

The Effects of SFAS 131 Geographic Segment Disclosures on the Valuation of Foreign Earnings

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Abstract

Thomas (1999) documents that investors discount the value of foreign earnings for U.S. multinationals. He conjectures but does not test the possibility that this finding is due to poor disclosure related to foreign operations. In this paper, we investigate whether the market's valuation of foreign earnings is a function of the firm's geographic segment disclosures. Specifically, we examine the effects of (1) the introduction of SFAS 131, (2) the change in the number of geographic segments disclosed, and (3) the inclusion of performance measures in geographic segment disclosures. We find strong evidence that our proxies for increased disclosure are positively associated with the foreign earnings response coefficient (FERC). We further find that increases in the number of geographic segments are incrementally value relevant beyond other SFAS 131 disclosures. Similarly, inclusion of earnings in geographic segment disclosures has an incremental effect on FERC beyond both SFAS 131 *per se* and a change in the number of geographic segments. In addition, we use the Mishkin (1983) test and find that investors' mispricing of the foreign component of earnings lessens (and in fact disappears) with greater disclosure related to foreign operations. Taken together, our results suggest that the pricing of foreign earnings is associated with important aspects of the firm's information environment.

Keywords: foreign earnings, geographic disclosures, valuation, market mispricing

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1. INTRODUCTION

This study investigates whether investors' pricing of earnings from foreign operations of U.S. multinational firms varies with the quality of the firm's information environment. Specifically, we examine the pricing of foreign earnings around the introduction of Statement of Financial Accounting Standards No. 131 (SFAS 131) and according to variations in the extent of geographic segment disclosure. The separate disclosure of earnings from domestic and foreign sources for multinational firms is mandated by the Securities and Exchange Commission (SEC), and prior research documents that investors find such disclosures value relevant (e.g., Bodnar and Weintrop 1997). Thomas (1999), however, finds that the market underprices foreign earnings and that stocks are temporarily mispriced. He conjectures, but does not test, the possibility that this finding may be explained by poor disclosure of foreign operations. In other words, given poor disclosure, investors cautiously discount the value of the foreign earnings streams. These findings suggest that the pricing of foreign earnings may be associated with the firm's information environment. In this paper, we examine the effects of (1) the introduction of SFAS 131, (2) the change in the number of geographic segments disclosed after adoption of SFAS 131, and (3) the inclusion of performance measures in geographic segment disclosures after adoption of SFAS 131.

Examining earnings components is of interest to both practitioners and academics because of the potential for investors to more precisely forecast earnings and estimate firm value (Khurana, Pereira and Raman 2003; Lipe 1986, and others). Foreign operations can experience profitability, growth and risk patterns that differ significantly from those of domestic operations (Bodnar, Hwang and Weintrop 2003). Consequently, both the Financial Accounting Standards

Board (FASB) and the SEC mandate the disclosure of information relevant for assessing firms' foreign operations.

Academics have responded with research on how investors value the foreign versus domestic components of earnings. Previous empirical work has investigated whether such disclosures are useful to investors. Boatsman, Behn and Patz (1993) examine whether equity valuations of U.S. multinationals are affected by SFAS 14 mandated geographic segment income disclosures. For the most part, the authors conclude that there is little evidence that SFAS 14 geographic segment income disclosures affect equity values. Bodnar and Weintrop (1997) split earnings into their domestic and foreign components using SEC mandated disclosures (SEC Regulation §210.4-08(h)). They document that both foreign and domestic earnings changes are significantly positively associated with annual excess stock returns and that the coefficient on foreign earnings is significantly larger than the coefficient on domestic earnings. They attribute their finding to greater growth opportunities in foreign markets.¹ Consistent with these findings, Thomas (1999) documents that foreign earnings are more persistent than domestic earnings. He also shows, however, that investors underestimate the persistence of foreign earnings and that stock values are (temporarily) mispriced. This explanation is consistent with investors finding it difficult to understand fully the nature of foreign earnings, which seems plausible given the relatively poor disclosure on foreign operations provided by many firms (e.g., White, Sondhi and Fried 2003, 577).

The quality of the information environment can affect the foreign earnings valuation discount through two mechanisms. First, better disclosure reduces the information asymmetry component of the cost of capital because investors tend to discount the value of stocks for which

¹ Bodnar, Hwang and Weintrop (2003) find similar results for firms domiciled in Australia, Canada and the United Kingdom.

limited information is available (Verrecchia 2001). If information asymmetry is especially severe for foreign operations (as the extant literature suggests), one would expect to observe a reduction in the risk-adjusted discount rate for foreign earnings when the information environment improves. Second, an enhancement in the information environment reduces the information acquisition cost for investors because they free-ride on the information that the firm produces (e.g., Diamond 1985). The more the firm discloses, the more investors free-ride. Thus, improvements in the information environment can reduce the risk premium of equity investments and make investors more risk neutral (e.g., Easley and O'Hara 2004).²

Consistent with Bodnar and Weintrop (1997), we find that both domestic and foreign earnings are value relevant. More importantly, we find strong evidence that our proxies for increased disclosure are positively associated with the foreign earnings response coefficient (FERC hereafter). That is, FERC increases (1) with the introduction of SFAS 131, (2) with increased geographic segment disaggregation post SFAS 131, and (3) with the inclusion of earnings in geographic segment disclosures post SFAS 131.³ We also find that increases in the number of geographic segments are incrementally value relevant beyond other SFAS 131 disclosures. Similarly, inclusion of earnings in geographic segment disclosures has an incremental effect on FERC beyond both SFAS 131 *per se* and a change in the number of geographic segments. Our findings are robust to a number of sensitivity checks, including controls for differential growth rates between domestic and foreign operations, firm size, profitability, structural changes related to mergers and acquisitions or divestitures, and self-selection biases. In addition, we conduct tests to examine whether the investor mispricing documented by Thomas (1999) reduces with greater geographic disclosure. Using the Mishkin

² See Easley and O'Hara (2004) for an extensive discussion of models which predict that firm-provided information affects the cost of capital.

³ In this paper, we use the terms "earnings" and "performance measures" interchangeably.

(1983) test, we find evidence suggesting that investors' mispricing lessens (and in fact disappears) with the introduction of SFAS 131. Taken together, our results suggest that the pricing of foreign earnings is associated with important aspects of the firm's information environment.

We contribute to the existing literature on foreign earnings components in two ways. First, we provide further empirical support for the disclosures suggested and mandated under SFAS 131. In particular, we interpret our results as evidence that such disclosures enhance the relevance and reliability of foreign earnings numbers.⁴ With respect to reliability, we argue that SFAS 131 increases the verifiability of the foreign earnings numbers because it requires additional information related to foreign operations, hence reducing or preventing misrepresentation. Second, by providing evidence of a direct link between the voluntary inclusion of earnings in geographic segment disclosures and the pricing of foreign earnings, we build a case for making these disclosures mandatory. In addition, our mispricing tests provide some empirical support to the claim that additional disclosures can reduce market mispricing. This study is one of the first attempts to show that improved disclosure reduces market mispricing. Such retesting of market mispricing based on changes in the information environment of a firm has a wide variety of applications in the accounting literature.

The remainder of the paper is organized as follows. In the next section we provide background on segment disclosures and develop our hypotheses. Section 3 defines the earnings and abnormal stock return variables we use, describes the sample selection, and provides descriptive statistics. The empirical results are provided in Section 4, and Section 5 concludes.

⁴ Relevance and reliability are FASB's prime criteria for assessing accounting information (e.g., Holthausen and Watts 2001).

2. BACKGROUND AND HYPOTHESES DEVELOPMENT

In their review paper, Meek and Thomas (2004) raise the question of how the quality of disclosure of geographic segment information impacts firm value. They also ask if the link between geographic operations and firm value has improved under SFAS 131. In this section, we first discuss the changes in the firm's information environment brought about by SFAS 131. We then present our hypotheses related to how both mandatory changes in geographic segment disclosure following SFAS 131 and firms' voluntary segment disclosure choices are associated with the pricing of foreign earnings.

2.1 Background on SFAS 131

SFAS No. 131 (Disclosures about Segments of an Enterprise and Related Information) became effective for fiscal years beginning after December 15, 1997 (FASB 1997). It supersedes SFAS 14 (Financial Reporting for Segments of a Business Enterprise) which had come under severe criticism from user groups. Perhaps most importantly, the CFA Institute (formerly the Association for Investment Management and Research or AIMR) issued a position paper in 1993 requesting that financial statement information be disaggregated to a much greater degree and more information be provided for segments (AIMR 1993).⁵ Similarly, the AICPA Special Committee on Financial Reporting (1994) listed improved segment information as its number one recommendation.

Firms were required to disclose segment information under SFAS 14 by both line-of-business and geographic area with no specific link to the internal organization of the company.

⁵ Paragraph 45 of SFAS 131 includes the following statement: "There is no disagreement among AIMR members that segment information is totally vital to their work. There also is general agreement among them that the current segment reporting standard, Financial Accounting Standard No. 14, is inadequate." Likewise, Epstein and Palepu (1999) report that many sell-side analysts consider segment disclosures as the most useful data for their investment recommendations.

SFAS 131 fundamentally changes the manner in which firms provide segment information (Herrmann and Thomas 2000). The standard requires companies to report disaggregated information about reportable operating segments based on management's organization of the enterprise (the “management approach”). An operating segment is defined as a component of an enterprise (1) that engages in business activities from which it may earn revenues and incur expenses, (2) whose operating results are regularly reviewed by the enterprise's chief operating decision maker, and (3) for which discrete financial information is available (SFAS 131, paragraph 10). Under SFAS 131, operating segments may be based on products and services, geographic location, legal entity, customer type, or another basis.⁶ For each operating segment, firms must provide information about segment profit or loss, certain revenue and expense items, and assets. In addition, SFAS 131 requires supplemental “enterprise-wide disclosures” about products and services, geographic areas, and major customers if they are not already included as part of the operating segment disclosures. For companies that do not define operating segments on the basis of geographic location, SFAS 131 requires the disclosure of two items by geographic area: revenues from external customers and long-lived assets. These disclosures must be made for each country in which a material amount of revenue or long-lived assets is located.⁷ This represents a major difference from SFAS 14, under which firms were allowed to disclose geographic information by geographic region. Many users complained that the regional disclosures were of limited use.

⁶ An operating segment is separately reportable if a) its revenues are 10% or more of the combined revenues of all reported operating segments, b) its profit or loss is 10% or more of the combined amount of profit or combined amount of loss, whichever is greater, or c) its assets are 10% or more of the combined assets of all operating assets. The existence of a major customer must be disclosed if revenues from transactions with a single customer amount to 10% or more of total revenues (FASB 1997).

⁷ Materiality is not specifically defined for enterprise-wide disclosures. According to Herrmann and Thomas (2000), many companies use 10% as a threshold. Douppnik and Seese (2001), however, find that many firms use quantitative thresholds less than 10%. In addition to providing information by individual material country, SFAS 131 indicates that “an enterprise may want to provide subtotals of geographic information about groupings of countries” (paragraph 38).

Street, Nichols and Gray (2000) report that the consistency of segment information and the number of total segments reported increased significantly with the introduction of SFAS 131.⁸ Based on these findings the authors conclude that business reporting improved with SFAS 131. Berger and Hann (2003a) and Herrmann and Thomas (2000) report similar findings. Herrmann and Thomas (2000) also document that for enterprise-wide disclosures, the proportion of country-level geographic segments has increased, while the proportion of broader geographic area segment disclosures has decreased. However, both Herrmann and Thomas (2000) and Street et al. (2000) find that relatively few companies voluntarily disclose profit by geographic area under SFAS 131.⁹ Hence there is some mixed evidence regarding the potential usefulness of geographic segment disclosures following SFAS 131.

Given the prior evidence on underpricing of foreign earnings, in the next section we introduce hypotheses related to whether SFAS 131 disclosures help mitigate such mispricing.

2.2 Hypotheses development

Thomas (1999) conjectures but does not test the idea that the difficulty investors face when trying to understand the value relevance of firms' foreign earnings is in part caused by low-quality disclosures related to foreign operations. Given this difficulty, investors cautiously underestimate the persistence of foreign earnings (Thomas 1999; Khurana, Pereira and Raman 2003; Callen, Hope and Segal 2004). Geographic segment disclosures have the potential to mitigate this information deficiency. In particular, if investors find geographic segment disclosures to be useful in forecasting future earnings and hence valuing the firm more

⁸ Similarly, a 1998 report by Bear Sterns emphasizes the improvement in the consistency of descriptions of the business throughout the president's letter, management discussion and analysis, and notes.

⁹ In addition, for those firms that choose to include earnings in their geographic segment disclosures, SFAS 131 does not define which measure of segment profit or loss should be used. It allows any measure to be used as long as that measure is used internally for decision making.

accurately, then the valuation discount applied to foreign earnings documented by Thomas (1999) should decrease in the level of such disclosure.¹⁰

Investors and analysts often assert that segment disclosures are among the most important information provided by firms. For example, in a recent CFA Institute survey (“Global Corporate Financial Reporting Quality,” October 27, 2003), 71% of investment professionals rated segment disclosures as either “very” or “extremely” important. Douppnik and Seese (2001) argue that information provided at a less aggregated segment level should be at least as useful as more aggregated information.¹¹ Supporting this claim and the survey results, Berger and Hann (2003a) find that both analyst and market expectations are altered by the release of the new SFAS 131 segment data. Although they do not examine SFAS 131 disclosures, Balakrishnan, Harris and Sen (1990) find that geographic segment information can enhance the prediction of earnings under certain conditions. Similarly, Nichols, Tunnell and Seipel (1995) find that analyst forecast accuracy increases in the level of geographic segment information. Using a simulation technique, Herrmann (1996) finds that the accuracy of forecasts increases as sales and gross profit are disclosed at a more disaggregated geographic level. Finally, comparing forecast errors of geographic sales for models employing SFAS 131 with those utilizing SFAS 14 geographic sales data, Behn, Nichols and Street (2002) find a significant improvement in the predictive accuracy

¹⁰ Prior research has examined the role of enhanced disclosure in reducing estimation risk (where estimation risk is triggered by information asymmetry) and concludes that greater disclosure may reduce estimation risk and that this risk is non-diversifiable (e.g., Barry and Brown 1985; Handa and Linn 1993; Coles, Loewenstein and Suay 1995; Easley and O’Hara 2004).

¹¹ This is an application of the fineness (or Blackwell) theorem from information economics. Briefly, the theorem states that the information in X is preferred to the information in Y as long as every signal from X is fully contained in a signal from Y (e.g., Demski 1977). For example, Piotroski (2003a) finds that segment reporting fineness is negatively associated with information asymmetry about future earnings realizations. There are conditions under which the fineness theorem, however, may not hold. For example, if segment data are measured or reported with error, decisions using the finer data need not be as accurate as decisions using consolidated data alone (e.g., Givoly, Hayn and D’Souza 1999).

of geographic sales disclosures under SFAS 131. They attribute this finding to the requirements that companies report sales for each individually material country.

Based on the above discussion, we present several related hypotheses (all stated in the alternative form). Our hypotheses examine whether the foreign earnings valuation discount documented by Thomas (1999) is mitigated with greater geographic segment disclosures. Specifically, we consider the introduction of SFAS 131, the change in the number of geographic segments following SFAS 131, and the inclusion or exclusion of performance measures in geographic segment disclosures following SFAS 131.¹²

Given that prior literature documents that SFAS 131 improves segment reporting consistency and asserts that investors can now assess the company “through the eyes of management,” our first hypothesis investigates whether the foreign earnings discount is reduced following SFAS 131.

H1: FERC is higher after adoption of SFAS 131.

Not all firms increased their number of reported geographic segments following SFAS 131, and some even reduced the number of geographic segments (e.g., Herrmann and Thomas 2000). The second hypothesis examines whether the *change* in the number of geographic segments (from pre to post SFAS 131) is associated with FERC:

H2: FERC is positively associated with the change in the number of geographic segments disclosed post SFAS 131.

¹² In our empirical tests we also examine incremental effects: (i) whether the change in the number of geographic segments disclosed has an incremental effect over and above that of other SFAS 131 disclosures and (ii) whether inclusion of performance measures in geographic segments disclosures has an incremental effect on the foreign ERC beyond that of other SFAS 131 disclosures, including an increase in the number of segments reported.

SFAS 131 does not require the disclosure of earnings for enterprise-wide geographic segment disclosures, only revenues and assets. Although not the only factor, earnings are the single most important explanation of firms' stock returns over the long run and a significant determinant even in the short run (e.g., Givoly, Hayn and D'Souza 1999). Therefore, consistent with prior research that links disclosure quality with the ability of financial analysts and investors ability to predict firm performance (e.g., Lang and Lundholm 1996; Lundholm and Myers 2002), we expect investors to face reduced uncertainty by having access to earnings by geographic segment. Hence, we expect FERC to increase in the disclosure of geographic earnings:

H3: FERC is positively associated with the inclusion of performance measures in geographic segment disclosures post SFAS 131.

In Section 4 we also report results of Mishkin (1983) tests to provide additional evidence on the reduction in mispricing resulting from more disaggregated segment disclosure. If improvements in geographic disclosures enhance the ability of investors to assess the performance of foreign operations, then mispricing of the foreign component of earnings documented by prior research should lessen (or even disappear):

H4: Investors' mispricing of foreign earnings will lessen after adoption of SFAS 131.

3. VARIABLE DEFINITIONS AND SAMPLE SELECTION

In this section, we describe how we compute the earnings and abnormal stock return variables. We then explain our sample selection and discuss descriptive statistics.

3.1 Earnings measures

We measure foreign and domestic earnings per share using data for U.S. firms from the Compustat Annual database (both active and research firms). Foreign earnings are computed as pretax foreign income (#273) adjusted for foreign taxes where foreign taxes are measured as the sum of foreign income taxes (#64) and deferred foreign taxes (#270). Domestic earnings are the difference between pretax domestic income (#272) and domestic taxes calculated as total income taxes (#16) less foreign taxes. We then compute earnings changes by differencing the earnings measures. To facilitate cross-sectional and temporal comparisons, we standardize the foreign and domestic earnings changes by stock price at the beginning of the fiscal year.

3.2 Abnormal stock return measure

We follow a procedure similar to Bodnar and Weintrop (1997) to compute abnormal stock returns. We extract stock returns inclusive of dividends from the CRSP monthly returns file. If the firm is delisted during a specific month, we use the delisting return provided by CRSP if it is available. To compute annual abnormal returns for the current fiscal year, we proceed as follows. First, we require that 36 monthly returns preceding the current fiscal year are available to estimate the market model parameters. The market model is estimated using CRSP value-weighted market returns. Second, we cumulate the monthly returns starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year:

$$UR_{it} = \prod_{j=1}^{12} (1 + (R_{i,j} - \hat{\alpha}_i - \hat{\beta}_i R_{m,j})) - 1.$$

UR is the current cumulative abnormal annual return, R_{ij} is the raw monthly return for firm i corresponding to month j , $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the firm-specific parameters of the market model estimated over the previous 36 months, and R_{mj} is the CRSP value-weighted monthly market return corresponding to month j .¹³

3.3 Sample selection and descriptive statistics

Our sample period spans the period from 1985 to 2002 and the sample selection procedure follows Bodnar and Weintrop (1997). We include only firms incorporated in the United States with both current and lagged observations for domestic and foreign pre-tax annual income. We also require that data are available for current and lagged income taxes. These restrictions yield a sample of 17,676 firm-year observations (2,805 firms). Requiring stock returns from CRSP reduces the sample to 14,972 observations (2,476 firms). After imposing necessary requirements on the availability of stock returns in order to compute the market model parameters, we have a sample of 11,503 observations (1,939 firms). Finally, in order to ensure that our results are not driven by extreme observations, we eliminate the top and bottom half percentile of standardized domestic and foreign earnings changes. After imposing these data constraints the final sample for the earnings response coefficient tests consists of 11,328 observations (1,925 firms). Panel A of Table 1 summarizes our sample selection procedures. Panel B shows that approximately 24% of the sample firms increase the number of geographic segments and 35% include at least one performance measure in the geographic segment disclosure when they adopt SFAS 131.

¹³ As alternative specifications we have used (i) raw returns and (ii) market-adjusted returns. We have also required 60 months of returns for the market model estimation. Results are similar with these alternative specifications of annual returns.

Panel A of Table 2 presents descriptive statistics for the full sample. As sample firms are multinationals, they are relatively large, with a median (mean) market value of equity of \$420 million (\$3.6 billion). By comparison, the median (mean) market value of all Compustat firms for our sample period is \$70 million (\$1.2 billion). Foreign revenues as a percent of total revenues have a median value of 26.5% (compared with 26.7% reported by Bodnar and Weintrop 1997), illustrating the importance of foreign operations for the average sample firm. As in Bodnar and Weintrop (1997), the median growth rate of foreign sales (8.2%) exceeds that of domestic sales (5.7%), consistent with foreign markets exhibiting greater average growth opportunities than domestic markets. Panel B of Table 2 presents Pearson correlations among the dependent variable, test variables, and selected control variables. Pre (post) SFAS 131 correlations are presented above (below) the diagonal. Domestic and foreign earnings changes are significantly correlated with abnormal returns in both the pre and post SFAS 131 periods. Domestic earnings changes have a higher correlation with abnormal returns pre SFAS 131, whereas foreign earnings changes have a higher correlation with abnormal returns post SFAS 131. Domestic and foreign earnings changes are moderately positively correlated.¹⁴

4. RESULTS

In this section, we report results of hypotheses tests, including a number of sensitivity analyses. These tests center on whether FERC is an increasing function of disclosures related to foreign operations. All regressions are estimated using firm fixed effects. In addition we conduct Mishkin (1983) tests to examine whether the underpricing of foreign earnings decreases with such disclosure.

¹⁴ We have computed variance inflation factors (VIF) for all regressions presented. This highest VIF is 2, suggesting that multicollinearity is not an issue in our estimation.

We first estimate a regression of unexpected returns on the change in domestic ($\Delta\text{DomEarn}$) and foreign ($\Delta\text{ForEarn}$) earnings:¹⁵

$$\text{UR}_{i,t} = \beta_{11} + \beta_{12} \Delta\text{DomEarn}_{i,t} + \beta_{13} \Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (1)$$

Panel A of Table 3 reports the results of this test as well as regressions of abnormal returns on either the change in domestic earnings or the change in foreign earnings. Consistent with Bodnar and Weintrop (1997), both the domestic and foreign ERCs are positive and significant at less than the 1% level, suggesting that investors view both earnings streams as value relevant. In addition, an untabulated F-test shows that, consistent with Bodnar and Weintrop (1997), the estimated coefficient on $\Delta\text{ForEarn}$ is significantly larger than the coefficient on $\Delta\text{DomEarn}$, suggesting that the value of the firm is more sensitive to changes in foreign income than it is to changes in domestic income.

4.1 Relation between geographic segment disclosures and FERC

We use the following model to test whether FERC is higher after SFAS 131 (H1):

$$\text{UR}_{i,t} = \beta_{21} + \beta_{22}\text{SFAS131} + \beta_{23}\Delta\text{DomEarn}_{i,t} + \beta_{24}\Delta\text{ForEarn}_{i,t} + \beta_{25}\text{SFAS131} * \Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (2)$$

where SFAS131 is an indicator variable that takes the value one for periods after SFAS 131 is effective and the value zero otherwise. Considering that SFAS 131 covers a variety of disclosures and is not exclusively related to foreign operations, it is possible that the value relevance of domestic earnings also increases with SFAS 131. In particular, most firms increased the number of industrial segments reported upon adopting SFAS 131 (Berger and Hann 2003a). Although we control for domestic earnings in our empirical tests, as sensitivity analyses we

¹⁵ As a sensitivity test we have re-run our tests using total and foreign earnings changes instead of domestic and foreign earnings changes and find similar results (compare the discussion in Bodnar and Weintrop 1997, 81-83).

further report results of tests where we interact the SFAS 131 dummy with domestic earnings. We present similar specifications for all subsequent main tests.

The results are reported in Panel B of Table 3. Both $\Delta\text{DomEarn}$ and $\Delta\text{ForEarn}$ are positive and significant. The focus, however, is on the interaction term between $\Delta\text{ForEarn}$ and the indicator variable for SFAS 131. The estimated coefficient on this interaction is positive and significant at less than the 1% level, supporting the notion that foreign earnings are valued more following the new standard. This finding suggests that the disclosure required by SFAS 131 improves overall disclosure related to foreign operations and consequently makes it easier for investors to assess the value of these operations. The results of the regression specification which includes an interaction between $\Delta\text{DomEarn}$ and SFAS131 are similar. The interaction with foreign earnings is positive and significant as before. The interaction with domestic earnings is, however, small in magnitude and statistically insignificant.

SFAS 131 is unique in that it is the first standard to specifically address financial analysts' complaints (Botosan and Stanford 2004). Street et al. (2000) emphasize the importance of improved consistency in segment reporting following SFAS 131. They state that with the "management approach" required by SFAS 131, external parties can now "see through the eyes of management." As a result, investors face less uncertainty and consequently apply a lower "uncertainty discount" to foreign earnings post SFAS 131. Our result is consistent with Street et al.'s (2000) conclusion that under SFAS 131 foreign business reporting has improved.

We next test whether FERC is positively associated with the *change* in the number of geographic segments disclosed after SFAS 131 (H2):

$$\text{UR}_{i,t} = \beta_{31} + \beta_{32} \Delta\text{GSEG} + \beta_{33} \Delta\text{DomEarn}_{i,t} + \beta_{34} \Delta\text{ForEarn}_{i,t} + \beta_{35} \Delta\text{GSEG} * \Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (3)$$

where $\Delta GSEG$ is an indicator variable that takes the value one if (1) the observation is post SFAS 131 and (2) there is an increase in the number of geographic segments in the fiscal year in which the firm adopts SFAS 131 (zero otherwise).¹⁶ Panel A of Table 4 illustrates that the coefficients on domestic and foreign earnings changes are positive and statistically significant. As predicted, the estimated coefficient on the interaction term of $\Delta GSEG$ and $\Delta ForEarn$ is positive and significant at less than the 1% level indicating that foreign earnings are valued more when firms increase their geographic segment disclosures. The estimated coefficient on the interaction term is larger than the coefficient on the interaction term in the previous regression (3.136 versus 1.134), highlighting the importance of increased geographic segment disclosures to investors. The results hold when including an interaction between $\Delta DomEarn$ and $\Delta GSEG$.¹⁷

The above findings raise the question of whether it is the introduction of SFAS 131 with its management approach to segment reporting and the documented increased reporting consistency that matter for valuation or whether the increase in the number of reported geographic segments has an additional impact. We address this issue by examining both effects at the same time. Thus, to test if the increase in the number of geographic segments has an incremental impact on the valuation of foreign earnings beyond the implementation of SFAS 131, we estimate the following regression:

$$UR_{i,t} = \beta_{41} + \beta_{42}SFAS131 + \beta_{43}\Delta GSEG + \beta_{44}\Delta DomEarn_{i,t} + \beta_{45}\Delta ForEarn_{i,t} + \beta_{46}SFAS131*\Delta ForEarn_{i,t} + \beta_{47}\Delta GSEG*\Delta ForEarn_{i,t} + \varepsilon_{i,t} \quad (4)$$

The results are reported in Panel B of Table 4. Both the coefficients on the SFAS 131 interactive and the $\Delta GSEG$ interactive are positive and significant. In other words, controlling

¹⁶ We also consider alternative specifications where $\Delta GSEG$ is either a continuous measure or a percentage measure of the change in segments disclosed. No inferences are changed with these alternative specifications.

¹⁷ The coefficient on the interaction with foreign earnings is significantly greater than the coefficient on the interaction with domestic earnings.

for the effect of the other, both the introduction of SFAS 131 and the increase in geographic segments (post SFAS 131) positively impact the valuation of foreign earnings. The results of the regression including interactions with $\Delta\text{DomEarn}$ are consistent both with these results and with the results reported in Table 3, Panel B, and Table 4, Panel A.

These findings provide support for the view that both the “general benefits” of SFAS 131, such as improved consistency and the use of internal management reporting for external disclosure, and an increase in geographic segments improve the information environment related to foreign operations. In particular, each has a significant incremental effect on FERC.

We next turn to tests of performance measures. To determine whether FERC is greater for firms that include earnings in their geographic segment disclosures (H3), we estimate the following model:

$$\text{UR}_{i,t} = \beta_{51} + \beta_{52} \text{PMEAS} + \beta_{53} \Delta\text{DomEarn}_{i,t} + \beta_{54} \Delta\text{ForEarn}_{i,t} + \beta_{55} \text{PMEAS} * \Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (5)$$

where PMEAS is an indicator variable that takes the value of one if (1) the observation is post SFAS 131 and (2) the firm discloses at least one performance measure in its geographic segment disclosures post SFAS 131 (zero otherwise).¹⁸ Results are reported in Panel A of Table 5. The coefficient on the interaction between $\Delta\text{ForEarn}$ and PMEAS is positive and statistically significant (p-value < 0.01), which supports H3. The large magnitude of the estimated coefficient, 2.005, suggests that investors find disclosure of performance measures to be an economically important means of reducing uncertainty about foreign operations. When we add

¹⁸ Specifically, the Compustat segment database classifies six measures of performance: operating income before depreciation, operating income after depreciation, operating income, income before extraordinary items, pretax income, and net income. Our performance measure takes the value 1 if the firm discloses at least one of these measures for its geographic segments during the year when the firm implements SFAS 131 and the fiscal year is post 131; otherwise it takes the value 0. Note that in our sample, if a firm discloses a particular earnings measure for one geographic segment, it always discloses the same measure for all its geographic segments disclosed that year.

the interaction between $\Delta\text{DomEarn}$ and PMEAS , the estimated coefficient is small and statistically insignificant, and other results are consistent with those described above.

To investigate whether the inclusion of geographic earnings has incremental value relevance to investors over and above (1) the general mandatory disclosures of SFAS 131 and (2) the change in the number of geographic segments disclosed, we estimate the following models:

$$\text{UR}_{i,t} = \beta_{61} + \beta_{62}\text{SFAS131} + \beta_{63}\text{PMEAS} + \beta_{64}\Delta\text{DomEarn}_{i,t} + \beta_{65}\Delta\text{ForEarn}_{i,t} + \beta_{66}\text{SFAS131}*\Delta\text{ForEarn}_{i,t} + \beta_{67}\text{PMEAS}*\Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (6)$$

$$\text{UR}_{i,t} = \beta_{71} + \beta_{72}\Delta\text{GSEG} + \beta_{73}\text{PMEAS} + \beta_{74}\Delta\text{DomEarn}_{i,t} + \beta_{75}\Delta\text{ForEarn}_{i,t} + \beta_{76}\Delta\text{GSEG}*\Delta\text{ForEarn}_{i,t} + \beta_{77}\text{PMEAS}*\Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (7)$$

The empirical results of these regressions are reported in Panels B and C of Table 5. In both panels, the interaction between $\Delta\text{ForEarn}$ and PMEAS is positive and significant even in the presence of the other interactions ($\Delta\text{ForEarn}$ and SFAS 131, and $\Delta\text{ForEarn}$ and ΔGSEG , respectively). These findings suggest that knowledge of earnings has incremental value relevance to investors beyond the general benefits of the new standard SFAS 131 and the increasing number of disclosed geographic segments.

Finally, we include the SFAS 131 dummy, ΔGSEG , and PMEAS in the same regression, and test if each is value relevant while controlling for the effects of the others. That is, we estimate the following model:

$$\text{UR}_{i,t} = \beta_{81} + \beta_{82}\text{S131} + \beta_{83}\Delta\text{GSEG} + \beta_{84}\text{PMEAS} + \beta_{85}\Delta\text{GSEG_PMEAS} + \beta_{86}\Delta\text{DomEarn}_{i,t} + \beta_{87}\Delta\text{ForEarn}_{i,t} + \beta_{88}\text{S131}*\Delta\text{ForEarn}_{i,t} + \beta_{89}\Delta\text{GSEG}*\Delta\text{ForEarn}_{i,t} + \beta_{810}\text{PMEAS}*\Delta\text{ForEarn}_{i,t} + \varepsilon_{i,t} \quad (8)$$

Panel D of Table 5 shows that the interactions of $\Delta\text{ForEarn}$ with both ΔGSEG and PMEAS are positive and significant, suggesting that both disclosure effects are incrementally value relevant. The interaction of $\Delta\text{ForEarn}$ with SFAS 131 is positive but not significant at

conventional levels. This result could be interpreted as follows: geographic segment disclosures, including the inclusion of performance measures, dominate the overall effect of the introduction of SFAS 131. Alternatively, the lack of significance could reflect the low power of the test stemming from partitioning the sample into small sub-groups.

Our results for SFAS 131 *per se*, change in the number of geographic segments, and inclusion of performance measures in geographic segment disclosures are consistent with prior research showing that segment disclosures may enhance security valuation (e.g., Kinney 1971; Tse 1989). Our results are consistent with reduced mispricing from SFAS 131 disclosures, something we test formally in our mispricing tests below.

4.2 Sensitivity analyses

We conduct several robustness tests. In particular, we consider the effect of growth, firm size, firm performance, and structural changes on investors' pricing of foreign earnings.¹⁹ We also perform self-selection tests for change in number of geographic segments and inclusion of earnings in geographic segment disclosures. The results of these tests are reported in tables 6 and 7, respectively.

4.2.1 Controlling for growth, firm size, structural changes, and firm performance

In our first robustness test, we include controls for two factors potentially affecting our regression results: differential growth rates and firm size. Bodnar and Weintrop (1997) find that

¹⁹ In addition to the sensitivity analyses described in this section we have we have (i) re-run tests with the same number of years (i.e., four years) included before and after the introduction of the new standard, (ii) used domestic and foreign earnings before tax (rather than after tax), and (iii) included the change in other comprehensive income related to foreign exchange gains or losses in foreign earnings (as in Callen et al. 2004). Results are similar to those reported.

differences between domestic and foreign earnings response coefficients are partly explained by differences in growth opportunities. Earnings response coefficients may also vary with firm size, as firm size relates to overall disclosure level (e.g., Lang and Lundholm 1996) and the extent of sophisticated investor following (Thomas 2004; Callen et al. 2004). After controlling for differential growth rates and firm size, we find that none of the reported results is materially affected (see Panel A of Table 6).²⁰ Specifically, although the valuation of foreign earnings is increasing in firm size (but not related to differential growth), our previously reported results hold after controlling for this effect. This finding suggests that our results are not due to lack of control for growth and firm size.

Our next robustness check considers whether changes in reported segment disclosures resulting from activities including mergers, acquisitions, and divestitures affect reported results. If a firm doubles in size through a merger, its number of geographic segments may very well increase. In such a situation it is not clear that an increase in the number of geographic segments implies an enhanced information environment. To ensure that our results are not driven by corporate structural changes, we eliminate firms with a greater than 35% increase or decrease in total assets, as such firms are more likely to undergo major structural changes. Panel B of Table 6 reports that excluding these 3,255 observations does not materially affect the reported results (i.e., results with the smaller sample are very similar to the full sample results).²¹

As a final robustness check in this section, we consider whether firm performance affects the magnitude of earnings response coefficients. Earnings coefficients may differ over time or across firms because of differences in profitability (e.g., Hayn 1995; Burgstahler and Dichev

²⁰ In the reported test, differential growth is measured as the percentage change in foreign sales less the percentage change in domestic sales (consistent with Bodnar and Weintrop 1997). Firm size is market capitalization of equity. No inferences are changed if we use the first difference in size. The sample size for these sensitivity analyses is reduced given the need to have non-zero values for domestic and foreign sales in the previous year.

²¹ We have repeated this test using alternative cut-offs (20% and 50%) and find similar results.

1997). If foreign operations are more profitable for firms after adoption of SFAS 131 or for firms that either report performance measures (i.e., $PMEAS = 1$) or increase the number of geographic segments (i.e., $\Delta GSEG = 1$), then higher earnings coefficients are expected and previously reported conclusions are confounded.²² We find that this is not the case. As shown in Panel C of Table 6, all conclusions remain after controlling for the profitability of foreign operations.²³

4.2.2 Selection tests

Results to this point are consistent with increased geographic segment disclosures leading to higher valuations for foreign earnings. However, one possible concern is that disclosure choices under SFAS 131 are potentially endogenous to the model. Firms' decisions on whether to increase the number of geographic segments and/or to disclose performance measures for each geographic segment are affected not only by the mandated requirements of SFAS 131, but also by voluntary decisions related to the tradeoff between the proprietary costs of these additional disclosures and potential valuation benefits resulting from mitigating the information asymmetry between managers and investors (and/or between different investors).^{24,25} Hence our conclusions may suffer from self-selection bias. That is, firms' decisions to increase the number of geographic segments and/or include performance measures may be caused by a host of other factors. And it could be these other factors, rather than improved geographic segment disclosure,

²² In the next section, we more formally test whether self-selection bias affects conclusions.

²³ For the SFAS 131 test, the indicator variable PM is defined as one if there is an increase in the two- or three-year average foreign profit margin after SFAS 131 (depending on data availability), and zero otherwise. For the $\Delta GSEG$ and $PMEAS$ tests, PM is as an indicator variable that takes the value one (zero otherwise) if the firm reports above median foreign profit margin after SFAS 131. Using return on assets instead of profit margin does not change any inferences.

²⁴ To ensure that the inclusion of performance measures is voluntary and not mandated by SFAS 131 (i.e., that the geographic segments are not operating segments), we have re-run tests after excluding firms that disclose capital expenditures and depreciation (both required for operating segments). No inferences are affected by eliminating these observations.

²⁵ The choice of number of geographic segments to disclose is affected by the mandates of SFAS 131 as well as strategic management considerations. Our view is that the number of geographic segments disclosed is largely a voluntary decision.

that lead to differences in earnings response coefficients.²⁶ Our test of the overall effects of SFAS 131 does not suffer from this potential endogeneity, as the reporting change we study is mandatory (Piotroski 2003b).

To address self-selection and endogeneity issues, we follow a similar research design as Leuz and Verrecchia (2000) and use a two-stage Heckman (1979) estimation approach. In the first stage, we use Probit estimation to model the decision to increase the number of geographic segments disclosed and to include geographic level earnings relative to the year prior to SFAS 131 adoption. In the second stage, we estimate equations (3) to (6) after controlling for the inverse Mills ratios computed using the first stage results.²⁷

In the Probit models, we introduce variables that proxy for external demands to reduce information asymmetries between managers and users of financial statements.²⁸ Following Cohen (2004) we compute a variable OWNER defined as the (industry-adjusted) natural logarithm of the number of common shareholders. We also include a variable, ASYMMETRY, which measures the asymmetry of information between managers and analysts (Botosan and Harris 2000). This variable is computed as the coefficient of variation of analysts' earnings forecasts from three months before the announcement of annual earnings as reported by IBES.

Highly indebted firms may be under greater pressure to disclose more since debtholders need more information for monitoring. We compute LEVERAGE as total liabilities (#181) divided by total assets (#6). In addition, we include LIQUIDITY, computed as cash flow from

²⁶ Healy and Palepu (2001) argue that this potential endogeneity is the most important limitation of voluntary disclosure studies.

²⁷ We estimate the Probit models cross-sectionally every year post SFAS 131 adoption to compute annual inverse Mills ratios. A complete description of our research methodology, including the computation of the inverse Mills ratio, can be found in Maddala (1983).

²⁸ We do not include variables that are derived from market returns since returns are the dependent variable in the second stage.

operating activities (#308) divided by net sales (#12). Low liquidity firms may be under different pressures to disclose than other firms.

As proxies for proprietary costs of disclosure, we include a measure of capital intensity (CAPIT), computed as (industry-adjusted) capital expenditures (#128) divided by net sales (#12), and the Herfindahl Index (HERF). Following the extant literature we include the industry concentration ratio (HERF) to control for the effects of industry-specific competition on disclosure (Berger and Hann 2003b; Verrecchia 1983). HERF equals $\sum_{i=1}^n (s_i / S)^2$ where: s_i is the segment's sales and S is the sum of sales for all segments in an industry (defined by 2-digit SIC code) and n is the number of firms (segments) in the industry. To obtain a firm-specific measure of this index, we compute the weighted average across firms' segments using the segments' sales as weights.

We further control for future growth opportunities as proxied by the market-to-book ratio (MB). We also control for firm performance with return on equity (ROE) as well as domestic and foreign profit margins (PMdom, PMfor), since previous research associates firm performance with disclosure strategies (e.g., Lang and Lundholm 1996). Finally, we include the variable SIZE which is the natural logarithm of total assets (#6) as a control variable.

We thus estimate separately in the first stage the following two Probit models for our two disclosure choices:

$$\begin{aligned} \Delta GSEG_{i,t}(\text{PMEAS}_{i,t}) = & \alpha_{11} + \alpha_{12} \text{OWNER}_{i,t-1} + \alpha_{13} \text{ASYMMETRY}_{i,t-1} + \alpha_{14} \text{LEVERAGE}_{i,t-1} \\ & + \alpha_{15} \text{CAPIT}_{i,t-1} + \alpha_{16} \text{LIQUIDITY}_{i,t-1} + \alpha_{17} \text{PMdom}_{i,t-1} + \alpha_{18} \text{PMfor}_{i,t-1} \\ & + \alpha_{19} \text{ROE}_{i,t-1} + \alpha_{110} \text{MB}_{t-1} + \alpha_{111} \text{HERF}_{i,t-1} + \alpha_{112} \text{SIZE}_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (9)$$

In the second stage, we use equations (3) to (6) and control for the inverse Mills ratios computed from the first stage.

Table 7 presents the empirical results of estimating these self-selection models.²⁹ Both first-stage models are significant, with Likelihood Ratio p-values of 0.001 and 0.011, respectively. For the Δ GSEG model, ASYMMETRY, CAPIT, MB, and SIZE are significant explanatory variables. For the PMEAS model, LIQUIDITY and MB are significant. More importantly, the second-stage results are consistent with our main test results. That is, both Δ GSEG and PMEAS are positively associated with FERC and these results hold when controlling for the general benefits of SFAS 131. Furthermore, the significance of the inverse Mills ratios (in three out of four models) confirms that it is important to control for self-selection bias.

4.3 Mispricing tests

To test more directly whether investors' mispricing of foreign earnings as documented by Thomas (1999) is mitigated with SFAS 131 geographic segment disclosures, we employ the Mishkin (1983) framework.

The Mishkin test determines whether the market rationally prices the average persistence of foreign and domestic earnings components.³⁰ As in Thomas (1999), we estimate simultaneously (1) the forecasting equation for total earnings changes and (2) the rational pricing equation for abnormal earnings changes, using nonlinear least squares for the pooled sample:

$$\begin{aligned} \Delta \text{Earn}_{i,t+1} &= \alpha_0 + \alpha_D \Delta \text{DomEarn}_{i,t} + \alpha_F \Delta \text{ForEarn}_{i,t} + \varepsilon_{i,t+1} \\ \text{AR}_{i,t+1} &= \beta_{91} + \beta_{92} (\Delta \text{Earn}_{i,t+1} - \alpha_0 - \alpha_D^* \Delta \text{DomEarn}_{i,t} - \alpha_F^* \Delta \text{ForEarn}_{i,t}) + \xi_{i,t+1} \end{aligned} \quad (10)$$

²⁹ The reported first-stage results are for Probit models corresponding to the year of SFAS 131 adoption. Results for the other post SFAS 131 years are similar and are available upon request. The second-stage results are robust to also including interactions with domestic earnings.

³⁰ More comprehensive discussions can be found in Sloan (1996), Dechow and Sloan (1997), and Thomas (1999).

In the above equations, $\Delta Earn_{i,t+1}$ is total earnings change next year, $\Delta DomEarn_{i,t}$ and $\Delta ForEarn_{i,t}$ are the domestic and foreign earnings changes in the current year, and $AR_{i,t+1}$ is the abnormal return one year ahead. Market efficiency imposes the constraints that $\alpha_D = \alpha_D^*$ and $\alpha_F = \alpha_F^*$. These nonlinear restrictions imply that stock prices impound correctly the persistence of total earnings changes that is attributable to both domestic and foreign earnings changes.³¹

To ensure comparability with the extant literature, we modify the computation of returns from the previous section. Adjusting the raw returns with expected returns from the market model can generate unwanted correlations with the earnings numbers from previous periods over which the parameters of the model are estimated. Following Sloan (1996), we use size-adjusted stock returns.³² Similarly, we change the scaling variable for earnings. Because previous stock prices are correlated with future returns, we replace them with average total assets. Finally, following Thomas (1999), we control for influential observations that may drive the results by eliminating all observations that have scaled earnings changes greater than 0.25.³³ These requirements result in a sample of 10,528 observations for the Mishkin test.

We estimate the system of equations separately for both the pre and post SFAS 131 periods. The results of these tests are reported Table 8. The results for the pre SFAS 131 period are comparable to those reported in Thomas (1999, Table 2, Panel B). Although the difference in the domestic earnings coefficients ($\alpha_D - \alpha_D^* = -0.051$) is not significant (with a p-value of 0.342), the difference in the foreign earnings coefficients ($\alpha_F - \alpha_F^* = 0.451$) is significant (p-

³¹ Market efficiency is tested using a likelihood ratio statistic that is distributed $\chi^2(q)$ and is equal to $2n \text{ Log}(SSR^c/SSR^u)$ where q is the number of constraints, n is the number of observations, SSR^c is the sum of squared residuals for the constrained system, and SSR^u is the sum of squared residuals from the unconstrained system.

³² Specifically, we compute abnormal returns by subtracting from the raw returns the value-weighted returns of the size decile portfolios provided by CRSP, where the size decile membership is determined at the time when returns start cumulating (i.e., three months after the fiscal year end).

³³ This outlier screening reduces the sample by 2.9%. Inferences are not affected if we do not delete extreme observations.

value 0.004). These results suggest that investors rationally anticipate the persistence of domestic earnings changes whereas investors discount foreign earnings changes even though they exhibit a lower mean reversal than domestic earnings. Specifically, stock prices underestimate the extent to which changes in foreign earnings persist (see Thomas 1999, 253) in the pre SFAS 131 period. In the post SFAS 131 period (1999 to 2002), however, neither the difference in domestic nor in foreign earnings coefficients is significant (with p-values of 0.889 and 0.921, respectively). These results support the ERC results reported above and are consistent with the notion that improved disclosure related to foreign operations can mitigate the mispricing of foreign earnings.

We do not report results of similar tests for comparing firms that increase geographic segments versus those that do not and for firms that include performance measures in geographic segments versus those that do not because the small sample sizes post SFAS 131 do not allow for reliable estimation when slicing the sample.

Overall, we find clear evidence that the mispricing of foreign earnings is reducing in the level of foreign operations disclosures. It is somewhat reassuring that standard setters mandate and firms provide information to investors that is useful in correcting the mispricing of foreign earnings.

5. CONCLUDING REMARKS

Prior research suggests that investors underprice foreign earnings due to a higher uncertainty discount as a result of poor disclosures related to the foreign operations. The recent mandate of SFAS 131 brought about significant changes in the disclosure of information related to geographic segments and therefore foreign earnings. Not all of these changes are mandatory. In fact some of them are simply suggested disclosures. Our study investigates whether the

additional disclosures mandated or suggested under SFAS 131 have led to incremental pricing of foreign earnings components and thereby to some extent corrected their underpricing documented in prior research. Our empirical tests provide evidence of an increment in the pricing of foreign earnings (and possible correction of the underpricing) as a result of the overall effect of SFAS 131. Specifically, we document that the foreign earnings response coefficient is increasing in (1) the introduction of SFAS 131, (2) an increase in the number of geographic segments disclosed, and (3) the inclusion of performance measures in geographic segments. These results are robust to a number of sensitivity analyses. We further find that specific disclosures related to the number of geographic segments disclosed and the inclusion of earnings in geographic segments are incrementally value relevant in pricing foreign earnings beyond the general benefits provided by SFAS 131. These results provide standard setters with further support of the benefit of such disclosures.

In addition to our tests of the effect of enhanced disclosure on the foreign earnings response coefficient, we present results of mispricing based on the Mishkin (1983) test. The results indicate that the mispricing disappears following the introduction of SFAS 131. One caveat is that we have few observations post SFAS 131, which makes the estimation of these tests unreliable for subsamples of firms based on change in the number of geographic segments and inclusion of earnings in geographic segment disclosures. We believe that such retesting of market mispricing based on changes in the information environment of a firm has a wide variety of applications in accounting and finance research.

Our study is the first to establish a link between geographic segment disclosures and the valuation of foreign earnings. Our results are consistent with Lundholm and Myers (2002) and Lang and Lundholm (1996) who conclude that disclosure quality is linked to the ability of

investors to predict firm performance. More generally, our findings provide support for FASB's view that the adoption of SFAS 131 and its resulting disaggregation of segment data would have capital market benefits (Berger and Hann 2003b). In addition, we provide evidence that reinforces equity investors' contention that such disclosures are both relevant and reliable. According to FASB's Conceptual Framework (FASB 1980), relevance and reliability are the prime characteristics of accounting information. With respect to reliability, enhanced geographic segment disclosures can increase verifiability because they provide additional information related to foreign operations. Moreover, the documented improved consistency in reporting following SFAS 131 enhances the reliability of segment disclosures.

Diamond (1985) argues in favor of the welfare role of public disclosure because it obviates the need for each individual investor to expend resources on costly information gathering. In other words, disclosure essentially turns private information into public information.³⁴ With respect to voluntary disclosure of performance measures in geographic segments, our findings indicate that investors find such disclosures to be value relevant. Critics of SFAS 131 have argued that the lack of mandatory earnings disclosure is one of the shortcomings of SFAS 131. Our evidence builds up the case for a potential mandate of these disclosures.

³⁴ In the models of Merton (1987) and Fishman and Hagerty (1989), disclosure reduces the cost of becoming informed, thereby increasing the pool of potential investors and lowering the firm's cost of capital. Easley and O'Hara (2004) provide a comprehensive review of this stream of research.

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Table 1: Sample Description**Panel A: Sample Selection**

Description of the Data	Sample Size	
	Firms	Observ.
Sample of Compustat firms incorporated in the U.S. with per share foreign and domestic earnings available (computed following Bodnar and Weintrop 1997). We require also that the two measures are available for the previous year.	2,805	17,676
Sample with available return data (twelve-month returns compounded to three months after the fiscal year end)	2,476	14,972
Sample with available earnings and price data as well as return data to compute the parameters of the market model (36 months of data before the current year are required). (We require that current year and previous year earnings and previous year end stock price are available)	1,939	11,503
Final sample for ERC tests after eliminating observations in top and bottom half percentile of the earnings variables (change in domestic and foreign earnings scaled by beginning stock price)	1,925	11,328

Panel B: Sample Structure

Percentage of firms that increase the number of geographic segments when adopting SFAS 131	23.78%
Percentage of firms that disclose at least one performance (or earnings) measure when adopting SFAS 131	35.03%

Table 2: Descriptive Statistics**Panel A: Descriptive statistics for full sample**

	N	Median	Mean	Q1	Q3
Market value (millions)	11,328	419.9	3577.2	79.4	1897.9
UR	11,328	-0.083	0.040	-0.325	0.212
Δ Foreign earnings	11,328	0.000	0.003	-0.007	0.008
Δ Domestic earnings	11,328	0.001	0.007	-0.027	0.026
Foreign revenue %	10,589	0.265	0.285	0.120	0.426
Foreign revenue growth %	9,114	0.082	0.167	-0.039	0.244
Domestic revenue growth %	10,850	0.057	0.081	-0.038	0.163

Panel B: Sample Correlations (pre SFAS 131 above diagonal, post SFAS 131 below diagonal)

	UR	Δ Domestic earnings	Δ Foreign earnings	Market value	PM domestic	PM foreign	Δ GSEG
UR	-	0.259***	0.139***	-0.022**	-0.006	0.016	-
Δ Domestic earnings	0.113***	-	0.211***	-0.047***	0.018	0.006	-
Δ Foreign earnings	0.151***	0.091***	-	-0.037***	-0.026**	0.004	-
Market value	0.009	-0.018	-0.003	-	0.025**	-0.005	-
PM domestic	0.026	0.036**	0.053***	0.041**	-	0.003	-
PM foreign	0.015	0.019	0.068***	0.106***	-0.012	-	-
Δ GSEG	0.051***	0.003	0.017	0.048***	0.041**	0.019	-
PMEAS	0.003	0.001	0.012	-0.009	0.039**	0.012	0.083***

Panel A: UR is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Foreign (Δ Domestic) earnings change is the change in per share after tax foreign earnings (domestic earnings) scaled by the stock price at the end of the previous year. Foreign revenue % is foreign revenues as collected from the Compustat segment data divided by total revenues. Foreign (domestic) revenue growth % is year-over-year percentage change in foreign (domestic) revenues. **Panel B:** Pearson correlation coefficients are reported. PM (%) is profit margin in percentage points computed as foreign (domestic) after tax earnings divided by foreign (domestic) revenues. Δ GSEG is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that increased the number of geographic segments post SFAS 131 (zero otherwise). PMEAS is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that discloses at least one performance (earnings) measure post SFAS 131 (zero otherwise). ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 3: Regressions of Unexpected Stock Returns on Changes in Domestic and Foreign Earnings

Panel A: Full sample period						
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.040 ^{***}	5.99	0.040 ^{***}	5.93	0.040 ^{***}	6.01
Δ Domestic Earnings	0.827 ^{***}	18.74			0.754 ^{***}	16.84
Δ Foreign Earnings			1.555 ^{***}	11.88	1.140 ^{***}	8.66
N	11,328		11,328		11,328	
Adj R ²	0.030		0.012		0.036	

Panel B: Impact of the adoption of SFAS 131 on the foreign ERC (H1)						
	Pred. sign	Coeff.	t-stat	Coeff.	t-stat	
Intercept	?	0.040 ^{***}	6.02	0.040 ^{***}	6.02	
SFAS 131	?	0.133 ^{***}	7.22	0.132 ^{***}	7.20	
Δ Domestic Earnings	+	0.764 ^{***}	17.09	0.716 ^{***}	13.31	
Δ Foreign Earnings	+	0.846 ^{***}	5.50	0.875 ^{***}	5.65	
Δ Domestic Earnings * SFAS 131	?			0.158	1.62	
Δ Foreign Earnings * SFAS 131	+	1.134 ^{***}	3.83	1.065 ^{***}	3.56	
N		11,328		11,328		
Adj R ²		0.042		0.042		

Regressions are run using firm fixed effects estimation. The dependent variable is UR which is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Domestic (Δ Foreign) Earnings is the change in per share after tax domestic (foreign) earnings scaled by the stock price at the end of the previous fiscal year. SFAS131 is an indicator variable that takes the value one if the observation is post SFAS 131 and zero otherwise. ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 4: Effect of the Change in Number of Geographic Segments on the Foreign Earnings Response Coefficient**Panel A: Test of H2**

	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040 ^{***}	6.02	0.040 ^{***}	6.03
Δ GSEG	?	0.205 ^{***}	5.20	0.208 ^{***}	5.27
Δ Domestic Earnings	+	0.751 ^{***}	16.80	0.690 ^{***}	15.00
Δ Foreign Earnings	+	1.015 ^{***}	7.58	1.048 ^{***}	7.83
Δ Domestic Earnings * Δ GSEG	?			1.103 ^{***}	5.62
Δ Foreign Earnings * Δ GSEG	+	3.136 ^{***}	4.77	2.193 ^{***}	3.23
N		11,328		11,328	
Adj R ²		0.040		0.043	

Panel B: Incremental relevance of the change in number of geographic segments beyond the overall impact of SFAS 131 adoption on the foreign earnings response coefficient

	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040 ^{***}	6.03	0.040 ^{***}	6.04
SFAS 131	?	0.111 ^{***}	5.34	0.111 ^{***}	5.35
Δ GSEG	?	0.094 ^{**}	2.11	0.097 ^{**}	2.17
Δ Domestic Earnings	+	0.758 ^{***}	16.96	0.715 ^{***}	13.33
Δ Foreign Earnings	+	0.851 ^{***}	5.54	0.878 ^{***}	5.68
Δ Domestic Earnings * SFAS 131	?			-0.070	-0.66
Δ Domestic Earnings * Δ GSEG	?			1.147 ^{***}	5.44
Δ Foreign Earnings * SFAS 131	+	0.729 ^{**}	2.32	0.734 ^{**}	2.32
Δ Foreign Earnings * Δ GSEG	+	2.565 ^{***}	3.67	1.630 ^{**}	2.27
N		11,328		11,328	
Adj R ²		0.043		0.046	

Regressions are run using firm fixed effects estimation. The dependent variable is UR which is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Domestic (Δ Foreign) Earnings is the change in per share after tax domestic (foreign) earnings scaled by the stock price at the end of the previous fiscal year. SFAS131 is an indicator variable that takes the value one if the observation is post SFAS 131 and zero otherwise. Δ GSEG is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that increased the number of geographic segments post SFAS 131 (zero otherwise). ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 5: Effects of Including Performance Measures on the Foreign Earnings Response Coefficient

Panel A: Test of H3					
	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040 ^{***}	6.02	0.040 ^{***}	6.02
PMEAS	?	0.165 ^{***}	4.95	0.165 ^{***}	4.95
Δ Domestic Earnings	+	0.757 ^{***}	16.93	0.751 ^{***}	15.78
Δ Foreign Earnings	+	0.996 ^{***}	7.30	0.999 ^{***}	7.30
Δ Domestic Earnings * PMEAS	?			0.052	0.37
Δ Foreign Earnings * PMEAS	+	2.005 ^{***}	3.95	1.983 ^{***}	3.88
N		11,328		11,328	
Adj R ²		0.040		0.040	
Panel B: Incremental relevance of the disclosure of performance measure beyond the overall impact of SFAS 131 adoption on the foreign earnings response coefficient					
	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040 ^{***}	6.02	0.040 ^{***}	6.03
SFAS 131	?	0.118 ^{***}	5.35	0.117 ^{***}	5.32
PMEAS	?	0.048	1.19	0.048	1.20
Δ Domestic Earnings	+	0.763 ^{***}	17.09	0.715 ^{***}	13.31
Δ Foreign Earnings	+	0.845 ^{***}	5.49	0.874 ^{***}	5.64
Δ Domestic Earnings * SFAS 131	?			0.200 [*]	1.71
Δ Domestic Earnings * PMEAS	?			-0.113	-0.67
Δ Foreign Earnings * SFAS 131	+	0.758 ^{**}	2.28	0.675 ^{**}	2.01
Δ Foreign Earnings * PMEAS	+	1.399 ^{***}	2.46	1.437 ^{***}	2.51
N		11,328		11,328	
Adj R ²		0.042		0.042	
Panel C: Incremental relevance of the disclosure of performance measure beyond the change in number of geographic segments on the foreign earnings response coefficient					
	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040 ^{***}	6.02	0.040 ^{***}	6.03
Δ GSEG	?	0.163 ^{***}	3.96	0.165 ^{***}	4.01
PMEAS	?	0.124 ^{***}	3.58	0.126 ^{***}	3.63
Δ Domestic Earnings	+	0.754 ^{***}	16.87	0.705 ^{***}	14.69
Δ Foreign Earnings	+	0.926 ^{***}	6.74	0.947 ^{***}	6.88
Δ Domestic Earnings * Δ GSEG	?			1.173 ^{***}	5.80
Δ Domestic Earnings * PMEAS	?			-0.147	-1.02
Δ Foreign Earnings * Δ GSEG	+	2.650 ^{***}	3.92	1.624 ^{**}	2.33
Δ Foreign Earnings * PMEAS	+	1.495 ^{***}	2.87	1.636 ^{***}	3.12
N		11,328		11,328	
Adj R ²		0.042		0.045	

Panel D: Incremental relevance of the disclosure of performance measure and the change in number of geographic segments beyond the overall impact of SFAS 131 adoption on the foreign earnings response coefficient

	Pred. sign	Coeff.	t-stat	Coeff.	t-stat
Intercept	?	0.040***	6.03	0.040***	6.04
SFAS131	?	0.089***	3.62	0.089***	3.62
Δ GSEG	?	0.131**	2.42	0.131**	2.42
PMEAS	?	0.071	1.56	0.072	1.58
Δ GSEG_PMEAS	?	-0.120	-1.26	-0.113	-1.19
Δ Domestic Earnings	+	0.758***	16.96	0.715***	13.33
Δ Foreign Earnings	+	0.852***	5.54	0.878***	5.68
Δ Domestic Earnings * SFAS 131	?			-0.022	-0.18
Δ Domestic Earnings * Δ GSEG	?			1.172***	5.55
Δ Domestic Earnings * PMEAS	?			-0.138	-0.82
Δ Foreign Earnings * SFAS 131	+	0.421	1.22	0.385	1.11
Δ Foreign Earnings * Δ GSEG	+	2.438***	3.47	1.445**	2.00
Δ Foreign Earnings * PMEAS	+	1.218**	2.13	1.385**	2.41
N		11,328		11,328	
Adj R ²		0.044		0.046	

Regressions are run using firm fixed effects estimation. The dependent variable is UR which is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Domestic (Δ Foreign) Earnings is the change in per share after tax domestic (foreign) earnings scaled by the stock price at the end of the previous fiscal year. SFAS131 is an indicator variable that takes the value one if the observation is post SFAS 131 and zero otherwise. Δ GSEG is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that increased the number of geographic segments post SFAS 131 (zero otherwise). PMEAS is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that discloses at least one performance (earnings) measure post SFAS 131 (zero otherwise). ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 6: Sensitivity Analyses

Panel A: Controls for differential sales growth and firm size						
	SFAS131		Geographic Segments		Performance Measures	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.039 ^{***}	5.35	0.038 ^{***}	5.25	0.038 ^{***}	5.30
Size	0.116 ^{***}	5.68	0.177 ^{***}	4.37	0.150 ^{***}	4.31
DiffSales	0.027 ^{**}	2.19	0.038 ^{***}	3.18	0.040 ^{***}	3.35
SFAS 131	-0.001	-0.52				
ΔGSEG			-0.001	-0.40		
PMEAS					-0.001	-0.38
ΔDomestic Earnings	0.810 ^{***}	15.90	0.801 ^{***}	15.72	0.807 ^{***}	15.84
ΔForeign Earnings	-0.038	-0.12	0.037	0.12	-0.071	-0.22
ΔForeign Earnings * SFAS131	0.757 ^{**}	2.35				
ΔForeign Earnings * ΔGSEG			3.126 ^{***}	4.71		
ΔForeign Earnings * PMEAS					1.615 ^{***}	3.11
ΔForeign Earnings * Size	0.195 ^{***}	2.88	0.185 ^{***}	2.75	0.213 ^{***}	3.17
ΔForeignEarnings*DiffGrowth	-0.007	-0.31	-0.009	-0.39	-0.009	-0.38
N	9,044		9,044		9,044	
Adj R ²	0.044		0.045		0.043	

Panel B: Remove firms with more than 35% change in total assets						
	SFAS131		Geographic Segments		Performance Measures	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.047 ^{***}	5.89	0.047 ^{***}	5.88	0.047 ^{***}	5.88
SFAS 131	0.153 ^{***}	7.71				
ΔGSEG			0.226 ^{***}	5.20		
PMEAS					0.191 ^{***}	5.32
ΔDomestic Earnings	0.811 ^{***}	13.33	0.790 ^{***}	12.96	0.805 ^{***}	13.21
ΔForeign Earnings	0.955 ^{***}	4.62	1.232 ^{***}	7.30	1.177 ^{***}	6.83
ΔForeign Earnings*SFAS 131	1.341 ^{***}	3.91				
ΔForeign Earnings * ΔGSEG			3.518 ^{***}	5.07		
ΔForeign Earnings * PMEAS					2.771 ^{***}	4.88
N	8,073		8,073		8,073	
Adj R ²	0.042		0.040		0.040	

	SFAS131		Geographic Segments		Performance Measures	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.042 ^{***}	4.78	0.040 ^{***}	6.02	0.040 ^{***}	6.02
SFAS 131	0.144 ^{***}	5.53				
Δ GSEG			0.194 ^{***}	4.81		
PMEAS					0.155 ^{***}	4.46
PM	-0.002	-0.06	0.034	1.39	0.029	1.18
Δ Domestic Earnings	0.781 ^{***}	10.47	0.752 ^{***}	16.78	0.757 ^{***}	16.89
Δ Foreign Earnings	0.836 ^{***}	3.87	0.996 ^{***}	6.93	0.996 ^{***}	6.89
Δ Foreign Earnings * SFAS131	0.966 ^{**}	2.13				
Δ Foreign Earnings * Δ GSEG			3.079 ^{***}	4.64		
Δ Foreign Earnings * PMEAS					1.996 ^{***}	3.81
Δ Foreign Earnings * PM	0.273	0.51	0.028	0.07	-0.096	-0.24
N	5,709		11,328		11,328	
Adj R ²	0.042		0.040		0.041	

Regressions are run using firm fixed effects estimation. The dependent variable is UR which is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Domestic (Δ Foreign) Earnings is the change in per share after tax domestic (foreign) earnings scaled by the stock price at the end of the previous fiscal year. DiffGrowth is the difference between year-to-year foreign sales growth and domestic sales growth. Size is the logarithm of the market value of equity. SFAS131 is an indicator variable that takes the value one if the observation is post SFAS 131 and zero otherwise. Δ GSEG is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that increased the number of geographic segments post SFAS 131 (zero otherwise). PMEAS is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that discloses at least one performance (earnings) measure post 131 (zero otherwise). PM is an indicator variable that takes the value one if the foreign operations profit margin is greater than the median post SFAS 131 and zero otherwise. In the case of the SFAS 131 test, PM takes the value one if the average profit margin over two or three years (depending on data availability) after the SFAS 131 adoption is greater than the average profit margin for the years prior to 131 adoption. ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 7: Self-Selection Tests

Panel A: First stage Probit models for year of SFAS 131 adoption				
	Δ GSEG		PMEAS	
	Coefficient	Wald χ^2 -stat	Coefficient	Wald χ^2 -stat
INTERCEPT	0.082	0.031	-0.273	0.406
OWNER	-0.070	1.346	-0.010	0.031
ASYMMETRY	0.268**	6.484	0.071	0.854
LEVERAGE	0.370	0.553	0.042	0.008
CAPIT	0.430***	9.314	-0.030	0.387
LIQUIDITY	-0.740	0.848	-1.476**	3.637
PM domestic	1.305	1.860	0.911	0.922
PM foreign	1.179**	3.783	-0.880	2.144
ROE	-0.818	2.599	-0.298	0.332
MB	0.060***	9.681	0.059***	8.654
HERF	-1.662	0.343	1.519	0.419
SIZE	-0.152**	4.332	-0.058	0.780
Concordant Obs. (Discordant Obs)	72% (28%)		64% (36%)	
Likelihood Ratio (p-value)	44.42 (0.001)		24.34 (0.011)	
McFadden's R ²	0.117		0.055	
No. of firms	363		363	
Panel B: Second stage estimation for increase in geographic segments				
	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.011	1.60	-0.012	-1.43
SFAS131			0.094***	5.76
Δ GSEG	0.336***	8.73	0.211***	4.76
Δ Domestic Earnings	0.783***	19.79	0.792***	20.01
Δ Foreign Earnings	0.984***	8.30	0.811***	5.89
Δ Domestic Earnings * SFAS131			0.687**	2.57
Δ Foreign Earnings * Δ GSEG	2.752***	4.64	2.307***	3.69
Inverse Mills Ratio	-0.174***	-5.25	-0.101***	-2.85
N	11,328		11,328	
Adj R ²	0.055		0.059	
Panel C: Second stage estimation for inclusion of performance measures				
	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.017**	2.32	-0.012	-1.43
SFAS131			0.128***	7.44
PMEAS	0.170***	5.68	0.021	0.58
Δ Domestic Earnings	0.787***	19.84	0.797***	20.11
Δ Foreign Earnings	0.982***	8.13	0.808***	5.86
Δ Domestic Earnings * SFAS131			0.753***	2.69
Δ Foreign Earnings * PMEAS	1.709***	3.72	1.167**	2.31
Inverse Mills Ratio	-0.114***	-3.86	-0.025	-0.80
N	11,328		11,328	
Adj R ²	0.050		0.056	

PANEL A: The dependent variable is an indicator variable that takes the value one (zero otherwise) if the firm increases the number of geographic segments or includes performance measures in geographic segment disclosures, respectively. OWNER is the industry-adjusted logarithm of the number of common shareholders, ASYMMETRY is the coefficient of variation in analysts' earnings forecasts three months before annual earnings are announced, LEVERAGE is total liabilities divided by total assets, CAPIT is industry-adjusted capital expenditures scaled by net sales, LIQUIDITY is cash flows from operating activities divided by net sales, MB is the ratio of market value of equity to book value of equity, PM domestic (foreign) is profit margin for domestic (foreign) operations, ROE is return on equity at firm level, HERF is the firm specific Herfindahl Index which is equal to the weighted average (weights are segments' sales) of the industry-specific index which is $\sum_{i=1}^n (s_i/S)^2$ (a detailed explanation is in the text), SIZE is the logarithm of firm total assets. All variables are computed in the year prior to the year of SFAS 131 adoption.

PANELS B and C: Regressions from Panels B and C are run using firm fixed effects estimation. The dependent variable is UR which is annual abnormal return computed using the market model. The parameters of the market model are estimated over the 36 months preceding the current fiscal year using value-weighted market returns. The monthly returns are cumulated starting the fourth month after the previous fiscal year end month and ending three months after the termination of the current fiscal year. Δ Domestic (Δ Foreign) Earnings is the change in per share after tax domestic (foreign) earnings scaled by the stock price at the end of the previous fiscal year. Δ GSEG is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that increased the number of geographic segments post SFAS 131 (zero otherwise). PMEAS is an indicator variable that takes the value one if the observation is post SFAS 131 and belongs to a firm that discloses at least one performance (earnings) measure post 131 (zero otherwise). Inverse Mills Ratios are computed using results of the first stage probit models estimated annually post 131 adoption. ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.

Table 8: Mispricing Results (Mishkin Test)

Nonlinear least squares regression of the relation between one-period ahead size adjusted returns and foreign and domestic current earnings changes

$$\Delta \text{Earn}_{i,t+1} = \alpha_0 + \alpha_D \Delta \text{DomEarn}_{i,t} + \alpha_F \Delta \text{ForEarn}_{i,t} + \varepsilon_{i,t+1}$$

$$\text{AR}_{i,t+1} = \beta_{91} + \beta_{92} (\Delta \text{Earn}_{i,t+1} - \alpha_0 - \alpha_D^* \Delta \text{DomEarn}_{i,t} - \alpha_F^* \Delta \text{ForEarn}_{i,t}) + \xi_{i,t+1}$$

	Pre SFAS 131		Post SFAS 131	
	Coefficient	t-statistics	Coefficient	t-statistics
α_0	-0.001	-1.63	-0.013 ^{***}	-7.54
α_D	-0.188 ^{***}	-12.21	-0.175 ^{***}	-7.65
α_D^*	-0.137 ^{***}	-2.68	-0.162 [*]	-1.77
α_F	-0.097 ^{**}	-2.11	-0.131 [*]	-1.70
α_F^*	-0.548 ^{***}	-3.57	-0.099	-0.32
β_{91}	0.002	0.22	0.031 ^{***}	2.24
β_{92}	1.722 ^{***}	26.83	1.922 ^{***}	12.87
N	7,867		2,661	
Market efficiency tests	Chi-Squared		Chi-Squared	
	Statistic	p-value	Statistic	p-value
$\alpha_D = \alpha_D^*$	0.902	0.342	0.019	0.889
$\alpha_F = \alpha_F^*$	8.198	0.004	0.009	0.921
$\alpha_D = \alpha_D^*$ and $\alpha_F = \alpha_F^*$	8.446	0.014	0.033	0.984

Abnormal returns are computed by subtracting from the raw returns the value-weighted returns of the size decile portfolios provided by CRSP, where the size decile membership is determined at the time when returns start cumulating (i.e., three months after the fiscal year end). $\Delta \text{DomEarn}$ ($\Delta \text{ForEarn}$) is the change in after tax domestic (foreign) earnings scaled by the average total assets over the current year. Market efficiency is tested using a likelihood ratio statistic that is distributed $\chi^2(q)$ and is equal to $2n \text{Log}(SSR^c/SSR^u)$ where q is the number of constraints, n is the number of observations, SSR^c is the sum of squared residuals for the constrained system, and SSR^u is the sum of squared residuals from the unconstrained system. SFAS131 is an indicator variable that takes the value one if the observation is post SFAS 131 and zero otherwise. The F-test for Foreign Earnings tests whether the coefficient of foreign earnings post SFAS131 is equal to zero. ***, ** and * denote significance at the 1%, 5% and 10% levels (two-sided tests), respectively.