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Implications of Components of Income Excluded from Pro Forma Earnings for Future Profitability and Equity Valuation

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Abstract: This study addresses three research questions relating to total exclusions, special items, and other exclusions. Are each of these pro forma exclusion components forecasting irrelevant? Are each of the exclusion components value irrelevant? Are the valuation multiples on the exclusion components justified by their ability to forecast future profitability as predicted by the Ohlson (1999) model? Findings are generally consistent with the market-inefficiency results presented in Doyle et al. (2003). Total exclusions are valued negatively by the market despite the prediction that total exclusions will be valued positively. Valuation results also suggest that stocks with positive other exclusions are overpriced.

Keywords: pro forma earnings, equity evaluation, mispricing, residual income

1. INTRODUCTION

The promulgation of 'pro forma' earnings numbers in corporate earnings releases raises a variety of issues of interest to accounting policy makers and accounting researchers. The explanation offered by the companies that produce these 'Street' earnings numbers is that they more accurately reflect the firm's true earning power. There is some empirical support for this argument. Bradshaw and Sloan (2002), Brown and Sivakumar (2003), and Lougee and Marquardt (2004), show that stock prices correspond more closely with Street earnings numbers than with GAAP

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income.[1] However, critics express the concern that managers use the Street numbers to manage investors' perceptions of what the firm's true earnings power is, and hence what its stock is really worth.[2] Empirical evidence suggests such concerns may be warranted. For example, Matsumoto (2002) and Burgstahler and Eames (2003) provide evidence that firms appear to use Street numbers to meet as well as to manage analysts' earnings forecasts. The notion that GAAP income and pro forma earnings are of a different 'quality' underlies these studies as well as the discussion of pro forma earnings in the popular financial press.[3] Pro forma earnings have also attracted the attention of regulators. The implementation of Section 401 (b) of the Sarbanes-Oxley Act of 2002 requires that companies which disclose a non-GAAP financial measure such as pro forma earnings also present the most comparable financial measure as determined under GAAP, and reconcile the two measures.

A recent study by Doyle, Lundholm and Soliman (2003) (hereafter DLS) focuses on the components of earnings that analysts exclude from GAAP net income to arrive at pro forma income.[4] The study shows that investors appear to underreact to the excluded items as evidenced by the fact that significantly positive returns up to three years can be earned using hedge portfolios based on extreme exclusion amounts. The findings obtain for both total exclusions—i.e., the difference between actual net income and pro forma income, and other exclusions, i.e., total exclusions less special items. The market-inefficiency findings in DLS are intriguing, and DLS goes on to suggest that regulatory concerns about the use of pro forma earnings may be warranted. The authors' interpretation of the source of this market inefficiency (p. 148) is that investors must not fully adjust for the future cash flow implications of the excluded items when reacting to the firm's earnings announcement.

This paper focuses on the components of earnings that analysts exclude from GAAP net income to arrive at pro forma income using a different research design based on Ohlson (1999), which extends Ohlson (1995) by modeling earnings components. Ohlson (1999) allows one to test whether an earnings component is irrelevant for forecasting future abnormal earnings (i.e., 'forecast irrelevant') and irrelevant for pricing purposes (i.e., 'value irrelevant'). One argument that is often made for excluding an earnings component in arriving at pro forma earnings is that the excluded earnings component is forecasting irrelevant and/or value irrelevant. A major advantage of Ohlson (1999) is that it provides a rigorous link between the forecasting

1 Bradshaw and Sloan (2002) and Brown and Sivakumar (2003) use pro forma earnings numbers released by IBES. In contrast, Lougee and Marquardt (2004) uses the pro forma earnings actually released by sample firms, and finds that stock prices correspond more closely with pro forma earnings only for firms that provide reconciliations between GAAP income and pro forma earnings.

2 See, e.g., Turner (2000) and *Business Week* (2001).

3 Throughout we use the terms 'earnings' and 'income' interchangeably.

4 DLS uses the IBES actual earnings per share as the definition of pro forma earnings and we use the same definition in this paper. One difference between IBES earnings and the pro forma numbers released by management is that IBES earnings are likely to reflect more consistent treatment of the same item across firms. Therefore, caution should be exercised in carrying over conclusions based on IBES earnings to the pro forma numbers released by management. For example, Choi et al. (2006) examines the differences between Thomson Datastream and actual earnings for a sample of UK companies. Findings from value relevance tests indicate that the majority of management-specific adjustments reflect appropriate classification of earnings components by insiders, although there is evidence of strategic disclosure for a subset of management adjustments. Nevertheless, since consistency in accounting treatment across firms is desirable, conclusions based on IBES earnings may underestimate problems of concern to regulators associated with the actual pro forma numbers released by management.

and valuation equations making it possible to determine if the valuation multiples of the various earnings components are justified by their ability to forecast future profitability. The Ohlson (1999) model has previously been employed by Barth, Beaver, Hand and Landsman (1999 and 2005) in the context of cash flow and accrual components of earnings.

We address three research questions relating to total exclusions, special items, and other exclusions.[5] One, are each of these pro forma exclusion components forecasting irrelevant in a forecasting model of earnings that also includes equity book value and abnormal earnings? Two, are each of these pro forma exclusion components value irrelevant in a valuation model that also includes equity book value and abnormal earnings? Three, are the valuation multiples on the pro forma exclusion components justified by their ability to forecast future profitability as predicted by the Ohlson (1999) model?

Both DLS and Burgstahler, Jiambalvo and Shevlin (2002) are relevant to these research questions. DLS examines the ability of pro forma exclusions to forecast two different measures of cash flow rather than earnings as in the first part of our study. Burgstahler et al. (2002) examines the ability of special items to forecast earnings, and, similar to our study, partitions the sample into positive and negative special items. Neither DLS nor Burgstahler et al. (2002) investigate the value relevance of pro-forma earnings exclusion components. Also, neither study tests whether value relevant components are also forecast relevant.

Our sample includes all *Compustat* firms between 1990–2000 with available annual IBES pro forma data. To conduct our tests, we jointly estimate three sets of equations, one each for total exclusions, special items, and other exclusions.

Specifically, we first estimate the relation between future abnormal earnings and current abnormal earnings and, separately, each excluded earnings component. The total coefficient of the excluded component is the sum of the coefficient estimates of the excluded component and abnormal earnings inclusive of that component. The total coefficient of the excluded component measures its total marginal effect. When a significant relation for the total coefficient of the excluded earnings component is found, the component is deemed forecasting relevant. We address our second research question by estimating the relation between equity market value and equity book value, abnormal earnings, and the excluded earnings component. When a significant relation for the total coefficient of the excluded earnings component is found, the component is deemed value relevant. We address our third research question by comparing the total valuation multiples on each excluded earnings component obtained from this equity market value relation with those obtained from estimating the relation after constraining the valuation multiples to be equal to those implied by the Ohlson model. In addition, we estimate each equation by partitioning the sample into positive and negative exclusion subsamples. Our reason for partitioning the sample into positive and negative exclusions is motivated, in part, by the allegation by critics of pro forma earnings that managers exclude items to portray firms in positive light, and that, as a result, investors may be misled. Tacitly, these critics appear to suggest that employing positive exclusions that lower pro forma income

5 Barth, Beaver, Hand and Landsman (1999) uses Ohlson (1999) to examine if cash flows and accruals have different forecasting and valuation characteristics rather than to examine if cash flows and accruals are forecasting irrelevant and value irrelevant.

relative to GAAP income should be more 'believable' and therefore informative to investors.

Our principal results are as follows: We find that the total coefficient of total exclusions on future abnormal income is significantly positive, although smaller than the coefficient of other components of abnormal earnings. Tests based on the positive and negative total exclusion subsamples indicate that the significantly positive total forecasting coefficient reported for the overall sample is attributable to negative total exclusions. Whereas the total forecasting coefficient for negative total exclusions is significantly positive, indicating negative total exclusions possess forecasting relevance, positive total exclusions are not forecasting relevant. Findings relating to special items indicate that as with total exclusions, the total forecasting coefficient is significantly positive, although smaller than that on other components of abnormal earnings. However, the total coefficient is insignificantly different from zero for both the positive and negative special items subsamples. Findings relating to other exclusions also indicate that the total forecasting coefficient is significantly positive, and it is nearly the same magnitude as that on other components of abnormal earnings. We also find that both positive and negative other exclusions possess forecasting relevance. Findings from estimating the component forecasting equations indicate that total exclusions, special items, and other exclusions are persistent. As expected, our forecasting results are similar to those in DLS and Burgstahler et al. (2002).

Next, we find that total exclusions, special items and other exclusions are value relevant, but not in a manner one would predict based on the forecasting and component prediction coefficients. While DLS suggests that their study's market-inefficiency results are attributable to underreaction (p. 148), our results suggest that the pricing of excluded items is in some cases extreme and has the opposite sign of that predicted by the forecasting equations. This extreme mispricing leads us to agree with the conclusion in DLS that regulatory concern about the use of pro forma earnings may be warranted. Also noteworthy are our results which suggest that stocks with positive other exclusions are overpriced. These valuation results question the strategy in DLS of taking a long position in firms with positive other exclusions.

When we compare our forecasting results with the valuation multiples on the pro forma exclusions components, we find that the constraints on the excluded components' valuation multiples implied by the Ohlson model are binding for the overall sample and for positive and negative subsamples. This finding reinforces our mispricing results.

The remainder of the paper is organized as follows. Section 2 develops the hypotheses and research design. Section 3 describes the sample and data, and Section 4 presents the findings. Section 5 summarizes and concludes the study.

2. HYPOTHESES AND RESEARCH DESIGN

To examine how the pro forma earnings and the components of earnings excluded from pro forma earnings relate to equity value, we extend, following Barth, Beaver, Hand and Landsman (1999), the linear information system developed in the Ohlson (1999). The linear information system comprises four equations:

$$\mathrm{NI}^a_{it+1} = \omega_{10} + \omega_{11}\mathrm{NI}^a_{it} + \omega_{12}x_{2it} + \omega_{13}\mathrm{BV}_{it} + \varepsilon_{1it+1} \quad (1)$$

$$x_{2it+1} = \omega_{20} + \omega_{22} x_{2_{it}} + \omega_{23} \mathrm{BV}_{it} + \varepsilon_{2it+1} \quad (2)$$

$$\mathrm{BV}_{it+1} = \omega_{30} + \omega_{33} \mathrm{BV}_{it} + \varepsilon_{3it+1} \quad (3)$$

$$\mathrm{MVE}_{it} = \alpha_0 + \alpha_1 \mathrm{NI}^a_{it} + \alpha_2 x_{2it} + \alpha_3 \mathrm{BV}_{it} + u_{it}. \quad (4)$$

Equation (1) is the abnormal earnings forecasting equation, where abnormal earnings, NI^a_t, is defined in the usual way as earnings, NI_t, less a normal return on beginning equity book value, BV_{t-1}, i.e., $\mathrm{NI}_t - r\mathrm{BV}_{t-1}$. As in Ohlson (1999) and Barth, Beaver, Hand and Landsman (1999), NI_t is partitioned into x_{1t} and x_{2t} so that $\mathrm{NI}_t = x_{1t} + x_{2t}$. In the context of examining components of earnings excluded from pro forma earnings, x_2 is total exclusions, special items or other exclusions. In equation (1), ω_{11} reflects the persistence of abnormal earnings. Prior research (e.g., Dechow, Hutton and Sloan, 1999; Barth, Beaver, Hand and Landsman, 1999 and 2005) leads us to predict that ω_{11} is positive.

The coefficient on the earnings component x_2, ω_{12}, reflects the incremental effect on the forecast of abnormal earnings of knowing x_2. If all earnings components have the same ability to forecast abnormal earnings, ω_{12} will equal zero, and thus knowing that component of earnings does not aid in forecasting abnormal earnings. As a result, we test the null hypothesis that $\omega_{12} = 0$ against the alternative that $\omega_{12} \neq 0$.

Following Ohlson (1999, p. 150) we define x_2 as being 'forecasting irrelevant' if $(x_{1t}, \mathrm{BV}_t, \mathrm{BV}_{t-1})$ contains the same information as $(x_{1t}, x_{2t}, \mathrm{BV}_t, \mathrm{BV}_{t-1})$ for purposes of forecasting. Because x_{2t} is a component of NI^a_t, and $(x_{1t}, \mathrm{BV}_t, \mathrm{BV}_{t-1})$ is assumed to be given, the total coefficient on x_{2t} is $\omega_{11} + \omega_{12}$. ω_{13} is not included in the total coefficient on x_{2t} because BV_t is given and therefore does not change as x_{2t} changes. Thus, if $\omega_{11} + \omega_{12} = 0$, x_2 is irrelevant for forecasting abnormal earnings. Conversely, if $\omega_{11} + \omega_{12} \neq 0$, then x_2 is said to have abnormal earnings 'forecasting relevance.' To examine whether total exclusions, special items and other exclusions are forecasting irrelevant as suggested by company managers and analysts (Bear Stearns (2002)), we test the null hypothesis that $\omega_{11} + \omega_{12} = 0$ against the alternative that $\omega_{11} + \omega_{12} \neq 0$. Note that ω_{11} reflects the forecasting relevance of the $\mathrm{NI}^a_t - x_{2t} = x_{1t} - r\mathrm{BV}_{t-1}$ component of NI^a_t.

Equation (2), the component prediction equation, describes the autocorrelation, or persistence, of the earnings component x_2, which Ohlson labels 'predictability.' If total exclusions, special items, and other exclusions are 'unpredictable,' then $\omega_{22} = 0$. As a result, we test the null hypothesis that $\omega_{22} = 0$ against the alternative that $\omega_{22} \neq 0$.

Following Barth, Beaver, Hand and Landsman (1999), we include equation (3) to preserve the triangular information structure of the generalized version of Ohlson's (1999) model, but do not report its regression summary statistics. Also following Barth, Beaver, Hand and Landsman (1999), we do not test for any implied restrictions across equations relating to the intercepts, ω_{10}, ω_{20}, ω_{30}, and α_0.[6]

6 Testing for cross-equation restrictions for the intercepts is complicated empirically by inclusion of industry and year fixed-effects in our estimating equations (see below). However, untabulated findings from estimations in which we restrict the equation (4) intercepts to be zero and the equity book value coefficient to be unity—a version of the valuation and forecasting system corresponding more strictly to Ohlson (1995)—result in no changes in inferences regarding the total x_{2it} coefficient in equations (1) and (4).

Equation (4) is the valuation equation based on the information dynamics in equations (1) through (3). α_2 is the valuation multiple on x_2, i.e., total exclusions, special items or other exclusions. Analogous to the interpretation of ω_{12} in equation (1), α_2 reflects the incremental effect on valuation from knowing x_2. If all earnings components have the same relation with equity value, then α_2 will equal zero, and knowing that component of earnings does not aid in explaining equity value. Thus, we test the null hypothesis that $\alpha_2 = 0$ against the alternative that $\alpha_2 \neq 0$. Following Ohlson (1999, p. 150) we define x_2 as being 'valuation irrelevant' if $(x_{1t}, \text{BV}_t, \text{BV}_{t-1})$ contains the same information as $(x_{1t}, x_{2t}, \text{BV}_t, \text{BV}_{t-1})$ for purposes of valuation. Also analogous to equation (1), the total valuation coefficient on x_2 equals $\alpha_1 + \alpha_2$. Thus, if $\alpha_1 + \alpha_2 = 0$, x_2 is irrelevant for valuation. Conversely, if $\alpha_1 + \alpha_2 \neq 0$, then x_2 is 'valuation relevant.' To examine whether total exclusions, special items and other exclusions are value-irrelevant as suggested by company managers and analysts (Bear Stearns, 2002), we test the null hypothesis that $\alpha_1 + \alpha_2 = 0$ against the alternative that $\alpha_1 + \alpha_2 \neq 0$. Analogous to the interpretation of ω_{11} in equation (1), α_1 reflects the value relevance of the $\text{NI}_t^a - x_{2t} = x_{1t} - r\text{BV}_{t-1}$component of NI_t^a. Finally, we point out that our equation (4) differs from Ohlson's valuation equation in that, following Barth, Beaver, Hand and Landsman (1999), we allow for an intercept and do not restrict α_3 to be unity. Since we do not restrict α_3 to be unity, our model does not satisfy dividend irrelevance.[7]

For each interpretation of x_2 we estimate equations (1) through (4) as a system using Seemingly Unrelated Regressions, permitting regression errors to be correlated across equations. We do this for a pooled estimation using industry and year fixed-effects, and also for subsamples for which x_2 is positive or negative. Following Barth, Beaver, Hand and Landsman (1999 and 2005), we estimate all equations using unscaled data (Barth and Kallapur, 1996).[8]

An important advantage of the structure of the equations (1) through (4) is that they lead to a precise relation between the earnings forecasting equations and the valuation equations. Ohlson (1999, p. 151) establishes the following equations:

$$\alpha_1 = \omega_{11}/(R - \omega_{11}), \tag{5}$$

$$\alpha_2 = R\omega_{12}/(R - \omega_{11})(R - \omega_{22}), \quad \text{and} \tag{6}$$

$$\alpha_1 + \alpha_2 = 1/(R - \omega_{11})[\omega_{11} + (R\omega_{12}/(R - \omega_{22}))] \tag{7}$$

which also apply to our extension of his model (see for example, equation (5) in Barth, Beaver, Hand and Landsman, 1999). Equation (7) is simply the sum of (5) and (6) and is included for ease of reference. We use these equations to address our third research question whether the valuation multiples on the components of income excluded from income vary as predicted by equations (6) and (7).

Following Barth, Beaver, Hand and Landsman (1999), we address the third research question by estimating the system of forecasting, component prediction, and valuation equations (1) through (4) two ways, one permitting coefficients to be determined separately within each equation ('unconstrained' estimation) with the SUR system,

7 See prior footnote.

8 To address potential scale bias, we also estimate all models using per share data, and deflating by beginning equity market value and equity book value. None of the key experimental inferences is affected.

and another constraining cross-equation coefficients to be based on the constraints implied by equations (5) through (7) ('constrained' estimation). This permits us to compare the unconstrained total valuation coefficient for each excluded component to (a) those calculated using the unconstrained forecasting and prediction coefficients, and (b) to those based on the constrained estimation.

Observing significant differences between the unconstrained total valuation coefficient for each excluded component and (a) or (b) above is consistent with market mispricing, but there are other possible explanations. One possible explanation is that the linear system specified in the Ohlson (1999) model may not be entirely descriptively valid.[9] A second explanation is that requiring the regression coefficients to be cross-sectional constants that do not vary across firms is a restriction, the effects of which result in differences in the set of valuation coefficients. In addition, consistent with Barth, Beaver, Hand and Landsman (1999), but inconsistent with the forecasting equations (A3) in Ohlson (1999), we include an intercept and equity book value in the forecasting equations. The most compelling evidence of possible market mispricing will be in cases where the sign of the unconstrained total valuation coefficient for each excluded component differs from the sign of (a) or (b) above.

3. DATA AND DESCRIPTIVE STATISTICS

We obtain data for 1990–2000 from the *Compustat Primary, Secondary, and Tertiary, Full Coverage, and Research Annual Industrial Files* and the 2001 *IBES* analyst earnings database. Following Barth, Beaver, Hand and Landsman (1999 and 2005), Dechow, Hutton and Sloan (1999) and Bell, Landsman, Miller and Yeh (2002) we compute abnormal earnings, NI_t^a, as $\mathrm{NI}_t - r\mathrm{BV}_{t-1}$, setting r, the cost-of-equity capital, equal to 12%, and with net income, NI, measured as income before extraordinary items and discontinued operations.[10] Although defining NI in this way violates the clean surplus assumption of Ohlson (1995), it is consistent with prior research using the Ohlson model (e.g., Barth, Beaver, Hand and Landsman, 1999; and Dechow, Hutton and Sloan, 1999), as well as research comparing GAAP income, and pro forma measures (Brown and Sivakumar, 2003; and Bradshaw and Sloan, 2002).[11] As in related studies (Brown and Sivakumar, 2003; and DLS), operating income, OI, is taken from *Compustat*, and is used to compute special items, SI, as NI minus OI. Analyst pro forma earnings, PF, is the IBES estimate of operating income by adjusting reported net income using analysts' consensus earnings forecasts.[12] This is the same measure of Street earnings used in Bradshaw and Sloan (2002), Brown and Sivakumar (2003) and DLS

9 For example, the information dynamics given by equations (1) through (3) assumes a triangular structure, in which lagged amounts of the dependent variable in each successive equation are assumed to have no forecasting role. For example, the implicit coefficient on NI_t^a in equation (2), ω_{21}, is zero. Untabulated findings from estimations that relax the triangularity assumption indicate that the assumption is binding. However, none of the inferences from these estimations relating to our hypotheses differs from those relating to the tabulated findings.

10 None of our experimental inferences is affected by assuming alternative values for r.

11 Findings in Hand and Landsman (2005) suggest that violating clean surplus will have little effect on our findings. Stark (1997) derives conditions under which a component of clean surplus earnings can be irrelevant for valuation purposes. Ohlson (1999, p. 160) concludes that this approach is justified in empirical work because one-time items have no forecasting ability.

12 IBES estimates are provided on a per share basis (IBES, 1999). Therefore, we multiply each IBES estimate as well as *Compustat* per share NI, and OI by the applicable number of shares outstanding to obtain IBES estimates of total earnings, *Compustat* total NI and OI.

(2003). We define total exclusions, TE, as NI minus PF, and other exclusions, OE, as OI – PF (operating earnings minus pro forma earnings).[13] Since empirically PF tends to be larger than NI and OI, TE and OE have negative means (see Table 1). In other words, the items excluded to form pro forma earnings tend to be income-lowering.

To mitigate the effects of outliers, for each variable cross-sectionally pooled as well as by year and within each industry, we treat as missing observations that are in the extreme top and bottom one percentile (Kothari and Zimmerman, 1995; Collins, Maydew and Weiss, 1997; Fama and French, 1998; and Barth, Beaver, Hand and Landsman, 1999). We also restrict the sample to firms with full data to estimate the system of equations, and following Barth, Beaver, Hand and Landsman (1999 and 2005), we also require that sample firms have total assets in excess of $10 million to avoid the influence of small firms. We also exclude non-US firms, because the potential differences in the accounting environment and the data matching difficulties created by the multi-classes of equity securities. All variables are measured as of fiscal year end, including equity market value, and are expressed in millions of dollars.[14] Table 1 presents descriptive statistics for each of the variables used in the estimating equations. Panel A reports distributional statistics, Panel B contains Pearson and Spearman correlations, and Panel C describes the industry composition of the sample. Panel A reveals that, on average, the market value of equity exceeds the book value of equity, indicating that the firms in our sample had considerable unrecognized net assets (see Barth, Beaver and Landsman, 1998, p. 6). Panel A also reveals that mean abnormal earnings, NI^a, is negative, which could be attributable to the cost-of-equity capital being less than 12%, but is nonetheless consistent with prior research.[15] Mean values of total exclusions, TE, and special items, SI, are both negative, indicating that, on average, pro forma and operating earnings exceed reported net income, although median values of TE and SI are zero (27.88% of TE are zero, 62.24% of SI are zero, and 26.20% of OE are zero). Panel B reveals that most of the variables are highly correlated with each other. Notably, TE and SI are highly positively correlated with each other and negatively correlated with equity market value. Panel C reports the industry breakdown of our sample. Industries with the largest concentrations of firm-year observations are Computers, 17.8%, and Services, 10.8%.

4. RESULTS

(i) Benchmark Equations

Table 2, Panels A and B, present regression summary statistics corresponding to the benchmark abnormal earnings equations and equity valuation equations,

13 Our exclusions variables are defined as the negative of those same variables in DLS (2003). We do this to be consistent with Ohlson (1999). DLS examines the forecasting properties of components of analyst pro forma earnings, total exclusions and special items. They find that total exclusions includes (1) restructuring charges, asset writedowns, gains/losses on asset sales, and (2) in-process R&D, goodwill amortization, stock compensation expense, equity method gains/losses, legal settlement costs, and operations from projected future discontinued operations. Special items includes the items in category (1).

14 Inferences are essentially the same when market value is measured as three months after fiscal year end.

15 Including BV in the abnormal earnings equation partially relaxes the assumption of r being a fixed cross-sectional constant.

Table 1

Descriptive Statistics for Equity Market Value, Book Value, Abnormal Earnings, Total Exclusions, Special Items, Other Exclusions, and Industry Composition, for a Sample of 21,748 Firm-Year Observations, 1990–2000

Panel A: Distributional Statistics (in $ millions)

Variable	*Mean*	*25th %*	*Median*	*75th %*	*Std. Dev.*
MVE	468.39	49.05	130.17	406.57	1054.39
BV	161.12	25.75	60.56	156.67	294.47
NI^a	−0.88	−7.67	−0.54	4.53	35.74
TE	−2.88	−0.93	0.00	0.00	11.59
SI	−2.20	−0.42	0.00	0.00	9.42
OE	−0.68	−0.27	0.00	0.15	5.74

Panel B: Correlations, with Pearson (Spearman) Correlations Above (Below) the Diagonal

Variable	*MVE*	*BV*	*NI^a*	*TE*	*SI*	*OE*
MVE	1.00	0.76	0.43	−0.19	−0.19	−0.07
BV	0.84	1.00	0.28	−0.23	−0.23	−0.08
NI^a	0.32	0.22	1.00	0.28	0.25	0.16
TE	−0.06	−0.08	0.28	1.00	0.87	0.59
SI	−0.06	−0.08	0.26	0.49	1.00	0.12
OE	0.00	−0.01	0.13	0.65	−0.13	1.00

Panel C: Industry Composition

Industry	*Primary SIC Codes*	*Number of Firm-Years*	*% of Obs.*
Food	2000–2111	587	2.70
Textiles + printing/pub.	2200–2780	1, 743	8.01
Chemicals	2800–2824, 2848–2899	634	2.92
Pharmaceuticals	2830–2836	1, 306	6.01
Extractive industries	2900–2999, 1300–1399	848	3.90
Durable manufactures:			
Rubber, plastics, leather, stone, clay, & glass	3000–3299	630	2.90
Metal	3300–3499	1, 042	4.79
Machinery	3500–3569, 3580–3599	1, 105	5.08
Electrical equipment	3600–3669, 3680–3699	1, 370	6.30
Transportation equipment	3700–3799	622	2.86
Instruments	3800–3899	1, 855	8.52
Miscellaneous manufactures	3900–3999	297	1.37
Computers	7370–7379, 3570–3579, 3670–3679	3, 859	17.74
Retail:			
Wholesale	5000–5199	1, 149	5.28
Miscellaneous retail	5200–5799, 5900–5999	1, 911	8.79
Restaurant	5800–5899	444	2.04
Services	7000–8999, excluding 7370–7379	2, 346	10.79
Total		21, 748	100.00

Notes:

Variable definitions:

MVE = market value of common shares outstanding at fiscal year-end.
BV = book value of common equity as of fiscal year-end.
NI^a = abnormal earnings measured as NI (net income before extraordinary items and discontinued operations), minus 0.12 *BV (lagged one year).
TE = total exclusions, measured as NI minus PF (IBES estimates of operating income).
SI = special items, measured as NI minus OI (operating income taken from Compustat).
OE = Other exclusions, measured as OI minus PF.

Table 2

Regressions of Abnormal Earnings and Equity Market Value, for a Sample of 21,748 Firm-Year Observations, 1990–2000[a]

Panel A: Summary Statistics from Regression of Abnormal Earnings on Lagged Abnormal Earnings, and Equity Book Value

$$NI^a_{it+1} = \omega_{10} + \omega_{11}NI^a_{it} + \omega_{13}BV_{it} + \varepsilon_{1it+1}$$

		NI^a		*BV*		
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Adj. R^2*
Overall	21,748	0.54	99.62	0.00	5.80	0.357

Panel B: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, and Equity Book Value

$$MVE_{it} = \alpha_0 + \alpha_1 NI^a_{it} + \alpha_3 BV_{it} + u_{it}$$

		NI^a		*BV*		
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Adj. R^2*
Overall	21,748	6.78	55.05	2.50	161.40	0.643

Notes:
[a]See Table 1 for the definitions of all variables.
Abnormal earnings forecasting, and equity market value equations, along with an unreported equity book value equation, are estimated as an unrestricted system permitting coefficients to be determined separately within each equation, using Seemingly Unrelated Regressions with year and industry fixed effects (coefficients and *t*-statistics are not tabulated).

i.e., versions of equations (1) and (4) in which all earnings components are constrained to have identical coefficients.[16] We estimate these benchmark equations to facilitate comparison of our sample with prior research. Consistent with prior research (Dechow, Hutton and Sloan, 1999; and Barth, Beaver, Hand and Landsman, 1999), Panel A indicates that the coefficient on lagged abnormal earnings, ω_{11}, is positive and significant.[17] The estimated coefficient of 0.54 is similar to those reported in prior research. In addition, the equity book value coefficient, ω_{13} is significantly positive.[18] The benchmark valuation equation results in Panel B are also largely consistent with the aforementioned prior studies. In particular, the valuation coefficient on abnormal earnings, α_1 is 6.78 and is significantly positive.

(ii) Pro Forma/Total Exclusion Equations

Table 3, Panels A, B and C, presents regression summary statistics for equations (1), (2) and (4) that corresponds to the linear information system in which x_2 is defined to be total exclusions, TE. Thus, we partition NI^a into PF^a, where $PF^a_t = PF_t - rBV_{t-1}$,

16 Note that the component prediction equation (2) does not apply to the benchmark system. In addition, although we estimate the equity book value equation (3) for all versions of the linear information system (and use its residuals to form coefficient estimates for the other equations), for the sake of parsimony we do not tabulate its regression summary statistics.
17 Throughout we use a five percent level of significance level under a two-sided alternative.
18 A positive (negative) equity book value coefficient is consistent with the cost of capital being greater than (less than) 12%.

Table 3

Regressions of Abnormal Earnings and Equity Market Value, with Total Exclusions Included as a Separate Regressor, for a Sample of 21,748 Firm-Year Observations, 1990–2000[a]

Panel A: Summary Statistics from Regression of Abnormal Earnings on Lagged Abnormal Earnings, Total Exclusions, and Equity Book Value

$$NI^a_{it+1} = \omega_{10} + \omega_{11}NI^a_{it} + \omega_{12}TE_{it} + \omega_{13}BV_{it} + \varepsilon_{1it+1}$$

		NI[a]		*TE*		*BV*		*Forecasting Relevance Test* $\omega_{11} + \omega_{12} = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21, 748	0.60	122.81	−0.38	−22.24	−0.00	−1.51	174.34	0.370
Positive TE	5, 762	0.58	60.83	−0.68	−6.29	0.00	3.14	0.81	0.375
Negative TE	9, 922	0.61	84.25	−0.46	−21.58	−0.01	−5.51	57.12	0.340

Panel B: Summary Statistics from Regression of Total Exclusions on Lagged Total Exclusions, and Equity Book Value

$$TE_{it+1} = \omega_{20} + \omega_{22}TE_{\iota} + \omega_{23}BV_{it} + \varepsilon_{2it+1}$$

		TE		*BV*		
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Adj.* R^2
Overall	21, 748	0.21	26.47	−0.01	−29.11	0.104
Positive TE	5, 762	−0.15	−2.69	−0.01	−19.37	0.082
Negative TE	9, 922	0.22	21.15	−0.01	−16.33	0.134

Table 3 (Continued)

Panel C: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Total Exclusions, and Equity Book Value

$$\mathrm{MVE}_{it} = \alpha_0 + \alpha_1 N_{it}^{\alpha} + \alpha_2 \mathrm{TE}_{it} + \alpha_3 \mathrm{BV}_{it} + u_{it}$$

		NI[a]		*TE*		*BV*		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	8.03	61.76	−10.39	−26.34	2.36	147.15	41.31	0.654
Positive TE	5,762	6.60	25.91	15.07	6.03	2.43	68.51	75.10	0.607
Negative TE	9,922	8.55	41.02	−11.84	−23.02	2.28	87.57	50.29	0.620

Panel D: Summary Statistics of Actual, Calculated and Constrained Valuation Coefficients

Sample	*No. of Obs.*	*Actual* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Calculated* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Constrained* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*
Overall	21,748	−2.36	41.31	0.24	46.84	0.28	54.24
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(51.99)		(51.63)	
Positive TE	5,762	21.67	75.10	−0.03	0.85	−0.23	1.63
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(77.18)		(76.70)	
Negative TE	9,922	−3.29	50.29	0.07	3.06	0.09	2.72
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(53.97)		(53.09)	
(Wald-stat. for Positive TE estimates equal negative TE estimates)		(99.66)		(0.51)		(3.16)	

Notes:
[a] See Table 1 for the definitions of all variables.
Abnormal earnings forecasting, component prediction, and equity market value equations, along with an unreported equity book value equation, are estimated as an unrestricted system permitting coefficients to be determined separately within each equation, using Seemingly Unrelated Regressions with year and industry fixed effects (coefficients and *t*-statistics are not tabulated).

and TE. Panel D presents a comparison of the actual, calculated, and constrained total valuation coefficient for TE, $\alpha_1 + \alpha_2$, including tests of significance and difference from each other. Findings are presented separately using all available firm-year observations, and for the subsamples for which TE is positive and negative. Since TE = NI−PF, a negative value of TE occurs in the more common situation where, on balance, income-lowering items have been excluded from NI to form PF. Similarly, a positive value of TE occurs where, on balance, income-increasing items have been excluded from NI to form PF.

Panel A reveals that ω_{12}, the incremental forecasting coefficient on TE, is significantly negative for the full sample (t-statistic = −22.24). This finding implies that total exclusions are incrementally informative for forecasting future abnormal earnings. However, ω_{12} is significantly smaller in absolute magnitude than the PF_t^a (recall that NI^a was partitioned into PF_t^a and TE) coefficient, ω_{11}, as indicated by the significantly positive total forecasting coefficient on TE, $\omega_{11} + \omega_{12}$ (Wald χ^2 statistic = 174.34). Findings for the positive and negative subsamples are similar to those for the full sample, with ω_{12} less than zero, and for the negative subsample, the total coefficient on TE, $\omega_{11} + \omega_{12}$, is also significantly positive (Wald χ^2 statistic = 57.12). However, for the positive subsample, the total TE coefficient is insignificantly different from zero (Wald χ^2 statistic = 0.81). Thus, for the full sample, TE possesses forecasting relevance, i.e., is not a transitory component of income. However, this finding is apparently the result of pooling positive and negative TE observations together. When considered separately, it is apparent that positive total exclusions lack forecasting relevance. Panel B, which tabulates findings for the TE prediction equation, indicates that TE exhibits some degree of autocorrelation and is therefore also not entirely unpredictable.[19] The autocorrelation coefficient, ω_{22}, is 0.21 for the full sample and 0.22 for the negative TE subsample. Surprisingly, ω_{22} is negative for the positive TE subsample, suggesting that positive total exclusions tend to be followed by negative total exclusions.

Panel C indicates that the incremental valuation coefficient on total exclusions, α_2, is significantly negative for the full sample (t-statistic = −26.34), and for the negative TE subsample (t-statistic = −23.02). This finding indicates that total exclusions are incrementally valuation relevant. It is consistent with the prediction of equation (6), which shows that the sign of an income component's incremental valuation coefficient is determined by the sign of its incremental forecasting coefficient. However, contrary to what would be predicted by the Ohlson model, α_2 is significantly positive for the positive TE subsample (t-statistic = 6.03).

More important to our research equation, the Ohlson model also shows that the total valuation coefficient for an income component, x_2, is determined by the sign of its total forecasting coefficient (see equation (7)). Thus, based on the findings in Panel A, we expect the total valuation coefficient on TE, $\alpha_1 + \alpha_2$, to be positive for the full sample and negative subsample, and zero for the positive TE subsample. Panel C reveals that none of these predictions holds. In particular, $\alpha_1 + \alpha_2$ is significantly negative for the pooled and negative TE subsample (Wald χ^2 statistics = 41.31 and 50.29), and significantly positive for positive TE subsample (Wald χ^2 statistic = 75.10). These findings suggest that investors value total exclusions in a manner inconsistent with the implications it has for future abnormal earnings.

19 Finding that TE exhibits some degree of autocorrelation is not entirely surprising, given it includes items such as goodwill amortization and legal settlement costs, which tend to change little over time.

In particular, investors value negative total exclusions positively (negative TE times negative $\alpha_1 + \alpha_2$), but their forecasting properties suggest they should be valued negatively; investors value positive exclusions positively (positive TE times positive $\alpha_1 + \alpha_2$), but their forecasting properties suggest they should have no valuation weight.[20]

These findings are reinforced by Panel D, which shows that the total TE valuation coefficient in Panel C (the 'actual' total valuation coefficient) is significantly different from the total TE valuation coefficient calculated using the total forecasting coefficients in Panels A and B—the calculated total valuation coefficient—and from the total TE valuation coefficient obtained when constraining the Ohlson model equation (7) to hold—the constrained total valuation coefficient. For example, for the full sample, the respective Wald χ^2 statistics are 51.99 and 51.63.

Panel D also presents Wald χ^2 statistics for tests of differences between total TE valuation coefficients between the positive and negative TE subsamples. These statistics underscore the importance of examining the two samples of firm-years separately. In particular, whereas the tests indicate that the total TE calculated and constrained valuation coefficients are statistically indistinguishable for positive and negative TE observations (Wald χ^2 statistics = 0.51 and 3.16), the actual valuation coefficients are highly significantly different (Wald χ^2 statistic = 99.66).

Our findings for the total forecasting coefficient on TE are similar to results reported in DLS in their examination of the relation between future cash flows and TE. Our findings for positive and negative subsamples have no analog in DLS since that study does not examine subsamples based on sign. Moreover, notwithstanding a similarity between the two studies with respect to the implication that TE are underpriced, the valuation results and related tests contained in Panel D constitute a new perspective from that of DLS which examines the relation between TE and future market-adjusted returns. The fact that underpricing is implied by the results of two distinct types of tests is a measure of the robustness of this phenomenon.

Two of our valuation results are surprising and deserve further comment. First, α_2 is significantly positive for the positive TE subsample (t-statistic = 6.03). This result is puzzling since it says that the market values positive TE more highly than pro forma earnings. However, findings related to the market valuation equations in Abarbanell and Lehavy (2004), tell a similar story. In particular, findings reported in that study's Table 7 indicate that market values are better explained by net income than pro forma earnings (which excludes total exclusions) for the most positive decile of total exclusions. For none of the other deciles is this true. Furthermore, for the most negative total exclusions decile, net income is vastly inferior to pro forma earnings in explaining market values. Second, $\alpha_1 + \alpha_2$ is significantly negative for the pooled and negative TE subsample (Wald χ^2 statistics = 41.31 and 50.29) despite the fact that the Ohlson model predicts that $\alpha_1 + \alpha_2$ will be positive. One possible explanation is that investors anticipate that negative TE (e.g., restructuring charges) will lead to an income reversal in the future which in turn could have a positive impact on future market value. Burgstahler et al. (2002, p. 587) finds evidence of such an income reversal for negative special items. This possibility is an example of a situation that

20 In particular, using the coefficient estimates in Table 3, Panel C, negative TE gets multiplied by a negative total coefficient of −3.29, while positive TE gets multiplied by 21.67. In both cases the product is positive.

is outside the scope of the Ohlson (1999) model's parsimonious linear information dynamics.[21]

(iii) Operating/Special Items Income Equations

Table 4, Panels A, B and C, presents regression summary statistics for equations (1), (2) and (4) that corresponds to the linear information system in which x_2 is defined to be special items, SI. Thus, we partition NI^a into OI^a, where $OI_t^a = OI_t - rBV_{t-1}$, and SI. Panel D presents a comparison of the actual, calculated, and constrained total valuation coefficient for SI, $\alpha_1 + \alpha_2$, including tests of significance and difference from each other. Findings are presented separately using all available firm-year observations, and for the subsamples for which SI is positive and negative.

Panel A reveals that ω_{12}, the incremental forecasting coefficient on SI, is significantly negative for the full sample (t-statistic $= -25.55$). As with the total exclusions findings in Table 3, the incremental SI coefficient, ω_{12}, is significantly smaller in absolute magnitude than the OI_t^a coefficient, ω_{11}, as indicated by the significantly positive total forecasting coefficient on SI, $\omega_{11} + \omega_{12}$ (Wald χ^2 statistic = 9.69). However, contrary to the findings for total exclusions, the total coefficient on SI, $\omega_{11} + \omega_{12}$, is insignificantly different from zero for both the positive and negative SI subsamples (Wald χ^2 statistics = 0.31 and 0.56). Thus, when the two subsamples are considered separately, SI appears to lack forecasting relevance, i.e., is a transitory component of income.

Panel B, which tabulates findings for the SI prediction equation, indicates that SI exhibits some degree of autocorrelation and is therefore also not entirely unpredictable. The findings mirror those for TE in Table 3, Panel B. The autocorrelation coefficient, ω_{22}, is 0.14 for the full sample, 0.12 for the negative SI subsample, and negative for the positive SI subsample.

As with total exclusions, Panel C indicates that the incremental valuation coefficient on special items, α_2, is significantly negative for the full sample (t-statistic $= -24.03$) and for the negative SI subsample (t-statistic $= -18.47$). However, it is insignificant for the positive SI subsample (t-statistic = 0.16). Based on the findings in Panel A, we should expect the total valuation coefficient on SI, $\alpha_1 + \alpha_2$, to be positive for the full sample but zero for the positive and negative SI subsamples. Panel C reveals findings consistent with these predictions for the positive subsample but not for the full sample or negative subsample. In particular, $\alpha_1 + \alpha_2$ is significantly negative for the pooled and negative SI subsample (Wald χ^2 statistics = 67.35 and 37.50), but insignificantly different from zero for positive SI subsample (Wald χ^2 statistic = 2.36). These findings suggest that while investors appear to value positive special items in a manner consistent with the implications it has for future abnormal earnings, they are inconsistent in their valuation of negative special items. The findings in Panel D reinforce these results. In particular, Panel D reveals significant Wald χ^2 statistics

21 Another issue that is outside of the scope of the Ohlson (1995) model linear information dynamics is conditional conservatism, where managers recognize losses on a more timely basis than gains. Although timely loss recognition could, in principle, affect the timing of positive and negative exclusions, it is difficult to predict how this would affect the relation between the forecasting and valuation properties of exclusions if the income effects show up over multiple periods. Similarly, it is difficult to predict how management's efforts to smooth income over multiple periods would affect the relation between the forecasting and valuation properties of exclusions.

Table 4

Regressions of Abnormal Earnings and Equity Market Value, with Special Items Included as a Separate Regressor, for a Sample of 21,748 Firm-Year Observations, 1990–2000[a]

Panel A: Summary Statistics from Regression of Abnormal Earnings on Lagged Abnormal Earnings, Special Items, and Equity Book Value

$$NI^a_{it+1} = \omega_{10} + \omega_{11}NI^a_{it} + \omega_{12}SI_{it} + \omega_{13}BV_{it} + \varepsilon_{1it+1}$$

		NI^a		*SI*		*BV*		*Forecasting Relevance Test $\omega_{11} + \omega_{12} = 0$*	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.R^2*
Overall	21,748	0.60	119.80	−0.53	−25.55	−0.00	−2.35	9.69	0.375
Positive SI	1,858	0.52	28.26	−0.39	−1.62	−0.00	−0.78	0.31	0.300
Negative SI	6,355	0.65	69.41	−0.67	−22.44	−0.01	−7.53	0.56	0.356

Panel B: Summary Statistics from Regression of Special Items on Lagged Special Items, and Equity Book Value

$$SI_{it+1} = \omega_{20} + \omega_{22}SI_t + \omega_{23}BV_{it} + \varepsilon_{2it+1}$$

		SI		*BV*		
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Adj. R^2*
Overall	21,748	0.14	17.71	−0.01	−32.52	0.087
Positive SI	1,858	−0.23	−2.29	−0.01	−9.90	0.099
Negative SI	6,355	0.12	10.03	−0.01	−18.74	0.128

Table 4 (Continued)

Panel C: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Special Items, and Equity Book Value

$$\mathrm{MVE}_{it} = \alpha_0 + \alpha_1 N_{it}^{\alpha} + \alpha_2 \mathrm{SI}_{it} + \alpha_3 \mathrm{BV}_{it} + u_{it}$$

		NI[a]		*SI*		*BV*		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	7.83	60.64	−11.55	−24.03	2.37	147.70	67.35	0.653
Positive SI	1,858	5.98	16.24	0.71	0.16	2.18	44.93	2.36	0.699
Negative SI	6,355	8.85	35.57	−12.67	−18.47	2.31	69.25	37.50	0.629

Panel D: Summary Statistics of Actual,Calculated and Constrained Valuation Coefficients

Sample	*No. of Obs.*	*Actual* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Calculated* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Constrained* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*
Overall	21,748	−3.72	67.35	−0.03	0.49	0.00	0.00
(Wald-stat for actual estimates equal calculated or constrained estimates)				(68.58)		(67.47)	
Positive SI	1,858	6.69	2.36	0.33	1.11	0.18	0.27
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(2.22)		(2.24)	
Negative SI	6,355	−3.82	37.50	−0.21	12.37	−0.27	11.39
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(34.28)		(32.45)	
(Wald-stat. for Positive SI estimates equals negative SI estimates)		(5.83)		(2.92)		(1.68)	

Notes:
[a] See Table 1 for the definitions of all variables.
Abnormal earnings forecasting, component prediction, and equity market value equations, along with an unreported equity book value equation, are estimated as an unrestricted system permitting coefficients to be determined separately within each equation, using Seemingly Unrelated Regressions with year and industry fixed effects (coefficients and *t*-statistics are not tabulated).

for tests of difference between actual and calculated total SI valuation coefficients, and between actual and constrained coefficients for the full sample and negative subsample (Wald χ^2 statistics = 68.58, 67.47, and 34.28 and 32.45). However the Wald χ^2 statistics corresponding to the positive subsample (Wald χ^2 statistics = 2.22 and 2.24) are insignificant. Consistent with the findings relating to total exclusions, the Wald χ^2 statistics for tests of differences between total SI valuation coefficients between the positive and negative SI subsamples support examining the two samples of firm-years separately, where the actual valuation coefficients are significantly different (Wald χ^2 statistic = 5.83).

Our finding on the total forecasting coefficient on SI are mixed (significant and positive for the total sample but insignificantly different from zero for both positive and negative subsamples). DLS findings on the relation between future cash flows and SI (SI adjusted for the sign difference – see footnote 12) are also mixed but in a different way. For one measure of cash flow the forecasting coefficient on SI is insignificantly different from zero, but for the other it is negative. Burgstahler et al. (2002, pp. 578–79) finds that positive special items are largely transitory but that the forecasting coefficient on negative special items is significantly negative. The forecasting equations in all three studies are different, which may account for differences in results between our findings and those of DLS and Burgstahler et al. (2002).

Our valuation results for SI and tests on SI in Panel D have no analog in DLS or Burgstahler et al. (2002). However, they can be compared to the market-inefficiency results in DLS. DLS finds (Table 6) that future market-adjusted stock returns are insignificantly different from zero for SI. This in turn suggests that SI are fairly priced but our valuation results for the total sample find that SI are underpriced. In their study on special items, Burgstahler et al. (2002) rejects the null hypothesis that prices fully impound the implications of special items for future earnings.

(iv) Other Exclusions Equations

Table 5, Panels A, B and C presents regression summary statistics for equations (1), (2) and (4) that correspond to the linear information system in which x_2 is defined to be other exclusions, OE. Thus, we partition NI^a into $\text{PF}^a + \text{SI}$ and OE. Panel D presents a comparison of the actual, calculated, and constrained total valuation coefficient for OE, $\alpha_1 + \alpha_2$, including tests of significance and difference from each other. Findings are presented separately using all available firm-year observations, and for the subsamples for which OE is positive and negative.

Panel A reveals that ω_{12}, the incremental forecasting coefficient on OE, is negative but insignificant for the full sample (t-statistic = −1.68). However, it is significantly negative for the positive and negative subsamples (t-statistics = −1.95 and −2.76). As with the total exclusions and special items findings in Tables 3 and 4, the incremental ω_{12} coefficient is significantly smaller in absolute magnitude than the $\text{PF}_t^a + \text{SI}$ coefficient, ω_{11}, as indicated by the significantly positive total forecasting coefficients on OE, $\omega_{11} + \omega_{12}$ (Wald χ^2 statistics = 227.65, 16.97 and 87.73). Thus, in contrast to special items, other exclusions appears to possess forecasting relevance, regardless of their sign.

Panel B, which tabulates findings for the OE prediction equation, indicates that OE exhibits some degree of autocorrelation, but only for the full sample and the

Table 5

Regressions of Abnormal Earnings and Equity Market Value, with Other Exclusions Included as a Separate Regressor, for a Sample of 21,748 Firm-Year Observations, 1990–2000[a]

Panel A: Summary Statistics from Regression of Abnormal Earnings on Lagged Abnormal Earnings, Other Exclusions, and Equity Book Value

$$NI^{a}_{it+1} = \omega_{10} + \omega_{11}NI^{a}_{it} + \omega_{12}OE_{it} + \omega_{13}BV_{it} + \varepsilon_{1it+1}$$

		NI		*OE*		*BV*		*Forecasting Relevance Test* $\omega_{11} + \omega_{12} = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	0.54	102.96	−0.06	−1.68	0.00	5.59	227.65	0.358
Positive SI	7,490	0.56	62.17	−0.18	−1.95	0.01	4.07	16.97	0.366
Negative SI	8,560	0.51	58.16	−0.12	−2.76	0.00	1.66	87.73	0.304

Panel B: Summary Statistics from Regression of Other Exclusions on Lagged Other Exclusions, and Equity Book Value

$$OE_{it+1} = \omega_{20} + \omega_{22}OE_{t} + \omega_{23}BV_{it} + \varepsilon_{2it+1}$$

		OE		*BV*		
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Adj.* R^2
Overall	21, 748	0.35	44.45	−0.00	−8.67	0.107
Positive SI	7, 490	0.01	0.54	−0.00	−6.82	0.018
Negative SI	8, 560	0.43	36.12	−0.00	−0.41	0.174

Table 5 (Continued)

Panel C: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Other Exclusions, and Equity Book Value

$$MVE_{it} = \alpha_0 + \alpha_1 N_{it}^{\alpha} + \alpha_2 OF_{it} + \alpha_3 BV_{it} + u_{it}$$

		NI[a]		*OE*		*BV*		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	7.06	56.82	−9.02	−12.14	2.47	159.45	7.19	0.645
Positive SI	7,490	7.13	35.25	16.98	8.51	2.43	89.43	144.25	0.643
Negative SI	8,560	6.09	27.10	−12.95	−12.27	2.41	82.77	45.93	0.578

Panel D: Summary Statistics of Actual, Calculated and Constrained Valuation Coefficients

Sample	*No. of Obs*	*Actual* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Calculated* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*	*Constrained* $\hat{\alpha}_1 + \hat{\alpha}_2$	*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$ *Wald-stat.*
Overall	21,748	−1.96	7.19	0.80	96.79	0.84	84.85
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(14.86)		(14.68)	[b]
Positive OE	1,858	24.11	144.25	0.68	16.45	[b]	
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(140.61)		[b]	
Negative OE	6,355	−6.86	45.93	0.53	22.33	0.54	17.92
(Wald-stat. for actual estimates equal calculated or constrained estimates)				(54.28)		(53.44)	
(Wald-stat. for Positive SI estimates equals negative SI estimates)		(238.02)		(0.83)		[b]	

Notes:
[a] See Table 1 for the definitions of all variables.
Abnormal earnings forecasting, component prediction, and equity market value equations, along with an unreported equity book value equation, are estimated as an unrestricted system permitting coefficients to be determined separately within each equation, using Seemingly Unrelated Regressions with year and industry fixed effects (coefficients and *t*-statistics are not tabulated).
[b] The parameter estimates failed to converge for OLS after 100 iterations using CONVERGE = 0.001 as the convergence criterion.

negative OE subsample. The findings mirror those for TE in Table 3, Panel B. The autocorrelation coefficient, ω_{22}, is 0.35 for the full sample, 0.43 for the negative OE subsample, and essentially zero for the positive OE subsample.

As with total exclusions and special items, Panel C indicates that the incremental valuation coefficient on special items, α_2, is significantly negative for the full sample (t-statistic $= -12.14$) and for the negative OE subsample (t-statistic $= -12.27$). However, in contrast to total exclusions and special items, α_2 is significantly positive for the positive OE subsample (t-statistic $= 8.51$). This means that the total OE coefficient for positive OE observations is actually larger than that on $PF_t^a + SI$. Based on the findings in Panel A, we expect the total valuation coefficient on OE, $\alpha_1 + \alpha_2$, to be positive for the full sample and for the positive and negative OE subsamples. As with special items, Panel C reveals findings consistent with these predictions for the positive subsample but not for the full sample or negative subsample. In particular, $\alpha_1 + \alpha_2$ is significantly negative for the pooled sample and the negative OE subsample (Wald χ^2 statistics = 7.19 and 45.93), and significantly positive for the positive OE subsample (Wald χ^2 statistic = 144.25). These findings suggest that while investors appear to value positive other exclusions in a manner consistent with its implications for future abnormal earnings, they are inconsistent in their valuation of the full sample and the negative subsample. The findings in Panel D extend the finding that the forecasting equations and the valuation equations for OE are inconsistent. In particular, for the full sample, positive subsample, and negative subsample, Panel D reveals significant Wald χ^2 statistics for tests of difference between actual and calculated total OE valuation coefficients (Wald χ^2 statistics = 14.86, 140.61 and 54.28), and between actual and constrained coefficients (Wald χ^2 statistics = 14.68, not available because the constrained test for the positive subsample did not converge, and 53.44). Consistent with the findings relating to total exclusions, the Wald χ^2 statistics for tests of differences between total OE valuation coefficients between the positive and negative OE subsamples support examining the two samples of firm-years separately. The actual valuation coefficients are significantly different (Wald χ^2 statistic = 238.02).

Our finding for the total forecasting coefficient on OE are very similar to those in DLS, which examines the relation between future cash flows and OE. Our subsample results show that the total forecasting coefficients on the positive and negative subsamples are both significantly positive and similar in magnitude. The valuation results for OE and tests on OE in Panel D can be compared to the market-inefficiency results in DLS. DLS finds (Table 6) that future market-adjusted stock returns are positively related to OE (OE adjusted for the sign difference — see footnote 12). This in turn suggests that OE are underpriced, and that is what our valuation results suggest for the total sample.

DLS shows that a hedge portfolio which is long the top decile of OE and short the bottom decile makes impressive abnormal returns (Table 7). This suggests that stocks with positive OE are underpriced and that stocks with negative OE are overpriced. Our valuation results find that stocks with both positive and negative OE are overpriced. Therefore, our valuation results reinforce the idea that one should consider shorting companies with negative OE. However they caution against taking a long position in firms with positive OE. We note that for the forecasting horizon of one year, DLS finds negative abnormal returns from taking a long position in firms in the second and third highest decile of OE.

(v) Implication of Results on the Credibility of Positive and Negative Exclusions

Recall that the argument in favor of pro forma earnings is that they exclude transient components of income which are irrelevant for valuation. Critics of pro forma earnings allege that managers exclude items to portray firms in positive light, and that as a result, investors may be misled. They appear to suggest that employing positive exclusions that lower pro forma income relative to GAAP income should be more 'believable' in the sense that they are more likely to be, in fact, transient. Our partition of the sample into positive and negative exclusions sheds light on this concern.

Table 3, Panels A and B, shows that positive total exclusions are transient, but that negative total exclusions are not transient and possess some ability to forecast future earnings. Thus the critics' concerns appear to be justified with respect to total exclusions. When we partition total exclusions into special items and other exclusions we find from Table 4, Panel A, that both positive special items and negative special items do not have significant ability to forecast earnings. Table 4, Panel B, indicates that while negative special items have significantly positive autocorrelation positive special items have significantly negative autocorrelation. Table 5, Panel A, indicates that both positive other exclusions and negative other exclusions have significant ability to forecast future earnings. However Table 5, Panel B, shows that positive other exclusions exhibit no autocorrelation while negative other exclusions exhibit a significant amount of positive autocorrelation. In summary our results suggest that the critics have some reason to be concerned that positive excluded items are more likely to be transient than negative excluded items.

(vi) An Alternative Market Valuation Equation

Pope and Wang (2005) develop a model which can address many of the same issues as Ohlson (1999). Pope and Wang (2005) replace the forecasting equations assumed in Ohlson (1999) with the assumptions that the value of the firm is a linear function of current period accounting items, and that dividends per se are irrelevant in valuation. The Pope and Wang (2005) valuation model leads to the following valuation regression equation:

$$\mathrm{MVE}_{it} = \alpha_0 + \mathrm{BV}_{it} + \alpha_1 \mathrm{NI}^a_{it} + \alpha_2 x_{2it} + a_3 \mathrm{BV}_{it-1} + u_{it}. \tag{8}$$

Pope and Wang (2005) prove, under mild assumptions (Proposition 2), that accounting is conservative if and only if $\alpha_3 > 0$, and is increasing in α_3. Although a full analysis using the Pope and Wang (2005) model is beyond the scope of this paper, we estimate equation (8) for the three cases (and positive and negative subsamples) analyzed in Tables 3–5.

Findings using the Pope and Wang (2005) valuation specification are presented in Table 6, with Panels A, B and C corresponding to estimations in which x_{2it} is total exclusions, special items, and other exclusions. The findings reveal that inferences relating to the total coefficient of x_{2it}, the focus of this paper, are similar to those relating to the reported total coefficient for the three cases (and positive and negative subsamples) analyzed in Panel C of Tables 3–5. For example, regarding total exclusions, Panel A of Table 6 reveals that the Wald χ^2 statistic is significantly positive for the overall sample and positive and negative subsamples, mirroring the findings in Table 3,

Table 6

Alternative Equity Market Value Regressions, for a Sample of 21,748 Firm-Year Observations, 1990–2000[a]

Panel A: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Equity Book Value, Total Exclusions, and Lagged Equity Book Value, with Equity Book Value's Coefficient Restricted to Have a Value of One

$$\text{MVE}_{it} = \alpha_0 + \text{BVE}_{it} + \alpha_1 \text{NI}^a_{it} + \alpha_2 \text{TE}_{it} + \alpha_3 \text{BVE}_{it-1} + \varepsilon_{it}$$

		NI[a]		*TE*		BVE_{t-1}		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	12.31	101.30	−13.98	−36.77	1.38	92.45	21.06	0.673
Positive TE	5,762	12.38	50.05	14.76	5.76	1.42	44.86	114.49	0.635
Negative TE	9,922	12.15	60.45	−15.23	−30.84	1.26	50.56	43.53	0.626

Panel B: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Equity Book Value, Special Items, and Lagged Equity Book Value, with Equity Book Value's Coefficient Restricted to Have a Value of One

$$\text{MVE}_{it} = \alpha_0 + \text{BVE}_{it} + \alpha_1 \text{NI}^a_{it} + \alpha_2 \text{SI}_{it} + \alpha_3 \text{BVE}_{it-1} + \varepsilon_{it}$$

		NI[a]		*SI*		BVE_{t-1}		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	12.07	99.80	−15.72	−33.78	1.39	92.48	65.44	0.670
Positive SI	1,858	9.38	27.43	−2.31	−0.55	1.23	28.58	2.92	0.723
Negative SI	6,355	11.84	49.15	−16.27	−24.93	1.29	39.35	50.85	0.630

Panel C: Summary Statistics from Regression of Equity Market Value on Abnormal Earnings, Equity Book Value, Other Exclusions, and Lagged Equity Book Value, with Equity Book Value's Coefficient Restricted to Have a Value of One

$$\text{MVE}_{it} = \alpha_0 + \text{BVE}_{it} + \alpha_1 \text{NI}^a_{it} + \alpha_2 \text{OE}_{it} + \alpha_3 \text{BVE}_{it-1} + \varepsilon_{it}$$

		NI[a]		*OE*		BVE_{t-1}		*Value Relevance Test* $\alpha_1 + \alpha_2 = 0$	
Sample	*No. of Obs.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Coefficient*	*t-stat.*	*Wald-stat.*	*Adj.* R^2
Overall	21,748	11.35	94.00	−12.44	−16.70	1.48	98.87	2.21	0.657
Positive SI	7,490	11.86	59.47	22.38	11.22	1.48	57.73	295.65	0.667
Negative SI	8,560	10.18	46.47	−18.65	−17.84	1.32	47.51	68.89	0.577

Notes:
[a] See Table 1 for the definitions of all variables.
Each equity market value regression is estimated separately with year and industry fixed effects (coefficients and *t*-statistics are not tabulated).

Panel C. In addition, the sign and magnitude of the incremental x_{2it} coefficients in Table 6 are similar to those reported in the corresponding Panels C of Tables 3–5. For example, the incremental total exclusion coefficients in Table 6, Panel A are −13.98 for the full sample and 14.76 and −15.23 for the positive and negative subsamples; the corresponding coefficients in Table 3, Panel C are −10.39, 15.07 and −11.84. We also note that in every case $\alpha_3 > 0$ with a *t*-statistic greater than 25, which is consistent with Proposition 2 in Pope and Wang (2005).

5. SUMMARY AND CONCLUDING REMARKS

This study uses the Ohlson (1995 and 1999) valuation model to address three research questions related to total exclusions, special items and other exclusions. Regarding the first question, we find that the total forecasting coefficient on total exclusions is significantly positive, although smaller than that on other components of abnormal earnings. Findings from the positive and negative total exclusion subsamples indicate that the significantly positive total forecasting coefficient reported for the overall sample is attributable to negative total exclusions. Findings related to special items indicate that, as with total exclusions, the total forecasting coefficient is significantly positive. Contrary to the findings for total exclusions, the total coefficient is insignificantly different from zero for both the positive and negative special items subsamples. Findings related to other exclusions indicate that the total forecasting coefficient is significantly positive and nearly the same magnitude as that on other components of abnormal earnings.

Regarding the second research question, we find that total exclusions are value relevant, but not in the predicted manner. In particular, based on the forecasting equations, we expect the total valuation coefficient for total exclusions to be positive for the full sample and for negative total exclusions, and insignificantly different from zero for positive exclusions. In fact, the total valuation coefficients are significantly negative for the full sample and negative total exclusions, and significantly positive for positive total exclusions. In addition to indicating the manner of mispricing, our evidence suggests that the mispricing differs for positive and negative total exclusions. The market appears to positively price positive total exclusions even though they have no forecasting consequences for future abnormal earnings. The market positively values negative total exclusions even though they predict lower future abnormal earnings. As with the forecasting equations, findings related to special items mirror those for total exclusions, in that, although special items are valuation relevant, they exhibit similar inconsistencies between forecasting and valuation coefficients. Findings related to other exclusions suggest they are also valuation relevant and that the market appears to misprice this component as well. In particular, the market positively values negative other exclusions even though they predict lower future abnormal earnings. Although the market correctly prices positive other exclusions positively, evidence suggests it overvalues them.

Regarding the third research question we find that the constraints on the excluded components' valuation multiples implied by the model are binding for the overall sample and for positive and negative subsamples. In particular, findings are consistent with those based on a comparison of total actual valuation coefficients and those implied by the forecasting and prediction equations, in that the constrained valuation coefficients also generally differ in sign from those implied by forecasting and component prediction equations.

Collectively, the evidence suggests that the market misprices positive and negative total exclusions, special items, and other exclusions, and that the over-valuation or under-valuation is generally consistent with the market-inefficiency evidence presented in Doyle, Lundholm and Soliman (2003). Three of our findings deserve further emphasis. First, our results suggest that total exclusions are valued negatively by the market despite the fact that the Ohlson model predicts that total exclusions will be valued positively. This extreme mispricing leads us to agree with the conclusion in Doyle, Lundholm and Soliman (2003) that regulatory concern about the use of pro forma earnings may be warranted. Second, Doyle, Lundholm and Soliman (2003) find that the return coefficient on special items is insignificantly different from zero, but Burgstahler et al. (2002) reject the null hypothesis that prices fully impound the implications of special items for future earnings. Our finding is that special items are underpriced. Third, Doyle, Lundholm and Soliman (2003) show that a hedge portfolio which takes a long position in firms in the top decile of OE and short in the bottom decile makes impressive abnormal returns, and that shorting the bottom decile contributes to the hedge returns. This suggests that stocks with positive OE are underpriced, but our valuation results suggest that stocks with positive OE are overpriced.

Finally, we note that findings in this study also suggest that investors will likely benefit from reconciliations between GAAP and pro forma income as required under Sarbanes-Oxley because such disclosures enable investors to separately assess the forecasting and pricing implications of the components excluded from pro forma income (Cornell and Landsman, 2003).

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