Does the Information Environment Affect the Value Relevance of Financial Statement Data?

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Abstract

Recent studies demonstrate that the usefulness of financial statement data for valuation of stocks varies depending on specific economy- and firm-level conditions. This empirical study identifies a novel firm-level influential condition. It hypothesises and finds that for firms that trade at a premium to book value the value-relevance of two fundamental financial statement value drivers (i.e., earnings and book value) is negatively related to the level of sophistication of the firm's information environment. However, for firms that trade at a discount to book value, the level of sophistication of information environment does not affect the value-relevance of these financial statement value drivers. The level of complexity of the firm's information environment is proxied by the firm's capitalised value. The empirical analysis is based on a sample of non-financial firms listed on the London Stock Exchange.

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I. INTRODUCTION AND THEORETICAL FRAMEWORK

Financial statements are typically considered by investors as one of the most important sources of information for stock valuation. However, empirical research has shown that the usefulness of accounting information for valuing stocks tend to fall over time, as economies become more knowledge-intensive (Core *et al*., 2003; Lev and Zarowin, 1999). Furthermore, the value relevance of accounting data has been found to depend on the sign of earnings or their level relative to book value (Collins *et al.*, 1999; Burgstahler and Dichev, 1997), whether firms trade at a premium vis-à-vis discount to book value (Aleksanyan, 2006), and the financial health of the firm (Barth *et al*., 1998).

Our study demonstrates that, to the extent that the capitalised value of the firm may proxy for the level of sophistication of the firm's information environment, the usefulness of financial statement information for valuing stocks is also associated with the level of sophistication of firm's information environment. The firm's information environment is the universe of price-sensitive information which includes the economy, industry and firm-specific news and press reports, analyst reports, as well as financial statements. Consistent with Collins and Kothari (1989) and Atiase (1985), we use the firm's market capitalisation as a proxy for its information environment, and test the following **Hypothesis**:

(i) there should be a negative association between the usefulness of key financial statement data for equity valuation and the level of sophistication of the firm's information environment (i.e., size), and

(ii) the negative association between the usefulness of this data and the firm's information environment should be less pronounced when the firm trades at a discount to book value.[1]

The prediction (i) draws on prior findings of Atiase (1985) and Grant (1980) that there is much greater price adjustment to earnings announcements by small vis-à-vis large firms, and the findings of Francis *et al*. (2002) that the market's reaction to earnings announcements (and value relevance of earnings) increases when there is a monotonic decrease in the amount of a firm's non-financial competing information. The prediction (ii) uses the conjecture that the fact that the firm is valued at a discount to book value implies negative in expectation present value of future abnormal earnings. If allowed to persist, such future earnings would destroy value and all what would matter to risk-averse investors is the bottom-line value of the firm's net (book) assets in place (Barth *et al.*, 1998; Aleksanyan, 2006), regardless of the level of sophistication of the firm's information environment.

The remainder of this paper is organised as follows: section 2 explains the employed test design and the data, section 3 reports results and section 4 concludes.

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[1] Collins and Kothari (1989) and Atiase (1985) note that driven by high information demand the amount of production and dissemination of non-accounting information is an increasing function of the capitalised value of the firm, as professional investors devote a majority of their resources to gathering and dissemination information on larger, wider traded stocks. Hence one may suggest that for larger firms the firm's accounting information is likely to account for a smaller proportion of the entire volume of value-relevant competing information which is available to investors.

II. THE MODEL AND DATA

The relationship between the share price and financial statement value drivers is typically modelled in the spirit of the residual income valuation (Ohlson 1995; Rees 1997) or option style valuation framework (Burgstahler and Dichev 1997)[2]. Despite some conceptual differences, both theoretical frameworks utilise the same set of accounting value drivers, i.e., earnings and book values, and are usually translated into the same empirical regression model, where the market value of equity is regressed on the contemporaneous book value and reported earnings (Rees 1997; Burgstahler and Dichev 1997; Akbar and Stark 2003).

Our study employs this empirical model as it allows straightforward testing of the effect of different information environments on value relevance of two fundamental accounting value drivers, i.e., earnings and book value. To reduce the econometric problems associated with spurious OLS regression parameters, due to substantial cross-sectional differences in scale of the sample firms, we adopt the conventional approach (e.g., Akbar and Stark 2003) and deflate the model by a scale proxy[3]. We also control for the sign-of-earnings effect (Collins *et al.* 1999) by adding a negative earnings dummy variable and the interactions of all variables with the negative earnings dummy.

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[2] The residual income valuation model states that the value of equity should equal its book value plus the present value of future expected abnormal earnings. The option-style model, on the other hand, holds that equity market value should equal (i) the value of the firm's resources in place, when the firm is not a going concern, or (ii) the discounted stream of future earnings, when the firm is expected to continue its business as usual.

[3] Our scale proxy is the arithmetic mean of three of the most commonly used single-variable deflators: market value of equity, total assets and sales. In contrast with the highly asymmetric and skewed distributions of regression variables that are deflated by alternative single-proxy variables, our scale proxy and deflated variables have close-to-normal frequency distributions.

$$mv_{it} = \alpha_0 + \alpha_1 D + \alpha_2 bv_{it} + \alpha_3 dbv_{it} + \alpha_4 er_{it} + \alpha_5 der_{it} + u_{it} \quad (1)$$

where mv_{it}, is the scale-deflated market value of ordinary equity at the balance sheet date, bv_{it} is the scale-deflated book value of ordinary equity, and er_{it} is the scale-deflated earnings for ordinary shareholders, all for firm *i* in year *t*; D_{it} is a dummy variable that takes the value of unity when the firm reports negative earnings, and zero otherwise; dbv_{it} and der_{it} are, respectively, the interactions of D_{it} with bv_{it} and er_{it}, ($dbv_{it} = D_{it}*bv_{it}$, and $der_{it} = D_{it}*er_{it}$); u_{it} is the regression error term.

To test the prediction (i) of our hypothesis, we divide the sample into size-based quintiles (as size is our proxy for information environment) and compare the regression's explanatory power among the quintiles.[4] To test the prediction (ii), we run the regression for two separate sub-samples of firms: firms that trade at a premium to book value, and firms that trade at a discount to book value.

Our pooled cross-sectional and over time data, which is obtained from the Extel Financial Company Analysis database, cover the period from 1988 to 2005 and include all non-financial firms listed on the London Stock Exchange. The final sample, that excludes the outliers (top and bottom 1% of all regression variables), missing values and negative book values, consists of 20,806 firm-years. To avoid sample bias, induced by changes of the size of firms over time, observations are first arranged into quintiles within each year of the sample period. The corresponding yearly quintiles are then pooled over the entire sample period. Thus, the 1st quintile includes 20% of the largest firms from each year of the sample period, while the 5th quintile (Q5) pools the yearly smallest 20% of firms.[5]

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[4] Consistent with Collins *et al.* (1997), the information content of an individual variable of interest is measured as the difference between the R^2 of the full model and the R^2 of the model when it omits the variable of interest.

[5] Note that the first quintile firms match the non-financial constituents of the FTSE 250 index. Thus firms in this quintile are the largest in the UK and operate in the most sophisticated information

III. EMPIRICAL FINDINGS

Table 1 about here

Table 1 reports regression results for the premium (Panel A) and discount (Panel B) sub-samples across the size quintiles. Results in Panel A suggest that the combined value relevance of book value and earnings (R^2) is negatively related to the firm's size (i.e., the level of sophistication of the firm's information environment). While the R^2 is only 3.2% for the quintile of the largest companies (Q1), it is more than three times higher (at 11.4%) for the next quintile of smaller companies. Note that in contrast to Q1 firms, the Q2 firms fall outside the FTSE 250 index and, therefore, are not as closely followed by financial analysts as firms in the first quintile. The combined value relevance of earnings and book value continues to increase as one moves towards the smallest firms' quintile (Q5), where the R^2 reaches 18.7%. The increasing R^2 as companies become smaller suggests that the valuation role of earnings and book value increases as the informational environment of firms becomes less sophisticated.

Further analysis reveals that most of this increase is due to the increased incremental information content of book value. That is, for smaller firms that operate in less sophisticated information environment, book value gradually becomes a more important measure of value for investors. Our suggested explanation is that, in the less sophisticated information environment of smaller firms, information asymmetries

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environment. The actual number of observations (in Table 1) varies across quintiles and between the ***mv>bv*** and ***mv <bv*** panels because the eliminated outliers and negative book value cases are not equally spread across the quintiles.

between firms and investors may be high, causing risk-averse investors to rely more on a conservative measure of value, i.e., the book value of net assets in place.

Results for the discount firms (Panel B) show that the combined value relevance of earnings and book value is not related to the informational environment, as the R^2 does not have any pronounced trend across the quintiles. Book value accounts for nearly all of the regression's explanatory power across all quintiles, while the role of earnings is trivial. The fact that the firm is valued at a discount to book value implies that its present value of future abnormal earnings is negative in expectation and all what should matter to investors, regardless of the size (i.e., information environment) of the firm, is the value of the firm if the firm is pressed to adapt its net assets to an alternative usage that does not destroy value. This explanation concurs with Burgstahler and Dichev (1997) theorisation regarding the valuation role of book value when firm is not likely to continue as a going concern.

IV. CONCLUSIONS

This study argues that the usefulness of key financial statement data (earnings and book value) in stock valuation decreases as the information environment of firm becomes more sophisticated. Information environment encompasses all sources of information relevant to assessing firm value (e.g., government, industry, analyst reports, firm-specific news in the financial press, published financial statements), and is proxied by the firm's market capitalisation. For firms that trade above book value, we hypothesise and find that earnings and book value become more value relevant in less sophisticated information environment. For firms that trade at a discount to book value, we find book value to be the most important value driver and to remain as such regardless of information environment. We offer the following explanation to the latter. The fact that the firm is valued at a discount to book value implies that its present value of future abnormal earnings is negative in expectation and all what should matter to investors (regardless of the level of sophistication of the firm's information environment) is the most conservative valuation of the firm when it is pressed to adapt its assets to an alternative usage to limit further destruction of value.

Acknowledgements

The author is grateful to Jo Danbolt, John Holland and Antonios Siganos for helpful comments and suggestions.

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Table 1. Changes in value relevance of earnings and book value across quintiles representing different information environments

Model: $mv_{it} = \alpha_0 + \alpha_1 D + \alpha_2 bv_{it} + \alpha_3 dbv_{it} + \alpha_4 er_{it} + \alpha_5 der_{it} + u_{it}$

	Panel A: mv > bv						Panel B: mv < bv					
	Entire sample (mv > bv)	Q1	Q2	Q3	Q4	Q5	Entire sample (mv < bv)	Q1	Q2	Q3	Q4	Q5
Intercept (α_0)	0.696	1.004	0.722	0.624	0.457	0.426	0.043	0.114	0.037	0.075	0.035	0.057
p-value	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.050*	*0.000*	*0.002*	*0.001*
D	0.220	0.170	0.424	0.444	0.466	0.212	-0.063	-0.076	-0.088	-0.125	-0.034	-0.075
p-value	*0.000*	*0.044*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.075*	*0.064*	*0.000*	*0.074*	*0.000*
bv	0.196	-0.229	0.112	0.328	0.476	0.701	0.608	0.586	0.702	0.517	0.602	0.595
p-value	*0.000*	*0.000*	*0.004*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
dbv	0.428	0.403	0.349	0.263	0.038	0.017	0.076	0.112	0.090	0.246	0.050	0.048
p-value	*0.000*	*0.006*	*0.002*	*0.006*	*0.643*	*0.796*	*0.000*	*0.119*	*0.287*	*0.000*	*0.197*	*0.188*
er	3.354	2.515	4.271	3.407	3.420	1.762	0.499	0.789	0.235	1.247	0.763	-0.490
p-value	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.003*	*0.339*	*0.000*	*0.000*	*0.030*
der	-3.453	-2.253	-4.374	-3.563	-3.694	-1.988	-0.501	-0.601	-0.265	-1.261	-0.818	0.487
p-value	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.036*	*0.293*	*0.000*	*0.000*	*0.032*
Adj. R-sq.	9.2%	3.2%	11.4%	14.7%	18.1%	18.7%	63.8%	70.3%	71.5%	62.9%	69.0%	64.9%
No. of obs. *	16402	3846	3820	3510	2970	2256	4404	342	424	724	1220	1694
The individual incremental information content of ‘*er*’ and ‘*bv*’:												
er	3.5%	2.3%	5.7%	3.6%	4.4%	2.5%	0.3%	1.7%	-0.1%	1.8%	0.7%	8.2%
bv	2.7%	0.7%	0.9%	3.0%	4.5%	12.6%	52.9%	46.1%	58.5%	49.0%	57.7%	56.8%

Notes: All regression variables are scale deflated. *mv*, the market capitalization of ordinary equity, is the dependent variable; *er* is earnings for ordinary shareholders; *bv* is book value of ordinary equity; *D* is a dummy variable that takes value of unity for firms with positive earnings, and zero otherwise; *dbv* is the interaction of *bv* and *D*, and equals *D**bv*; *der* is the interaction of *er* and *D*, and equals *D**er*. All variables are at the balance sheet date. The table reports White’s heteroskedasticity-consistent p-values. **Q1** through **Q5** represent sub-samples, which correspond to the quintiles of the largest market capitalisation through the smallest market capitalisation firms, respectively. The computation of incremental information content of *er* (*bv*) follows Collins *et al.* (1997) and represents the difference between the R^2 of the entire mode and the R^2 of a model that excludes er (bv). * The variation in the number of observations across quintiles in each panel is due to the splitting of the original quintiles into ***mv>bv*** (Panel A) and **mv<bv** (Panel B) firms. Thus the sum of the number of observations in corresponding quintiles of Panels A and B should approximately be the same for all quintiles. Any remaining differences are due to uneven distribution of the eliminated outliers and negative book value cases across the quintiles.