The Role of "Other Information" in the Valuation of Foreign Income for U.S. Multinationals

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In this paper, we examine investors' valuation of the domestic and foreign components of total earnings after controlling for information beyond current earnings. Our sample consists of U.S. multinationals during the 1985–2002 period. In a prior study, Bodnar and Weintrop (1997) find that investors place a higher weight on foreign earnings than on domestic earnings in valuing securities, and that this finding can be explained in part by the higher growth opportunities in foreign markets. While this explanation is intuitively appealing, other possible explanations include the varying importance of information other than current accounting earnings in pricing securities and the possible misspecification of their model. One potentially important source of other information is information contained in revisions of analysts' forecasts of future (abnormal) earnings and terminal values. Excluding this information from the regression specification potentially leads to a correlated omitted variables problem. In this paper, we use the Liu and Thomas (2000) proxy for "other information," which is derived from analysts' revisions of near-term and long-term earnings forecasts and discount rate changes. Including the "other information" variable greatly improves the explanatory power of the returns–earnings regression. Consistent with our predictions, we find that the bias resulting from excluding other value-relevant information has a greater effect on foreign earnings than on domestic earnings. Foreign earnings are no longer incrementally value relevant when we control for "other information."

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1. Introduction

The foreign operations of a firm continue to generate interest among investors and researchers as firms expand internationally. Investors not only are interested in learning about firms' foreign operations in general but also are interested in the source of earnings, domestic versus foreign. Academics have responded with research on how investors value the foreign versus domestic components of earnings.

In a widely cited study, Bodnar and Weintrop (1997) (hereafter BW) find that although both foreign and domestic earnings are value relevant, stock returns are more sensitive to changes in foreign earnings than to changes in domestic earnings. Based on additional analyses, they attribute their finding to greater growth opportunities in foreign markets. While their explanation is intuitively appealing, other explanations for their finding include the potential varying importance of information other than current accounting earnings in pricing securities and possible misspecification of their model.

From an econometric perspective, omission of a variable correlated with the independent and dependent variables can cause the coefficients of the included independent variables to be biased. Thus, if "other information" is correlated with stock returns and earnings, the earnings response coefficients will be biased unless other information is included in the model. Moreover, the effect may differ for the foreign and domestic earnings components, depending on the correlation between stock returns, earnings, and other information.

In our study, we use a sample of U.S. multinational firms from 1985 to 2002 and reexamine how investors value domestic versus foreign earnings after controlling for other information. In particular, we test if including other information affects the earnings response coefficients for domestic and foreign earnings. One potentially important source of other information is information contained in revisions of analysts' forecasts of future (abnormal) earnings and terminal values. Hence our proxy for other information comes from Liu and Thomas (2000). Starting from the residual income model, Liu and Thomas (2000) derive a returns–earnings specification that incorporates revisions in analysts' near- and long-term earnings forecasts and discount rate changes occurring during the year as a proxy for other information. Liu and Thomas show that their model achieves significantly higher R^2s than traditional specifications. Furthermore, the estimated coefficients are closer to their theoretical values and are less sensitive to nonlinearities than previous models.

After controlling for other information, we do not observe a difference in the two earnings response coefficients. Our result is consistent with Khurana et al. (2003), who find that analysts perceive foreign earnings to be more persistent than domestic earnings, and suggests that the effect of omitting other information has a greater impact on the foreign association coefficient than on the domestic association coefficient.

To ensure that our results are not driven by failure to consider alternative explanations, we conduct several sensitivity analyses. We test whether our results

are sensitive to incorporating differential growth, sign of earnings changes, firm size, inclusion of the change in the foreign exchange translation adjustment in foreign earnings, use of pretax rather than after-tax earnings, and controls for differential timeliness of domestic and foreign earnings. Our results are robust to these alternative explanations.

We provide new evidence on how investors view the domestic and foreign components of earnings. In addition, our findings offer additional evidence to support Liu and Thomas's (2000) claim that the traditional returns-earnings regression can be misspecified. Our findings suggest that future research should appropriately control for other information when using the returns–earnings regression, particularly when the earnings response coefficient is used to draw inferences.

The rest of the paper is organized as follows. Section 2 reviews the prior literature and provides an overview of the econometric issue. Section 3 discusses the research design and section 4 describes the sample. Empirical results are presented in section 5 and we conclude in section 6.

2. Prior Research on Domestic Versus Foreign Earnings and the Effects of Correlated Omitted Variables

In this section, we briefly review prior research on the relative valuation of domestic and foreign earnings. We then discuss potential econometric issues that can arise from omitting important variables.

2.1 The Relative Valuation of Domestic and Foreign Earnings

Value relevance of earnings has been extensively studied since the seminal work of Ball and Brown (1968). Researchers have also investigated components of earnings, such as pension expense (e.g., Barth et al. [1992], special items (e.g., Elliott and Hanna [1996], or cash flows and accruals (e.g., Dechow [1994]. As firms continue to expand into international markets, investors are increasingly interested in learning about firms' international investments. This interest has fueled an important question in the academic literature: How do investors value foreign versus domestic earnings?

Although several studies have examined the relative value relevance of domestic and foreign earnings (e.g., Boatsman et al. [1993]; Christophe [2002]; Bodnar et al. [2003]), we focus on Bodnar and Weintrop (1997) for two reasons. First, their study is one of the most widely cited articles in this stream of research. Second, our model is most closely related to their model. BW use the SEC-mandated disclosures (SEC Regulation §210.4-08[h]) of firms' domestic and foreign earnings to examine how investors value each of these earnings components.[1]

1. An alternative approach is to further decompose earnings from foreign operations and examine the relative valuation of earnings from all the geographical segments reported by the firm. We do not pursue this line of research for the following reasons. First and most important, we follow extant

They regress annual excess stock returns on foreign and domestic earnings changes and find that both earnings response coefficients are significantly positive. In addition, the coefficient on foreign earnings changes is significantly larger than the coefficient on domestic earnings changes, suggesting that investors price foreign income changes differently than domestic income changes. Bodnar et al. (2003) repeat the analysis using a sample of firms from Australia, Canada and the United Kingdom and report results similar to those reported by BW for the United States.[2,3]

Research by Collins and Kothari (1989) demonstrates that earnings response coefficients are increasing in firms' growth opportunities. Using foreign and domestic year-over-year sales growth as proxies for foreign and domestic growth opportunities, BW find a positive association between the incremental foreign earnings response coefficient and the foreign growth opportunities. This finding suggests that differential growth opportunities translate into meaningful economic differences between domestic and foreign income streams (BW, p. 89). However, in their regression, not only is the interaction between foreign earnings and growth opportunities positive and significant but so is the relative foreign earnings association coefficient. This suggests that factors other than growth opportunities also contribute to the larger foreign association coefficient. We add to this stream of research by examining whether expanding the returns–earnings regression to explicitly control for other value-relevant information affects previously reported results. In particular, we expect that other information (described below) will be relatively more important for the valuation of foreign earnings than for the valuation of domestic earnings. We also explicitly test the effect of omitting other information on the bias in domestic and foreign earnings response coefficients.

2.2 The Issue of Omitted Correlated Variables

The first diagnostic for omitted variables is a low R^2 statistic (e.g., Jargowsky [2003]. In the accounting literature, Lev (1989) surveys a large number of papers using unexpected earnings response regression models and finds low (less than 10%) and often "negligible" R^2s. Although low R^2s are a necessary but not a sufficient condition for major specification problems, Lev suggests that they are a cause of concern and may be the result of specification problems.

Other researchers have also shown concern over omitted variables in returns–earnings regressions. For example, Cheng et al. (1992) find that omitted variables

research (e.g., BW) that has focused on domestic versus foreign earnings. Second, unlike earnings from domestic and foreign operations, which are defined by SEC regulation, firms' reported segment earnings vary widely both across firms and over time for the same firm. For example, whereas some firms report operating income, others report net income and some report some in-between earnings measure. Third, a geographic segment may meet the criteria for being reportable in one period but not in another.

2. Specifically, Bodnar et al. (2003) find that the association coefficient for foreign earnings is larger than the association coefficient for domestic earnings for all three countries, and that the difference is statistically significant for Canada and the United Kingdom.

3. Similarly, Garrod and Rees (1998) find that U.K. multinational firms are valued more highly than U.K. domestic firms.

are associated with systematic variation in earnings coefficients. Prior research has attempted to improve the returns–earnings specification by adding various proxies for other information used by investors. Lev and Thiagarajan (1993) find that adding a set of "accounting signals" (or fundamentals) significantly increases the explanatory power of earnings with respect to excess returns. Similarly, Collins et al. (1994) include observed earnings growth from future periods, and Abarbanell and Bushee (1997) include current-period revisions in analysts' earnings forecasts.

Liu and Thomas (2000) follow a similar approach. Based on the residual income model, they construct an elaborate proxy for other information based on revisions in analysts' forecasts and discount rate changes (explained in detail in section 3.2). A recent study by Cheng (2005) validates the use of analysts' forecasts as a parsimonious proxy for forward-looking information. Cheng shows that analysts integrate a substantial amount of the information contained in 22 explicit information items that have been shown by prior research to be useful in valuation. In addition, analysts incorporate into their forecasts also unique information beyond the explicit information items examined.

When Liu and Thomas (2000) include their "other information" proxy in the returns–earnings regression, they find that R^2s increase significantly from below 5% to over 30%.[4] In addition, the estimated earnings response coefficients (ERCs) are better behaved and easier to interpret. They also document that the lower ERCs and R^2s characterizing the regressions for loss firms (or negative values of unexpected earnings) disappear under this specification (i.e., the nonlinearity in returns–earnings relations is noticeably reduced).

Based on the low R^2s in the BW model (and similar studies) and the evidence relating to other information provided by Liu and Thomas (2000), if one believes that other information beyond domestic and foreign earnings changes is important in explaining current period excess returns, then a model that omits other information as a regressor is likely to be misspecified. Not only is the omission equivalent to incorrectly forcing the coefficient of other information to be zero (i.e., biasing the coefficient), but also and more important, it biases the coefficients of the included regressors. Thus the coefficients of domestic and foreign earnings changes are forced to carry the effect of the omitted other information, and will be biased.[5] Consequently the inferences made on the basis of the biased coefficients may be incorrect.

The following discussion shows how omitting value relevant other information

4. Corroborating Liu and Thomas's findings on the importance of analysts' revisions of future earnings and terminal values, Copeland et al. (2004) find that changes in expectations of long-term earnings better explain market-adjusted stock returns than changes in expectations for current year's earnings, next year's earnings, or noise (measured as the standard deviation of analyst forecasts).

5. Omitting relevant variables also affects the standard errors of the included variables. There are several potentially offsetting effects, so that the standard errors may be larger or smaller relative to the correctly specified model (e.g., Jargowsky 2003; Kennedy 1998). However, in most accounting research where degrees of freedom are plentiful, including an omitted variable will tend to reduce the standard errors of the included variables.

biases the coefficients of total and foreign earnings (see, e.g., Jargowsky [2003]). Here the total earnings are the sum of domestic and foreign earnings, and under this specification, the coefficient of foreign earnings tests the difference between domestic and foreign earnings.[6]

If we regress unexpected stock returns (*UR*) on total (*EARN*) and foreign (*FOREARN*) earnings changes and (incorrectly) exclude other information, the regression equation is

$$UR_{i,t} = \alpha_{10} + \alpha_{11}EARN_{i,t} + \alpha_{12}FOREARN_{i,t} + \varepsilon_{1i,t} \tag{1}$$

The regression equation that includes the variable representing other value-relevant information (*OI*) is

$$UR_{i,t} = \alpha_{20} + \alpha_{21}EARN_{i,t} + \alpha_{22}FOREARN_{i,t} + \alpha_{23}OI_{i,t} + \varepsilon_{2i,t} \tag{2}$$

Further, to the extent that analysts use both domestic and foreign earnings components in predicting future earnings, total and foreign earnings will associate with analysts' forecast revisions as in the following:[7]

$$OI_{i,t} = \alpha_{30} + \alpha_{31}EARN_{i,t} + \alpha_{32}FOREARN_{i,t} + \varepsilon_{3i,t} \tag{3}$$

Substituting eq. (3) into eq. (2) and rearranging terms:

$$\begin{aligned} UR_{i,t} = {} & \alpha_{20} + \alpha_{21}EARN_{i,t} + \alpha_{22}FOREARN_{i,t} + \alpha_{23}\,(\alpha_{30} + \alpha_{31}EARN_{i,t} \\ & + \alpha_{32}FOREARN_{i,t} + \varepsilon_{3i,t}) + \varepsilon_{2i,t} = (\alpha_{20} + \alpha_{23}\alpha_{30}) + (\alpha_{21} \\ & + \alpha_{23}\alpha_{31})\,EARN_{i,t} + (\alpha_{22} + \alpha_{23}\alpha_{32})\,FOREARN_{i,t} + (\varepsilon_{2i,t} \\ & + \alpha_{23}\varepsilon_{3i,t}) \end{aligned} \tag{4}$$

When estimating the regression of *UR* on *EARN* and *FOREARN*, but *omitting OI* (i.e., eq. [1]), the slope parameters for both of the included independent variables are potentially biased. From eq. (4), the expected values for the slope parameters are

$$E[\alpha_{11}] = \alpha_{21} + \alpha_{23}\alpha_{31} \tag{5}$$

$$E[\alpha_{12}] = \alpha_{22} + \alpha_{23}\alpha_{32} \tag{6}$$

where the second term in eqs. (5) and (6) represents the bias, and this bias has two components.[8] The first component (α_{23}) is the "true effect" of the omitted variable. If α_{23} is zero there is no bias. The second component is the coefficients of total and foreign earnings in eq. (3). For example, α_{31} is the slope coefficient for *EARN* that would be obtained from a regression of *OI*—the missing variable—on *EARN* and *FOREARN*. The direction of the bias is determined by signs of the two terms

6. We follow Bodnar and Weintrop (1997) in using total and foreign earnings rather than domestic and foreign earnings (see also Section 3.1).

7. In the empirical section we also consider expanded models for explaining variations in other information.

8. The formal derivation of omitted variable bias involves substituting the true model into the formula for the OLS slope coefficient, and then taking the expectation (e.g., Jargowsky [2003]).

in the bias equation, and the difference in the magnitude of the bias for the two regressors will depend largely on the magnitudes of α_{31} and α_{32}.

We acknowledge that analysts' forecasts may correlate more strongly with either foreign or domestic earnings. On one hand, analysts may weight foreign earnings relatively more in forecasting future earnings if they expect foreign earnings to grow faster in less exploited foreign markets than in a more mature domestic market (as documented by BW). Consistent with BW, Thomas (1999) documents that foreign earnings changes are more persistent than domestic earnings changes. More important, Khurana et al. (2003) provide evidence that analysts perceive foreign earnings to be more persistent than domestic earnings. On the other hand, if analysts perceive higher uncertainty regarding foreign earnings because international operations are conducted in a less familiar business environment (e.g., Hope et al. [2005]), then they may have a tendency to discount foreign earnings when forecasting future earnings (and terminal values). However, based on the empirical evidence in Khurana et al. we expect α_{32} to be larger than α_{31}, and as a consequence, the bias on foreign ERC to be larger than the bias on domestic ERC.

Our study extends prior literature that documents the effects of correlated omitted variables on the bias of ERC in returns–earnings regressions by examining how the correlated omitted variable affects the relative magnitude of response coefficients on subcomponents of earnings (i.e., domestic vs. foreign). Our general finding is that correlated omitted variables can bias subcomponents of earnings to differing degrees. Specifically, we find that higher foreign ERC relative to domestic ERC, as documented by prior studies, is no longer observed when we control for a proxy for other information (i.e., analysts' forecast revisions) in the regression.

3. Research Design

In this section, we briefly describe the returns-earnings regression tests we employ. We also explain our proxy for "other information" and the computation of excess stock returns (i.e., the dependent variable).

3.1 An Extended Returns–Earnings Regression

Following BW, we regress unexpected annual stock returns on the change in annual earnings components. Specifically, we decompose the change in total earnings into its domestic and foreign components using SEC-mandated disclosures (SEC Regulation §210.4-08[h]).[9] Consistent with prior literature, to test for the incremental value relevance of foreign earnings changes, we employ the method-

9. Specifically, consistent with prior research (BW) we first obtain pre-tax domestic and foreign earnings from Compustat (data items 272 and 273, respectively). Then we compute after-tax domestic and foreign earnings by using foreign taxes payable (item 64), foreign deferred taxes (item 270), and total income taxes (item 16). Finally, earnings changes are computed as the current year's earnings less last year's earnings, on a per-share basis and scaled by stock price.

ology adopted by BW and regress returns on total and (incremental) foreign earnings changes (see eq. [1] above).[10] With this specification, the coefficient on total earnings (α_{11}) captures the level of ERC common to both domestic and foreign operations. The coefficient of foreign earnings (α_{12}) represents the difference between the domestic and foreign ERCs (BW, p. 83).[11] However, as explained above, eq. (1) may be misspecified and the coefficients may be biased if the "other information" is not included as a regressor. Hence, we add our proxy for other value-relevant information, *OI* (see eq. [2]). Our tests primarily focus on comparing the models in eqs. (1) and (2) to identify whether the *OI* variable is value relevant, and whether its omission causes bias in the coefficients of other included variables. We also compute the differential bias on domestic and foreign ERCs resulting from omitting other information. In the following two sections we describe how we measure other information and the dependent variable, respectively.

3.2 Measurement of Other Information

Liu and Thomas (2000) improve the specification of the returns–earnings relation by adding a proxy for "other information" used by the market. They use analysts' forecast revisions and discount rate changes to generate that proxy. We elect to use their specification because it is the most powerful returns–earnings regression model currently found in the literature. Their model yields R^2s ranging from approximately 20% to 40%, suggesting that it is a relatively well-specified model which provides a reasonable control for other information. In addition to improving the model specification by controlling for other information, Liu and Thomas document that the nonlinearity in returns–earnings relations is noticeably reduced under this specification.

Starting from the residual income valuation model (e.g., Preinreich [1938]; Edwards and Bell [1961]; Peasnell [1982]), Liu and Thomas (2000) derive a returns–earnings regression specification that includes a proxy for "other value-relevant information." This proxy is defined as revisions in future abnormal earnings and terminal values, computed using analysts' earnings forecasts. We follow Liu and Thomas in computing the empirical proxy for other information. To estimate the earnings forecast revisions (i.e., RAE_2 through RAE_5), we use fore-

10. Our regression specification of excess stock returns regressed on changes in total and foreign income follows directly from the model of Liu and Thomas (2000). Hence our regression results are directly comparable with those of both Liu and Thomas (2000) and BW. Our regression specification is also consistent with Thomas (1999), Callen, Hope, and Segal (2005), and Hope, Kang, Thomas and Vasvari (2005).

11. Econometrically, a regression with domestic and foreign earnings is equivalent to a regression with total and foreign earnings. However, the latter specification is robust to cases where the sum of domestic and foreign after-tax earnings does not equal total earnings (see BW). As a robustness test, we have deleted (the few) observations with a significant difference between total earnings and the sum of domestic and foreign earnings (based on various cut-offs). No inferences are affected with this specification. In addition, we have run our tests using domestic and foreign earnings and find consistent results.

casted earnings for each year in the five-year horizon (eps_{t+s}) and corresponding book values (bps_{t+s-1}). All analyst data are from I/B/E/S. In cases where forecasts are not available for all five years, we fill in missing forecasts for years +3, +4 and +5 by applying the mean long-term growth forecast to the mean forecast for the prior year in the horizon (i.e., $eps_{t+s} = eps_{t+s-1} \times [1 + g]$). Future book values corresponding to these earnings forecasts are determined by assuming the ex-ante clean surplus relation: ending book value for each future period equals beginning-of-period book value plus forecasted earnings less forecasted dividends. We also assume that the current dividend payout ratio will be maintained throughout the five-year period. If year $t + 1$ earnings forecasts are negative, we assume that the dollar amount of the indicated dividend, rather than the payout ratio, remains constant over the five-year horizon.

In the following, RAE_j denotes the revision in analysts' forecasts corresponding to future year j, and OI, our measure of other information, is the sum of these revisions over the five-year period and the terminal value.[12] AE denotes the present value of expected future abnormal earnings,[13] and k_t is the firm-specific cost of capital estimate at time t, measured as the risk-free rate plus the firm-specific beta times the historical risk premium.[14,15] P_{t-1} is the beginning-of-year stock price. The revision in future abnormal earnings in each period (RAE_j) is computed by subtracting last period's expectation about future year $t + \tau$ abnormal earnings from this period's updated expectation about the year $t + \tau$ abnormal earnings.

$$E_t[AE_{t+s}] = \frac{E_t(ae_{t+s})}{(1 + k_t)^s}$$

$$RAE_j = \frac{[E_t(AE_{t+j-1}) - (1 + k_{t-1})E_{t-1}(AE_{t+j-1})]}{P_{t-1}}$$

$$OI = RAE_2 + RAE_3 + RAE_4 + RAE_5 + RTERM.$$

To compute the revision in terminal values, $RTERM$, we estimate the five-year-out market-to-book premium (the excess of price over book value). To accomplish this, we assume that the five-year-out price-to-book ratio remains unchanged between $t - 1$ and t and apply this ratio to the estimated book value

12. Liu and Thomas (2000) conclude that using the aggregate measure of other information (OI) instead of including all its sub-components reduces measurement error.

13. Abnormal earnings are defined as follows (see Liu and Thomas 2000): $ae_{t+s} = eps_{t+s} - k_t bv_{t+s-1}$, where eps is earnings per share and bv is book value of equity.

14. Consistent with Liu and Thomas (2000), our measure for risk-free rate is the ten-year Treasury bond yields as of April 1 of each year. Although Liu and Thomas (2000) show that the model is robust to different assumptions about the risk-free rate, we have re-run the analysis using different assumptions about the risk-free rates. We have also computed betas using a portfolio approach instead of the firm-specific approach. For this analysis we compute the portfolio beta as the median beta of all firms in the same beta decile as that firm in a given year. Our results do not change with these alternative assumptions and specifications.

15. In our tests we use a market premium of 5% as per Liu and Thomas. No inferences are changed if we instead use a market premium between 3% and 10%.

five years out (see the appendix for details). All variables are scaled by stock price at the end of year $t - 1$.

3.3 Measurement of Dependent Variable

To measure unexpected returns, we follow Liu and Thomas (2000) and subtract expected returns, computed using the capital asset pricing model, from actual annual buy-and-hold returns. To compute expected returns, we first calculate the CAPM beta. We require that a firm-year observation have a minimum of 24 consecutive monthly returns available to be included in the beta calculation and, if available, we use up to 60 monthly observations. Next, following Liu and Thomas, we derive expected returns as the sum of the risk-free rate at the beginning of the year and the risk premium, defined as the product of beta and the historical market premium (see footnotes 14 and 15).

4. Sample and Descriptive Statistics

Our sample period spans the period 1985–2002.[16] Our sample selection procedure follows BW. We include only firms with both current and lagged observations for domestic and foreign pretax annual income. We also require that data be available for current and lagged income taxes. Using these data we compute domestic and foreign after-tax earnings for current and previous years. We then convert these measures into earnings-per-share data by dividing by shares outstanding at the end of the fiscal year. We then difference these variables and obtain domestic and foreign earnings changes on a per-share basis. Finally, consistent with BW we scale these measures by stock price at the end of the previous fiscal year. We also extract annual total earnings per share and compute the annual change in earnings per share (scaled by stock price).

Combining the above requirements with the requirements for the proxy for other information and the dependent variable (see sections 3.2 and 3.3) yields a sample of 4,178 firm-year observations (1,040 distinct firms).[17] Table 1 presents descriptive statistics for the sample. Sample firms are multinationals that are followed by analysts (necessary to compute our proxy for other information); they are also quite large (with median market value of equity of $1.4 billion) compared with the typical Compustat firms. Foreign revenues as a percent of total revenues have a median of 30.1%, suggesting that foreign operations are economically significant for our sample firms.[18] The foreign return on assets is higher than the domestic return on assets (medians of 9.1% and 7.7%, respectively). Furthermore,

16. Our sample period starts in 1985 because data on the domestic and foreign components of earnings are not available in Compustat prior to 1984.

17. Winsorizing all regression variables at their first and 99th percentile or applying commonly used outlier removal techniques (e.g., Belsley et al. [1980]) does not change any inferences.

18. Similarly, foreign income as a percent of total income has a median of 26.2% (untabulated).

TABLE 1

Descriptive Statistics

	Mean	1%	Q1	Median	Q3	99%	*N*
Market value ($MM)	4822	55	481	1387	4351	54093	4178
Total assets ($MM)	5153	79	454	1377	4444	65338	4178
Foreign revenues (% of total)	32.4	3.7	16.4	30.1	44.2	77.3	4178
Domestic ROA (%)	9.1	−11.8	2.8	7.7	14.2	35.4	2866
Foreign ROA (%)	10.8	−10.2	3.7	9.1	16.2	40.6	2973
Domestic sales growth (%)	9.8	−55.4	−3.3	6.8	18.9	180.1	4178
Foreign sales growth (%)	15.3	−55.6	−2.8	10.9	29.7	183.2	3813
Total earnings change	0.001	−0.121	−0.011	0.002	0.013	0.145	4178
Foreign earnings change	0.001	−0.054	−0.005	0.001	0.007	0.068	4178
Other information	−0.011	−0.834	−0.185	0.021	0.198	0.608	4178

1%, Q1, Q3 and 99% are the first percentile, first quartile, third quartile and 99th percentile, respectively. Market value is market value of shareholders' equity. Domestic (foreign) ROA is domestic (foreign) earnings divided by domestic (foreign) total assets. The domestic and foreign sales growth numbers are year-over-year rates. Total (foreign) earnings change is the change in total (foreign) earnings from the previous year on a per share basis, scaled by stock price at the end of the previous fiscal year. Other information is our proxy for other value-relevant information. It is based on Liu and Thomas's (2000) measure of analysts' revisions in near- and long-term earnings and terminal value forecasts.

the growth rate of foreign sales exceeds that of domestic sales (medians of 10.9% versus 6.8%), suggesting that foreign markets on average exhibit greater growth opportunities than domestic markets (consistent with BW).

5. Empirical Tests and Results

5.1 Main Regression Results

We report results using pooled OLS for all tests. In addition, to address potential cross-correlations of error terms, for the main tests we also present results of annual regressions in which we average coefficients and compute *t*-statistics using the time-series standard errors (Fama and MacBeth [1973]).[19] Table 2 presents the results of eq. (1). Consistent with BW, the coefficients on both total and foreign income changes are positive and significant at the 1% level, suggesting that investors view both domestic and foreign sources of income to be value relevant. Our findings support prior research that investors value foreign earnings differently

19. Significance levels are two-tailed. Standard errors are based upon White's (1980) heteroskedasticity consistent estimates for the pooled OLS regressions. We obtain consistent results when using Newey–West standard errors (that account for possible autocorrelation). When we add year indicators to the models the R^2s increase but no inferences are changed. We choose to present results excluding year indicators (for the pooled OLS regressions) to be consistent with BW. Finally, variance inflation statistics do not indicate the presence of multicollinearity in our tests.

TABLE 2

Results of Regressions of Annual Excess Returns on Total and Foreign Earnings Changes

$$UR_{i,t} = \alpha_{10} + \alpha_{11}\, EARN_{i,t} + \alpha_{12} FOREARN_{i,t} + \varepsilon_{1i,t} \quad (1)$$

	Pooled OLS Regression		Annual Cross-Sectional Regressions	
	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.66***	4.78	0.91***	5.65
Foreign earnings change	0.67***	2.93	0.85***	4.30
Intercept	0.02***	2.87	0.02	0.53
N		4178		18
F		38.2		5.0
Adj. R^2		0.02		0.03

UR is unexpected stock returns computed using CAPM. *EARN* (total earnings change) and *FOREARN* (foreign earnings changes) are the changes in total and foreign earnings from the previous year on a per-share basis, scaled by stock price at the end of the previous fiscal year. Reported significance levels are two-sided and based on White (1980). For the annual cross-sectional regressions we report the average coefficients, the accompanying *t*-statistics, and the average *F*-value and adjusted R^2 (Fama and MacBeth [1973]).

*** denotes significance at the 1% level (two-tailed).

than domestic earnings and, in particular, the finding that changes in foreign income are more positively correlated with returns than are changes in domestic income.

However, as discussed in previous sections, this may be a spurious result if failure to control for other value-relevant information in the returns–earnings regression biases the association coefficients for domestic and foreign earnings to different degrees. In fact, the regressions in Table 2 exhibit low adjusted R^2s (2% and 3%, respectively), which is consistent with a misspecified model in general and omitted variables in particular.

Panel A of Table 3 reports the results of regressing our proxy for other information on total and foreign earnings changes (eq. [3]). Other information is significantly positively correlated with both total and foreign earnings changes (i.e., both α_{31} and α_{32}, which are also found in eqs. [5] and [6], are significantly different from zero). The association between other information and foreign earnings is greater than the association between other information and domestic (i.e., total) earnings. This finding is consistent with Thomas (1999) and Callen et al. (2005) who document that foreign earnings are more persistent than domestic earnings. However, other information may depend on factors beyond current domestic and foreign earnings changes (e.g., Cheng [2005]). As a robustness check, we thus present results with an expanded set of regressors. In particular, we include a set of "accounting signals" that, according to Lev and Thiagarajan (1993), reflect fun-

TABLE 3

Regression of ''Other Information'' on Total and Foreign Earnings (and Accounting Signals)

Panel A: Regression of ''other information'' on total and foreign earnings changes

$$OI_{i,t} = \alpha_{30} + \alpha_{31}EARN_{i,t} + \alpha_{32}FOREARN_{i,t} + \varepsilon_{3i,t} \quad (3)$$

	Pooled OLS Regression		Annual Cross-Sectional Regressions	
	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.61***	4.02	0.75***	3.24
Foreign earnings change	0.99***	4.05	1.29***	4.06
Intercept	−0.05***	−7.66	−0.05	−1.34
N		4178		18
F		38.8		5.4
Adj. R^2		0.02		0.04

Panel B: Regression of ''other information'' on total and foreign earnings changes and control variables

$$OI_{i,t} = \alpha_{3a0} + \alpha_{3a1}EARN_{i,t} + \alpha_{3a2}FOREARN_{i,t} + \alpha_{3a3}\Delta INV_{i,t} + \alpha_{3a4}\Delta AR_{i,t} + \alpha_{3a5}\Delta GM_{i,t} + \alpha_{3a6}\Delta SNA_{i,t} + \alpha_{3a7}ET_{i,t} + \varepsilon_{3ai,t} \quad (3a)$$

	Pooled OLS Regression		Annual Cross-Sectional Regressions	
	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.68***	2.72	1.01***	2.78
Foreign earnings change	0.99***	3.01	1.13**	2.48
Inventory change	0.19**	2.18	0.35***	2.77
Accounts receivable change	0.05	0.9	0.29***	3.43
Gross margin change	0.41***	4.23	0.61***	3.30
Selling & admin. change	−0.16*	−1.72	−0.46***	−4.47
Effective tax	−3.01	−1.57	2.79	0.51
Intercept	−0.06***	−7.62	−0.05*	−1.73
N		3359		18
F		13.7		3.34
Adj. R^2		0.03		0.08

OI (other information) is our proxy for other value-relevant information. It is based on Liu and Thomas's (2000) measure of analysts' revisions in near- and long-term earnings and terminal value forecasts. *EARN* (total earnings change) and *FOREARN* (foreign earnings change) are the change in total and foreign earnings from the previous year on a per-share basis, scaled by stock price at the end of the previous fiscal year. Reported significance levels are two-sided and based on White (1980).The fundamental signal variables are computed as per Lev and Thiagarajan (1993): inventory change (*ΔINV*) is measured as *ΔInventory* (Compustat annual item 3) −*ΔSales* (Compustat annual item 12); accounts receivable change (*ΔAR*) is measured as *ΔAccounts Receivable* (Compustat annual item 2)−*ΔSales* (Compustat annual item 12); gross margin change (*ΔGM*) is measured as *ΔSales* (Compustat annual item 3)−*ΔGross Margin* (Compustat annual item 12–item 41); selling & admin. change (*ΔSNA*) is measured as *ΔSelling and administrative expenses* (Compustat annual item 189)− *ΔSales* (Compustat annual item 12); and effective tax (*ET*) is measured as PTE_t $(T_{t-1} - T_t)$, where PTE_t equals pretax earnings (Compustat annual item 170) and T_t is the effective tax rate at time *t*. The effective tax rate is measured as Compustat items 63/(18 + 63 + 49 − 48 − 55). For the annual cross-sectional regressions we report the average coefficients, the accompanying *t*-statistics, and the average *F*-value and adjusted R^2 (Fama and MacBeth [1973]).

*, ** and *** denote significance at the 10%, 5% and 1% level, respectively (two-tailed).

damentals claimed to be useful in security valuation: change in inventory, change in accounts receivable, change in gross margin, change in selling and administrative expenses, and effective tax rate (see also Cheng [2005]):[20]

$$OI_{i,t} = \alpha_{3a0} + \alpha_{3a1}EARN_{i,t} + \alpha_{3a2}FOREARN_{i,t} + \alpha_{3a3}\Delta INV_{i,t} + \alpha_{3a4}\Delta AR_{i,t} + \alpha_{3a5}\Delta GM_{i,t} + \alpha_{3a6}\Delta SNA_{i,t} + \alpha_{3a7}ET_{i,t} + \varepsilon_{3ai,t} \quad (3a)$$

where $\Delta INV_{i,t}$, $\Delta AR_{i,t}$, $\Delta GM_{i,t}$, $\Delta SNA_{i,t}$, and $ET_{i,t}$ are change in inventory, change in accounts receivable, change in gross margin, change in selling and administrative expense, and effective tax expense for firm i at time t, respectively.

The results in Panel B of Table 3 show that the coefficients of the control variables are consistent with those reported in Cheng (2005, Table 3). More important, other information is still significantly associated with both total and foreign earnings, even after controlling for the other variables, and the coefficient of foreign earnings changes exceeds that of total earnings changes.

Consequently, to further investigate this alternative explanation, we present results of eq. (2) in Table 4. Eq. (2) specifically controls for other information, an aggregate measure of forecast revisions and discount rate changes (Liu and Thomas [2000]). With this specification, the magnitude of both association coefficients is reduced. Although the change in total earnings retains its statistical significance, the incremental foreign association coefficient is no longer significant.

The inclusion of the "other information" variable not only generates a coefficient strongly positively correlated with excess returns (with a p-value less than 0.01), but also materially improves the explanatory power of the model. The adjusted R^2 increases from 0.02 to 0.34 in the pooled OLS regression and from 0.03 to 0.37 in the annual cross-sectional (Fama and MacBeth [1973]) regression. This increase is consistent with the results in Liu and Thomas (2000), and suggests that eq. (1) is potentially misspecified (Cheng et al. [1992]; Jargowsky [2003]). Since stock prices are forward-looking, it is not surprising that revisions in expectations of future earnings and discount rates are highly value-relevant. In particular, our results indicate that current-period stock returns can be explained better by current revisions of future-period earnings than by the current-period domestic and foreign earnings changes.[21] The results also indicate that the positive correlations between other information and total and foreign earnings changes cause the regression of returns on total and foreign earnings changes to suffer from an omitted variables

20. Inventory change is computed using Compustat item 3, accounts receivable change is computed using Compustat item 2, gross margin change is computed using Compustat items 12 and 41, sales and administrative expenses change is computed using Compustat item 189, and effective tax is based on Compustat item 170. Refer to Table 3 for further details on how these variables are computed.

21. Our results are further consistent with Callen et al. (2005), who, using a variance decomposition model, find that expected return news is value-relevant and conclude that it is important to control for changes in expected discount rates. Campbell et al. (1997), among others, have also shown that small changes in discount rates can have a large impact on security returns.

TABLE 4

Results of Regression of Annual Excess Returns on Total and Foreign Earnings Changes and a Proxy for Other Information

$$UR_{i,t} = \alpha_{20} + \alpha_{21}EARN_{i,t} + \alpha_{22}FOREARN_{i,t} + \alpha_{23}OI_{i,t} + \varepsilon_{2i,t} \quad (2)$$

	Pooled OLS Regression		Annual Cross-Sectional Regressions	
	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.34***	3.02	0.53***	4.31
Foreign earnings change	0.16	0.87	0.22	1.26
Other information	0.52***	28.88	0.54***	14.68
Intercept	0.04***	8.61	0.02	0.70
N		4178		18
F		710.2		47.7
Adj. R^2		0.34		0.37

UR is unexpected stock returns computed using CAPM. *EARN* (total earnings change) and *FOREARN* (foreign earnings change) are the change in total and foreign earnings from the previous year on a per-share basis, scaled by stock price at the end of the previous fiscal year. *OI* (other information) is our proxy for other value-relevant information. It is based on Liu and Thomas's (2000) measure of analysts' revisions in near- and long-term earnings and terminal value forecasts. Reported significance levels are two-sided and based on White (1980). For the annual cross-sectional regressions we report the average coefficients, the accompanying *t*-statistics, and the average *F*-value and adjusted R^2 (Fama and MacBeth [1973]).

*** denotes significance at the 1% level (two-tailed).

problem. In general, specification problems lead to substantial instability in inferences from the model.

To the extent that analysts (who serve as a major source of the additional information to investors) are aware of the faster growth in foreign earnings and consequently generate forecasts based on this fact, analyst forecast revisions will correlate more with innovations in foreign earnings than with domestic earnings. As a result, the estimated foreign ERC is more biased than the domestic ERC. Using eqs. (5) and (6), the biases for total and foreign earnings are (in the pooled OLS estimations):

Total: 0.52 * 0.61 = 0.32

Foreign (incremental): 0.52 * 0.99 = 0.52

Although both coefficients are biased, foreign earnings are biased more. This finding is consistent with Thomas (1999) and Callen et al. (2005), who document the higher actual time-series persistence of foreign earnings compared with domestic earnings, and in particular with Khurana et al.'s (2003) finding that analysts perceive foreign earnings to be more persistent than domestic earnings. The mag-

nitude of the bias for foreign earnings is 63% greater than that for total earnings, and hence the difference in bias appears to be economically significant.[22,23]

Our empirical results suggest the following. Regressions of unexpected returns on domestic and foreign earnings alone suffer from a correlated omitted variables problem. In particular, economic theory suggests that current stock returns incorporate forward-looking information. The Liu and Thomas (2000) measure of other information is a powerful proxy for such information, because it is based on financial analysts' revisions of both near- and long-term earnings forecasts (including terminal values). When other information is included, the overall explanatory power of the model increases substantially. Furthermore, the value relevance of incremental changes in current-period foreign earnings becomes insignificant and is much smaller than that of changes in current-period total earnings. This result is caused by the bias from excluding other information in the regression being greater for foreign earnings than for domestic earnings.[24]

5.2 Sensitivity Analyses

In the following sections, we perform sensitivity analyses to check whether our results are robust to alternative explanations. We consider relative growth opportunities, negative versus positive earnings changes, income taxes, foreign currency translation adjustments, firm size, and differential income statement conservatism.

5.2.1 Differential Growth Opportunities

As noted above in the discussion of descriptive statistics, our sample firms on average exhibit greater growth opportunities (as measured by historical year-by-year sales growth) in foreign markets than in domestic markets. Following BW, we augment regression eqs. (1) and (2) by adding an interaction term between foreign earnings changes and differential growth. In addition, differential growth is included separately.[25] The regression specifications become:

22. The magnitude of the bias for foreign earnings is 72% greater than for total earnings in the annual cross-sectional regression specification.

23. The difference in bias is weakly statistically significant in the pooled OLS tests, with a *p*-value of 0.09 (untabulated). The difference in bias in the Fama–MacBeth specification that excludes (includes) control variables is significant at the 1% level (not significant at conventional levels).

24. Our finding does not imply that foreign earnings are not value relevant in general, only that incremental current-period changes in foreign earnings are insignificant when controlling for other information. As discussed above, analysts are aware of the higher persistence of foreign earnings and include this information in their updates of future abnormal earnings and terminal values. Hence some of the importance of foreign earnings may be captured by the other information variable.

25. BW did not include differential growth as a separate variable. However, if differential growth is excluded it is difficult to ascribe an empirical finding to the interaction effect rather than the (omitted) main effect (e.g., Gupta and Govindarajan [1993], p. 463). Omitting differential growth, however, does not change our inferences. Furthermore, we have estimated a regression in which we interact differential growth with both total and foreign earnings changes. Results are similar to those reported.

$$UR_{i,t} = \alpha_{7a0} + \alpha_{7a1}EARN_{i,t} + \alpha_{7a2}FOREARN_{i,t} + \alpha_{7a3}FOREARN_{i,t}*DFG_{i,t} + \alpha_{7a4}DFG_{i,t} + \varepsilon_{7ai,t} \quad (7a)$$

$$UR_{i,t} = \alpha_{7b0} + \alpha_{7b1}EARN_{i,t} + \alpha_{7b2}FOREARN_{i,t} + \alpha_{7b3}FOREARN_{i,t}*DFG_{i,t} + \alpha_{7b4}DFG_{i,t} + \alpha_{7b5}OI_{i,t} + \varepsilon_{7bi,t} \quad (7b)$$

where $DFG_{i,t}$ is the difference in foreign and domestic sales growth rates for firm i at time t. Specifically, $DFG_{i,t}$ is computed as the percentage change in foreign sales less the percentage change in domestic sales (consistent with BW). If differential growth contributes to stock returns being more sensitive to changes in foreign earnings than to changes in domestic earnings, the interaction terms between foreign earnings and $DFG_{i,t}$ (α_{7a3} and α_{7b3}, respectively) will be positive.

Table 5 presents results of estimating these regressions. Panel A shows that whereas the main effect for the incremental foreign earnings change (α_{7a2}) is positive and significant, the interaction with differential growth (α_{7a3}) is not significant. When the proxy for other information is added, foreign earnings changes (α_{7b2}) loses its significance, consistent with results reported in Table 2. Consequently, our previously reported results are not sensitive to the inclusion of a proxy for differential growth opportunities between domestic and foreign operations.[26]

5.2.2 Negative Versus Positive Earnings Changes

Although largely tested in the linear form, nonlinearity in the price–earnings relation has been well documented in prior literature (e.g., Hayn [1995]). Extending this idea to the foreign component of earnings, Christophe (2002) documents that foreign earnings changes are reflected in stock returns only for negative changes. Adapting Christophe's specification to our setting, we estimate the following regressions:

$$UR_{i,t} = \alpha_{8a0} + \alpha_{8a1}EARN_{i,t} + \alpha_{8a2}FOREARNPOS_{i,t} + \alpha_{8a3}FOREARNNEG_{i,t} + \varepsilon_{8ai,t} \quad (8a)$$

$$UR_{i,t} = \alpha_{8b0} + \alpha_{8b1}EARN_{i,t} + \alpha_{8b2}FOREARNPOS_{i,t} + \alpha_{8b3}FOREARNNEG_{i,t} + \alpha_{8b4}OI_{i,t} + \varepsilon_{8bi,t} \quad (8b)$$

where *FOREARNPOS* (*FOREARNNEG*) denotes positive (negative) foreign earnings changes.

Panel B of Table 5 shows that when our proxy for other information is omitted, both positive and negative foreign earnings changes are positive and significant. However, when other information is included, the coefficient of positive foreign

26. Although used in prior research, it could be that year-over-year percent change in sales is not a powerful proxy for growth opportunities for domestic and foreign operations. As an alternative test, we used market-to-book (and changes in market-to-book) as well as the "accounting signals" described earlier. None of these are available separately for domestic and foreign segments, however. Untabulated results show that inferences are unchanged with these alternative specifications.

TABLE 5

Sensitivity Analyses

Panel A: Effect of differential growth rates for domestic and foreign operations

$$UR_{i,t} = \alpha_{7a0} + \alpha_{7a1}EARN_{i,t} + \alpha_{7a2}FOREARN_{i,t} + \alpha_{7a3}FOREARN_{i,t}{*}DFG_{i,t} + \alpha_{7a4}DFG_{i,t} + \varepsilon_{7ai,t} \quad (7a)$$

$$UR_{i,t} = \alpha_{7b0} + \alpha_{7b1}EARN_{i,t} + \alpha_{7b2}FOREARN_{i,t} + \alpha_{7b3}FOREARN_{i,t}{*}DFG_{i,t} + \alpha_{7b4}DFG_{i,t} + \alpha_{7b5}OI_{i,t} + \varepsilon_{7bi,t} \quad (7b)$$

	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.61***	3.75	0.31**	2.30
Foreign earnings change	0.70***	2.65	0.17	0.76
Foreign earnings change*Differential growth	0.00	0.30	−0.00	−0.25
Differential growth	0.02	0.07	0.04	0.22
Other information			0.53***	27.53
Intercept	0.01**	2.31	0.04***	7.63
N		3968		3968
F		15.6		384.0
Adj. R^2		0.02		0.34

Panel B: Effect of positive and negative foreign earnings changes

$$UR_{i,t} = \alpha_{8a0} + \alpha_{8a1}EARN_{i,t} + \alpha_{8a2}FOREARNPOS_{i,t} + \alpha_{8a3}FOREARNNEG_{i,t} + \varepsilon_{8ai,t} \quad (8a)$$

$$UR_{i,t} = \alpha_{8b0} + \alpha_{8b1}EARN_{i,t} + \alpha_{8b2}FOREARNPOS_{i,t} + \alpha_{8b3}FOREARNNEG_{i,t} + \alpha_{8b4}OI_{i,t} + \varepsilon_{8bi,t} \quad (8b)$$

	Coef.	*t*-stat	Coef.	*t*-stat
Total earnings change	0.66***	4.79	0.34***	3.00
Foreign earnings change if positive	0.59**	2.00	−0.05	−0.22
Foreign earnings change if negative	0.79**	2.27	0.50*	1.76
Other information			0.52***	28.92
Intercept	0.02***	2.80	0.05***	8.53
N		4178		4178
F		25.6		533.5
Adj. R^2		0.02		0.34

UR is unexpected stock returns computed using CAPM. *EARN* (total earnings change) and *FOREARN* (foreign earnings change) are the change in total and foreign earnings from the previous year on a per share basis, scaled by stock price at the end of the previous fiscal year. *FOREARNPOS* (*FOREARNNEG*) denotes positive (negative) foreign earnings changes. *OI* (other information) is our proxy for other value-relevant information. It is based on Liu and Thomas's (2000) measure of analysts' revisions in near- and long-term earnings and terminal value forecasts. *DFG* (differential growth) is the percentage change in foreign sales less the percentage change in domestic sales. *FPOS* (*FNEG*) denotes positive (negative) foreign earnings changes. Reported significance levels are two-sided and based on White (1980).

*, ** and *** denote significance at the 10%, 5% and 1% level, respectively (two-tailed).

earnings changes loses its significance and the coefficient of negative foreign earnings changes is significant only at the 10% level.[27]

5.2.3 Other (Untabulated) Sensitivity Analyses

In addition to the robustness tests described above, we performed additional tests to ensure that our results are not driven by the specific variable measures. We have tested for alternative specifications of earnings such as pretax earnings and find results similar to those reported. This finding suggests that our results are not driven by income tax expense considerations. Further, since foreign earnings contain a foreign exchange component (BW), we have also performed tests by adding changes in the accumulated foreign exchange gain or loss (included in other comprehensive income in shareholders' equity) to foreign earnings.[28] Our results remain robust to this alternative computation of foreign earnings.

Thomas (1999) finds that the market underestimates the persistence of foreign earnings. In a subsequent study, Thomas (2004) finds no evidence of mispricing in large firms, his main proxy for firms with "informed and sophisticated" investors. Our sample consists of firms followed by analysts (our sample firms have a median analyst following of 11); hence they are relatively large and presumably have above-average information environments (Thomas [2004]; Callen et al. [2005]). Nevertheless, we reestimated the regressions including firm size (i.e., the market value of equity) both as a main effect and as an interacting factor with total and foreign earnings changes. No inferences are changed after controlling for firm size, suggesting that our results are robust with the control for size.

Although not directly related to our focus on the role of other information, we also examined the relative income statement conservatism (or "differential timeliness") of domestic and foreign earnings. According to several authors (e.g., Givoly and Hayn [2000]), earnings are expected to correlate more with stock price movements in periods of "bad news" than in periods with good news. Following the approach of Basu (1997) and Givoly and Hayn (2000), we find a positive and significant coefficient of a dummy that measures the incremental response of earnings to bad news over the response to good news for both domestic and foreign earnings. Hence there is evidence that both streams of earnings exhibit income statement conservatism. We find no significant difference between the conservatism in domestic and in foreign earnings streams. Finally, we document increases in conservatism over time, consistent with prior research (e.g., Basu [1997]; Givoly and Hayn [2000]).

Overall, the findings in this section suggest that our results are robust even if

27. We also reran the test separately for positive and negative foreign earnings levels. In both these tests, foreign earnings changes are insignificant (while both total earnings changes and "other information" are positive and significant).

28. BW conduct a more elaborate test of exchange rate effects and conclude that exchange rate effects are not responsible for the significantly larger foreign association coefficient. Consistent with BW, Denis et al. (2002, footnote 16) state that their results and the results in prior literature suggest that "exchange rate volatility has little impact on the valuation effect of global diversification."

we consider such factors as relative growth opportunities, negative versus positive earnings changes, income taxes, foreign exchange effects, firm size, and differential income statement conservatism.

6. Concluding Remarks

Investors and researchers have shown increasing interest in firms' foreign operations and in particular their foreign earnings. Previous research has shown that investors view both domestic and foreign earnings as value relevant. Furthermore, a widely cited study (Bodnar and Weintrop [1997]) finds that foreign earnings are incrementally more value-relevant than domestic earnings.

Our study is motivated primarily by the possibility that prior results are affected by failure to control for other value relevant information beyond current domestic and foreign earnings. We use the elaborate measure of analysts' revisions of future abnormal earnings and terminal values developed by Liu and Thomas (2000) as our proxy for omitted other information. The explanatory power of our model improves significantly on inclusion of this other information, and more important, we document that the bias resulting from omitting other information is greater for foreign earnings than for domestic earnings. This finding is consistent with Thomas (1999) and Callen et al. (2005), who document the higher time-series persistence of foreign earnings as compared with domestic earnings. More important, the finding is consistent with Khurana et al. (2003), who find that analysts similarly perceive foreign earnings to be more persistent. Foreign earnings are no longer incrementally significant in explaining unexpected stock returns after the inclusion of other information in the model. Our results are robust to controlling for differential growth between domestic and foreign segments, firm size, separate consideration of positive and negative earnings changes, income tax expense considerations, unrecognized foreign exchange gains and losses, and differential income statement conservatism.

Our paper contributes to the existing value relevance literature in three ways. First it provides new evidence to the stream of literature that investigates the valuation of foreign and domestic components of earnings. In particular, our study complements Bodnar and Weintrop (1997) (as well as Bodnar et al. [2003] and similar studies) in providing evidence on the importance of forward-looking information. Second it provides further evidence for the claim by Liu and Thomas (2000) that the "traditional" returns-earnings regression is misspecified and that caution is necessary when drawing inferences from earnings response coefficients unless the model controls for other value relevant information. Finally, we extend Liu and Thomas's analysis by showing that it is particularly important to control for other value relevant information in the regression when researchers decompose earnings and examine the relative value relevance of the subcomponents of earnings because the correlated omitted variable can bias those earnings coefficients to differing degrees.

APPENDIX

Computation of RTERM (Component of "Other Information")

To estimate the five-year-out ratio of price-to-book as of $t-1$, price at the beginning-of-the period is expressed as follows. This expression replaces the implied terminal price-to-book premium ($p_{t+4} - bv_{t+4}$) with a term that contains the implied price-to-book ratio (p_{t+4}/bv_{t+4}). We then compute the five-year-out price-to-book premium as of t, using the relation $E_t\,(p_{t+5} - bv_{t+5}) = E_t\,(bv_{t+5}) \times (PB_5 - 1)$. p_{t-1} is the beginning-of-the-period stock price. bv_{t-1} is the beginning-of-the-period book value. ae_{t+i} is future abnormal earnings at time $t + i$, defined as $eps_t - k_t bv_{t-1}$. k_t is firm's cost of capital as of time t. AE_{t+1} denotes the present value of expected future abnormal earnings at time $t + i$. $term_{t+i}$ is the present value of expected market premium over book at time $t + i$.

$$p_{t-1} = bv_{t-1} + \sum_{s=1}^{5} \frac{E_{t-1}\,[ae_{t+s-1}]}{(1 + k_{t-1})^s} + \frac{E_{t-1}\left[\left(p_{t+4}/bv_{t+4} - 1\right) \times bv_{t+4}\right]}{(1 + k_{t-1})^5}$$

$$PB_5 = E_{t-1}\left(\frac{p_{t+4}}{bv_{t+4}}\right) = \left(p_{t-1} - bv_{t-1} - \sum_{s=1}^{5} \frac{E_{t-1}\,[ae_{t+s-1}]}{(1 + k_{t-1})^s}\right) \times \frac{(1 + k_{t-1})^5}{E_{t-1}(bv_{t+4})} + 1$$

$$E_t[term_{t+s}] = \frac{E_t(p_{t+s} - bv_{t+s})}{(1 + k_t)^s}$$

$$RTERM = \frac{[E_t\,(AE_{t+5}) + E_t(term_{t+5}) - (1 + k_{t-1})E_{t-1}\,(term_{t+4})]}{P_{t-1}}$$

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