annual results are not presented for the sake of brevity. a_0 , a_1 , a_2 and a_3 are the estimated intercept, and slope coefficients on equity, earnings and dividends respectively. Figures in brackets are White adjusted t-statistics and the R^2 is adjusted for sample size.

results, and that the addition of the dividend variable produces the expected change in the model we conclude that the model is robust.

Our first hypothesis expects the explanatory power of the models to improve in the post reform period. As Table V shows, for the pooled post-reform period (1991–1995) the explanatory power of the basic model is higher, 0.571, than for the pre-reform period (1986–1989), 0.516. In general the annual results support this view with the two best years in the post-reform period and the two worst in the pre-reform. As far as the enhanced model is concerned the explanatory power of these models is higher than those of the basic model, the pre-reform value (0.626) is very similar to that for the whole sample (0.628) but the post-reform explanatory power is estimated as 0.662 (see Table VI). Parametric and non-parametric tests, which view the annual coefficient of determinant from the value model as a point estimate of the explanatory power, have been conducted which offer modest support for the hypothesis that there is a statistical difference between the explanatory power pre and post reform.² However Cramer (1987) presents a method which has been used by accounting researchers to compare explanatory power of OLS regressions. Application of this approach suggests that the difference is not statistically significant. Whatever the statistical position it is clear that any improvement in explanatory power is modest.

The second hypothesis is referred to the incremental value relevance of the two main variables, book value and earnings. Table VII shows that there has been a substantial change and reports the explanatory power of the equity and earnings model, column A, that of a model which uses equity only, column B, that from a model using earnings only, column C, and the incremental explanatory power from adding earnings, column A-B, and that from adding equity, column A-C. The incremental explanatory power of earnings has declined over time (for example from 15.8% in 1986–89 to 8.5% in 1991–95), while that for book value has increased (from 0.9% to 14.6% for the same segments). Since the reform equity has taken over from earnings as the more influential variable. Using Cramer's (1987)

methodology the change in explanatory power for each of the single regressor models is statistically significant at 5 percent confidence levels, although only marginally so for the earnings case where 86–89 is compared to 90–95. These results hold even if all cases with negative values are removed from the analysis. It is interesting to note that the frequency of negative values is clearly greater in the years after the change than before.

To test the impact of the accounting reform on the estimated coefficients we estimate pooled regressions including slope dummies for both book value and earnings coefficients and also for the dividends coefficient in the case of the enhanced model. This test is conducted using 1991 as the first post reform year in the first instance and then replicating the test with 1990 as the first year. These results appear in Table VIII, but they do not allow us to securely reject the third hypothesis. For both the basic and the enhanced model and irrespective of the cut-off date employed it appears that earnings coefficients have fallen, whilst the change in the book value coefficients is not consistent. In both basic models these results are not significant at normal confidence levels but in both enhanced models the slope dummies for earnings are significant, but the dummy for book value is only significant when the post-reform period is defined as 1991–1995. The slope dummy on dividends is not significant. These results do not indicate that the market has perceived a clear difference in the book value of equity as consequence of the accounting changes, but the impact of these on the earnings figure has produced a reduction on the weight attached to this figure by investors. In our view this may be due to the inclusion of more transitory components than before, which reduces its predictive value.

To a certain extent these results contradict to Ballester and Livnat (1997, p. 134) who conclude “when financial statements are prepared according to a ‘true and fair view’ of accounting, earnings can become a good summary measure of economic events which affect a firm.” In so far as our expectations of the book value and earnings coefficients are consistent with good summary measures of economic events our results dispute those of Ballester and Livnat (1997).

5. Conclusions

Following the entry of Spain into the European Community in 1986, it was necessary to reform Spanish accounting regulations to adopt the European Directives. The accounting reform was completed in two steps. In 1989 there were many changes in recognition and valuation rules, as well as an increase in the disclosure requirements, and in 1990 a few additional requirements were established. This regulation came into force one year later, in 1990 and 1991 respectively, and in 1991 consolidated accounts became compulsory. It is generally considered that after all the changes the information on the balance sheet has improved through consolidation of subsidiaries and accounting for finance leases, bills discounted and pension commitments. However it may be possible that the earnings figure

Table VII. Decomposition of explanatory power

	Panel A			Panel B		Panel C		Panel D		Cases
	a1 equity	a2 earnings	R ² (A)	b1 equity	R ² (B)	c1 earnings	R ² (C)	(A)-(B)	(A)-(C)	
All	0.593 (3.931)	4.592 (6.661)	0.544	1.074 (8.444)	0.411	6.763 (10.139)	0.467	0.133	0.077	735
86-89	0.388 (1.467)	5.569 (4.206)	0.516	1.459 (6.024)	0.358	6.676 (5.617)	0.507	0.158	0.009	179
90-95	0.654 (3.970)	4.067 (5.143)	0.558	1.036 (7.266)	0.458	6.749 (8.284)	0.446	0.100	0.112	556
86-90	0.180 (0.924)	6.331 (5.600)	0.523	1.232 (6.493)	0.326	6.926 (6.854)	0.521	0.197	0.002	277
91-95	0.715 (4.041)	3.715 (4.559)	0.571	1.043 (6.604)	0.486	6.628 (7.190)	0.425	0.085	0.146	458

This table reports the explanatory power of the equity and earnings model, column A; a model which uses equity only, column B; a model using earnings only, column C; and the incremental explanatory power from adding earnings, column A-B; and that from adding equity, column A-C. As before the sample is as defined in Table III with various sub-samples split before and after enactment or implementation of the accounting reforms. Annual results are not presented for the sake of brevity. a_0 , a_1 , and a_2 are the estimated intercept, slope coefficients on equity, and earnings respectively. Figures in brackets are White adjusted t-statistics and the R² is adjusted for sample size.

Table VIII. Pooled regressions with dummy variable

	1986–89 and 1990–95		1986–90 and 1991–95	
	Basic model	Enhanced model	Basic model	Enhanced model
a_0	0.822 (3.063)	0.334 (1.451)	0.886 (3.347)	0.404 (3.089)
a_1	0.688 (3.247)	0.386 (1.847)	0.452 (2.612)	0.225 (2.304)
d_1	-0.072 (0.370)	0.143 (0.733)	0.188 (1.157)	0.328 (3.266)
a_2	5.086 (3.419)	4.602 (4.698)	5.886 (4.753)	4.990 (9.935)
d_2	-0.972 (0.585)	-2.487 (2.119)	-2.076 (1.429)	-3.133 (4.957)
a_3	–	14.274 (6.293)	–	12.874 (9.831)
d_3	–	-3.629 (1.126)	–	-2.526 (1.560)
Cases	735	735	735	735
R^2	0.548	0.646	0.549	0.614

The sample is as defined in Table III with results presented according to accounting year end. a_0 , a_1 , a_2 , and a_3 are the estimated intercept, slope coefficient on equity, earnings and dividends respectively. d_1 , d_2 and d_3 are the estimated coefficients on interaction terms with equity, earnings and dividends respectively. The dummy in the interaction term is one if identifying cases occurring after the reform and zero otherwise. Figures in brackets are White adjusted t-statistics and the R^2 is adjusted for sample size.

is less useful for predictive purposes because it is more volatile due to the strict application of the prudence principle and the inclusion of more transitory elements. On the whole we consider that all these changes have increased the quality of the accounting information. The aim of this study is to empirically test this general idea by analysing the effects of the accounting changes using security prices as a benchmark.

We have used a sample of 735 cases drawn from Spanish non-financial companies during the period 1986–1995, modelling security price using book value and earnings per share as independent variables. We also considered the influence of dividends. As in Rees (1997) the results show that dividends are influential during the whole period. We have estimated the model for the pooled data, for individual years, and for sub-samples representing pre and post reform periods.

Our results are consistent with the initial hypothesis concerning an improvement in the explanatory power of the valuation model following the accounting reform. To the extent that this is viewed as an improvement in accounting practices this may be seen as beneficial. However we find the improvement to be only marginal – whether judged by economic or statistical significance.

Nevertheless our results are also consistent with a decline in the value of earnings as indicators of permanent earnings. The apparent switch of influence from earnings to book value could have alternative explanations although we consider the increased element of transient earnings to be the most likely. Several cases may help to clarify this view. Following a strict interpretation of the prudence principle, monetary items in foreign currency must be valued at the year end, and while losses

must go immediately to the profit and loss account, unrealised gains are deferred. Goodwill has to be depreciated, while before this only occurred if it had suffered a reduction in value. Before there were no special constraints imposed on including research and development in the balance sheet, but now it is difficult to capitalise them. Capital grants have to pass through the profit and loss account, while before they were treated as equity.

As Collins et al. (1997) and others show, equity would be expected to have a stronger role in valuation where earnings include a substantial transitory component. Our results evidence that the explanatory power of earnings and the slope coefficient in the regressions declines significantly in the post reform period and the converse is the case for the equity variable. This result is exacerbated by, but not dependent on, the increased frequency of negative earnings in the post reform period. It seems clear that the results are not consistent with an improved definition of earnings – if improved implies a better indicator of earnings potential.

This study has not tried to consider all the possible effects of the Spanish accounting reform, such as the cost of implementation or the benefits for other users of the accounts. It only provides a partial valuation of the reform from the investors perspective and additional research is still need to clarify the full consequences of the accounting reform. However it does provide evidence that the reform has altered the balance of value relevance between the income statement and balance sheet. Perhaps contrary to expectations the value of equity has gained relevance whilst the earnings measure has lost it.

Notes

¹ This period has been enlarged up to 20 years by the Law 37/1998.

² In these tests the results of 1990 have been omitted as it is not entirely clear whether these incorporate the full effect of the reforms or not. A parametric test of differences in the R^2 for pre- and post-1991 confirm that the explanatory power of the latter period is higher with a two-tailed probability of 0.103 for the results in Table V and 0.037 for those in Table VI. Non-parametric equivalent tests show slightly higher p-values for Table V (0.142) and slightly lower for Table VI (0.028).

References

- Ballester, M. and J. Livnat: 1997, "The Association between Security Prices and Financial Information in the Spanish Stock Market", *Journal of International Financial Management and Accounting* 8(2): 114–136.
- Basu, S.: 1997, "The Conservatism Principle and the Asymmetric Timeliness of Earnings", *Journal of Accounting and Economics* 24: 3–37.
- Bernard, V.: 1995, "The Feltham-Ohlson Framework: Implications for Empiricists", *Contemporary Accounting Research* (Spring): 733–747.
- Christie, A.: 1987, "On Cross-Sectional Analysis in Accounting Research", *Journal of Accounting and Economics* 9: 231–258.
- Collins, D., E. Maydew and I. Weiss: 1997, "Changes in the Value-Relevance of Earnings and Book Values over the Past Forty Years", *Journal of Accounting and Economics* 24: 39–67.

- Cramer, J.S.: 1987, "Mean and Variance of R^2 in Small and Moderate Samples", *Journal of Econometrics* 35: 253–266.
- Fama, E. and J. MacBeth: 1973, "Risk Return and Equilibrium: Empirical Tests", *Journal of Political Economy* 71: 607–636.
- Gabás, F., E. Castro and J.A. Gonzalo: 1986, "Los Principios Contables Fundamentales en la Actualidad", in *VII Congreso Nacional de Censores Jurados de Cuentas de España: Auditoría y principios de Contabilidad* (Madrid: ICJCE), pp. 133–240.
- Giner, B.: 1993, "The Spanish Accounting Framework: Some Comments", *The European Accounting Review* (September): 379–385.
- Giner, B.: 1997, "The Influence of Company Characteristics and Accounting Regulation on Information Disclosed by Spanish Firms", *The European Accounting Review* 6(1): 45–68.
- Harris, T., M. Lang and H. Moller: 1994, "The Value Relevance of German Accounting Measures: An Empirical Analysis", *Journal of Accounting Research* 32(2): 187–209.
- International Accounting Standards Committee: 1997, *Presentation of Financial Statements: IAS 1*. (London: IASC).
- Joos, P. and M. Lang: 1994, "The Effects of Accounting Diversity: Evidence from the European Union", *Journal of Accounting Research* 32(Supp): 141–168.
- Kothari, S. and J. Zimmerman: 1995, "Price and Return Models", *Journal of Accounting and Economics* 20: 155–192.
- Lev, B.: 1989, "On the Usefulness of Earnings: Lessons and Directions from Two Decades of Empirical Research", *Journal of Accounting Research* 27(Supp): 153–192.
- Lev, B. and S. Thiagarajan: 1993, "Fundamental Information Analysis", *Journal of Accounting Research* (Autumn) 31(2): 190–215.
- Montesimos, V.: 1980, *Las normas de contabilidad en la Comunidad Económica Europea* (Madrid: IPC).
- Ohlson, J.: 1995, "Earnings, Book Values and Dividends in Equity Valuation", *Contemporary Accounting Research* (Spring) 11(2): 661–687.
- Rees, W.: 1997, "The Impact of Dividends, Debt and Investment on Valuation Models", *Journal of Business Finance and Accounting* 24(7&8): 1111–1140.
- Riccaboni, A. and R. Di Pietra: 1998, "Regulating Accounting within the Political System: The Key-Role of the Legislature in Italy", *Workshop on Accounting Regulation*, Siena (March).
- Tua, J.: 1982, "El Principio de Imagen Fiel: Aspectos jurídicos y Contables", *Revista Técnica del Instituto de Censores Jurados de Cuentas de España* (June) 5: 15–29.
- Walton, P.: 1993, "The True and Fair View in British Accounting", *European Accounting Review* 2(1): 49–58.
- White, H.: 1980, "A Heteroscedastic Consistent Covariance Matrix and a Direct Test for Heteroscedasticity", *Econometrica* 48: 721–746.

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