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**AN EXAMINATION OF INVESTORS' VALUATION OF
VOLUNTARY AND MANDATORY DISCLOSED DATA ON
FOREIGN OPERATIONS: THE CASE OF SFAS 131**

by

Mahmud Hossain

**A dissertation submitted to the Graduate Faculty in Business in partial
fulfillment of the requirements for the degree of Doctor of Philosophy, The
City University of New York**

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This manuscript has been read and accepted for the Graduate Faculty of Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract**AN EXAMINATION OF INVESTORS' VALUATION OF VOLUNTARY
AND MANDATORY DISCLOSED DATA ON FOREIGN OPERATIONS:
THE CASE OF SFAS 131**

by

Mahmud Hossain

Advisor: Joseph Weintrop

This dissertation examines how mandating a disclosure affects the investors' valuation of disclosed data. I develop hypotheses regarding how investors value voluntary disclosures and mandatory disclosures, and how mandating a disclosure changes its usefulness to investors. These hypotheses are tested empirically using U.S. multinational companies' disclosures of interim geographic segment data both before and after the adoption of SFAS 131.

The empirical results indicate that investors value interim data on foreign operations of U.S. multinational companies during both voluntary and mandatory disclosure regimes for this data. The results also provide evidence that investors find interim data on geographic segments more useful under the mandatory disclosure regime (post-adoption period of SFAS 131) than under the voluntary disclosure regime (pre-adoption period of SFAS 131).

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TABLE OF CONTENTS

List of tables	x
Chapter	
1. Introduction	1
1.1 Summary of results	5
1.2 Research contributions	5
1.3 Dissertation organization	6
2. Literature Review	8
2.1 Voluntary disclosure	8
2.1.1 Motives for voluntary disclosure	8
2.1.1.1 Capital-market transactions	8
2.1.1.2 Corporate-control contests	9
2.1.1.3 Stock compensation	9
2.1.1.4 Shareholder litigation	10
2.1.1.5 Management-talent signaling	11
2.1.1.6 Proprietary cost hypothesis	11
2.1.2 Credibility of voluntary disclosure	12
2.1.3 Economic consequences of voluntary disclosure	13
2.1.3.1 Improved stock liquidity	13
2.1.3.2 Reduced cost of capital	14
2.1.4 Voluntary disclosure of interim data	15
2.2 Effects of mandating disclosures	17

2.3	Value-relevance and usefulness of accounting numbers to investors	19
2.4	Economic consequences of disclosed data on foreign operations	22
3.	Segment disclosure regulations	27
3.1	Initial segment regulation	27
3.2	Segment disclosure after adoption of SFAS 131	29
4.	Hypotheses Development	33
5.	Research Design	42
5.1	Value-relevance tests for PRE firms	45
5.2	Effect of SFAS 131	52
5.3	Value-relevance tests for POST firms	53
6.	Sample Selection and Summary Statistics	55
6.1	Sample selection process	55
6.2	Sector membership and summary statistics of firm observations	57
7.	Empirical Findings	60
7.1	Value-relevance of voluntarily disclosed interim foreign sales data	60
7.2	Investors' valuation of voluntarily disclosed interim foreign sales data	62
7.3	Value-relevance of mandatorily disclosed interim foreign sales data of PRE firms	66

7.4	Investors' valuation of mandatorily disclosed interim foreign sales data of PRE firms	66
7.5	Impact of mandating interim disclosure of foreign operations on investors' valuation of quarterly disclosed foreign sales data	68
7.6	Forming of investors' expectations of interim foreign operations based on previous year's re-stated and actually disclosed data on foreign operations	68
7.7	Difference in investors' valuation of interim data on foreign operations of PRE and POST firms in the post-adoption period	70
7.8	Impact of direction of foreign sales change on investors' valuation	70
7.9	Multivariate analysis after dropping outliers	71
8.	Summary, Conclusions, and Limitations	75
8.1	Summary and conclusions	75
8.2	Limitations	77
	Appendix-Example Disclosures	79
	References	105

List of Tables

Table 1: Sample selection criteria	81
Panel A: PRE firms	81
Panel B: POST firms	82
Table 2: Description of firms observations by sector membership	83
Table 3: Summary statistics of sample firms	84
Panel A: Summary statistics of firms used in sign tests	84
Panel B: Summary statistics of the firms used in multivariate tests	84
Panel C: Summary statistics for empirical variables for the years 1996-2000	85
Table 4: Pearson correlation coefficients among the firm variables	86
Panel A: PRE firms	86
Panel B: POST firms	86
Table 5: Sign test of hypothesis 1: Market-model event study surrounding earnings announcements of PRE firms	88
Table 6: Multivariate test of hypothesis 1: Regression of short window (-1,1) average cumulative abnormal surrounding quarterly earnings announcements against changes in foreign sales per share for PRE firms in pre-adoption period	89
Table 7: Sign test of hypothesis 2: Market-model event study surrounding earnings announcements of PRE firms	90
Panel A: Average abnormal returns around earnings announcement dates (pooled sample)	90
Panel B: Mean cumulative abnormal returns for the window (-1,1) (year by year)	91

Table 8: Multivariate test of hypothesis 2: Regression of short window (-1,1) average cumulative abnormal surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for PRE firms in pre-adoption period	92
Table 9: Test of hypothesis 2: Regression of short window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements for PRE firms in pre-adoption period	93
Table 10: Test of hypothesis 3: Regression of short window (-1,1) average cumulative abnormal surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for PRE firms in post-adoption period	94
Table 11: Test of hypothesis 5: Testing how mandating SFAS 131 affects investors' valuation of foreign sales data	95
Table 12: Test of hypothesis 6: Regression of short window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for POST firms in the initial year of adoption of SFAS 131	96
Table 13: Test of hypothesis 7: Regression of short window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for POST firms in the second year of adoption of SFAS 131	97
Table 14: Test of how positive and negative foreign and domestic sales changes affect stock returns	98
Table 15: Multiple regression analysis after removing outliers	100
Panel A: Results of pooled time-series cross-sectional association regressions of quarterly excess returns and changes in foreign sales per share	100
Panel B: Results of pooled time-series cross-sectional association regressions of quarterly excess returns and changes in domestic and foreign sales	101
Panel C: Testing how mandating SFAS 131 affects investors' valuation of foreign sales data	102
Panel D: Regression of short window (-1,1) average cumulative abnormal returns surrounding earnings announcement	

against changes in foreign and domestic sales per share
for the POST firms in the initial year of adoption of
SFAS 131 103

Panel E: Regression of short-window (-1,1) average cumulative
abnormal returns surrounding earnings announcement
and against changes in foreign and domestic sales per
share for the POST firms in the second year of
adoption of SFAS 131 104

Chapter 1: Introduction

Financial statements contain voluntary financial disclosures. Much accounting research explores the value-relevance of voluntary disclosures¹. For example, Waymire (1984), Pownall and Waymire (1989), and Ajinkya and Gift (1984) show that investors value managerial forecasts of earnings, a common voluntary disclosure practice. Amir and Lev (1996) find empirical evidence that voluntary disclosures by cellular telecom companies, such as market population size — a growth proxy — and market penetration — an operating performance measure, are value-relevant. All these studies show that voluntary disclosures are value-relevant.

Some studies test whether mandating disclosures that were previously voluntary changes the value-relevance of such disclosures. Dye (1990) shows that mandating a previously voluntary disclosure may not benefit investors if this regulation merely formalizes what was already a common practice. Ajinkya (1980) finds that mandating segment disclosures that were previously voluntary does not change their value-relevance.

¹ According to Barth et al. (2001) an accounting number is considered as value-relevant "if it has a predicted association with equity market values" (p. 79). The primary objective of value-relevance research is to examine whether a specific accounting number provides information that is used by investors in valuing a firm (Barth et al. 2001).

In this dissertation, I test the value-relevance of interim geographic segment disclosures. I examine the value-relevance of these disclosures under both a voluntary and a mandatory disclosure regime. Finally, I test for a change in the value-relevance of these disclosures caused by a switch from a voluntary to a mandatory disclosure regime.

Interim geographical segment disclosures provide me the opportunity to test the investors' valuation of voluntarily and mandatorily disclosed data, and the change in valuation caused by the mandating of such disclosures. Before adoption of Statement of Financial Accounting Standards (SFAS No. 131): *Disclosures about Segments of an Enterprise and Related Information*, interim geographical segment disclosures were not mandatory. Before SFAS 131, some firms voluntarily disclosed interim data on geographical operations. Therefore, I can test whether investors valued such voluntarily disclosed data. Also, I can examine the investors' valuation of mandated data during the post SFAS 131 adoption period. Finally, some multinational companies made interim geographic segment disclosures both before and after SFAS 131's effective date, making it possible to test how mandating such disclosures changed the investors' valuation of the disclosed data.

Managers of firms provide voluntary disclosures when required or when mandated disclosures are not adequate to fully reveal a firm's true economic picture (Healy and Palepu, 2001). Through voluntary disclosure, managers can provide

information that makes it less costly for external users of financial information to understand the true economic condition of their businesses. Since voluntary disclosures are low cost, and provide investors relevant data to better estimate the true economic picture of the firms, it is reasonable to anticipate that investors value voluntarily disclosed data (Healy and Palepu, 2001). On the other hand, it is also possible that investors may not value voluntarily disclosed data since the data is merely self-serving (Lewellen et al., 1996).²

I then examine whether investors value mandatory interim geographic segment data. There are several reasons why mandatory disclosures might be value-relevant. Mandatory disclosures are subject to strict Securities and Exchange Commission (SEC) regulation. Auditors may review mandatorily disclosed interim data before release, even though they do not audit it.³ Hence investors are more likely to find mandatory disclosures reliable. Also investors have easy access to mandatorily disclosed data at little or no cost. However, in a strongly efficient

² Lewellen et al. (1996) defines self-serving behavior of managers as the exercise of discretion in the disclosure of accounting data to conceal poor performance both by their firms and themselves. Even though Skinner (1994) shows that managers also voluntarily disclose "bad news" such as lower-than-expected earnings, he argues that such data are only disclosed when the expected benefits of disclosing is higher than the expected costs. For instance, managers might voluntarily disclose negative earnings forecasts in order to prevent large stock price declines on earnings announcement dates (and thereby reduce the potential risks of shareholder suits). Hence, voluntarily disclosing "bad news" about the company's financial performance is also self-serving.

³ The main difference between a review and an audit is that an audit involves tests of details of account balances and transactions. However, SAS No. 71 (AICPA, 1972) provides specific guideline on an auditor's review. The interim review made by the auditors following SAS No. 71 adds credibility to the information available to investors by improving the reliability and quality of interim financial reports (Ettredge et al., 2000).

market,⁴ where data is costless, investors can get all necessary data needed to properly value an organization without regulation. As a result, mandatory disclosures may not provide any incremental information about the company. Hence, it is possible that investors do not value data provided on a mandatory basis.

Finally, I investigate whether or not mandating interim geographic segment disclosure, which was previously voluntarily disclosed, changes the investors' valuation of such data. Investors might value mandatorily disclosed data, which was previously voluntary, more highly than when it was disclosed on a voluntary basis. When a disclosure is not regulated, firms do not always disclose such data in a consistent manner.⁵ However, after a mandated disclosure requirement, firms must disclose in a more consistent way as specified by the Financial Accounting Standards Board (FASB). Hence, a mandated disclosure requirement allows investors to better compare the data across firms. In other words, investors would find mandatorily disclosed data, which was previously only disclosed on a voluntary basis, more value-relevant. Also, once a voluntary disclosure is mandated, it is subject to SEC oversight, which increases the potential liability a firm faces for misleading financial reporting. Managers who violate mandatory disclosure requirements are subject to investigation and potential prosecution

⁴ A market is considered to be strongly efficient if prices fully reflect all information including inside information. Therefore, even having access to privately held information, investors would not be able to generate abnormal returns in a strongly efficient market (Fama, 1970).

⁵ The *Appendix* shows how different firms provided data on interim foreign operations in different ways before SFAS 131 was mandated. Some firms merely indicated how their foreign sales in a particular quarter of a year increased or decreased compared to that of the same quarter of a previous year. Some firms reported by what percentage interim foreign sales increased or decreased. Finally, some firms clearly presented the total foreign sales number for each quarter.

(including fines) by the SEC. Hence, after a previously voluntary disclosure is mandated, investors perceive the disclosure to be more reliable. This in turn increases the value-relevance of the disclosed data. Therefore, I conjecture that mandating a disclosure which was previously voluntary increases the value-relevance of the disclosed data.

1.1 Summary of results

The empirical results show that investors value voluntarily disclosed geographic segment data before the adoption of SFAS 131. The results also indicate that investors value mandatorily disclosed interim data on foreign operations after the adoption of SFAS 131. Finally, I find evidence that after the adoption of SFAS 131, the value-relevance of interim geographic segment data, which was previously voluntary, increased.

1.2 Research contributions

This dissertation contributes to several streams of research: voluntary and mandatory disclosure, the effect of mandating a previously voluntary disclosure, and the segment disclosure literature. First, this study is the first empirical investigation of the value-relevance of voluntarily disclosed interim data on foreign operations before such disclosure became mandatory. Second, the effect of making interim geographic segment disclosure mandatory is examined. Finally, this dissertation examines the value-relevance of interim disclosures relating to a firm's foreign operation data after the adoption of SFAS 131.

1.3 Dissertation organization

This dissertation is organized as follows. In section 2, I review the prior literature relevant to my study. In section 3, I present a description of segment disclosure regulations. I develop hypotheses in section 4. Section 5 presents the research design used to test the hypotheses. Section 6 discusses the sample selection and summary statistics. Section 7 provides the empirical findings. Finally, section 8 concludes the dissertation and gives its limitations.

Chapter 2: Literature Review

Prior relevant research includes voluntary disclosure, the effects of mandating disclosures, the value-relevance and usefulness of accounting data to investors, and the economic consequences of disclosed data on foreign operations.

2.1 Voluntary disclosure

Much of the literature on voluntary disclosure deals with motives for it, the credibility of it, and the economic consequences of it. In this section, I focus on prior studies related to these aspects of voluntary disclosure. Since this dissertation deals with interim geographic segment disclosure before and after it is mandated, I also briefly review prior literature on interim voluntary disclosure.

2.1.1 Motives for voluntary disclosure

Healy and Palepu (2001) categorize determinants of a firm's level of voluntary disclosures into six areas: capital-market transactions, corporate-control contests, stock compensation, litigation, proprietary costs, and managerial signaling.

2.1.1.1 Capital-market transactions

Healy and Palepu (1993, 1995) hypothesize that investors' perceptions of a firm are important to corporate managers who expect to issue public debt or equity. In a setting of information asymmetry between management and external investors, Myers and Majluf (1984) point out that if this information asymmetry cannot be resolved, firms pay a penalty for making public equity or debt offers. Consequently, managers who anticipate making capital-market transactions have incentives to provide voluntary disclosure to reduce the information asymmetry problem, and thus reduce the firm's cost of external financing.

Lang and Lundholm (1993) test determinants of voluntary-disclosure choice as measured by disclosure scores prepared by Financial Accounting Federations (FAF). They find that there is a significant increase in voluntary disclosure beginning six months before the equity offerings. In general, this study provides evidence supporting the hypothesis that the voluntary disclosure level is increased before making a public equity offer. Healy et al. (1999) examine whether or not firms benefit from an expanded voluntary disclosure by examining changes in capital-market factors associated with increases in analyst disclosure ratings for 97 firms. The results of their study show that firms with increased analyst ratings of disclosures have an abnormally high frequency of subsequent public debt offers. In summary, the studies of Lang and Lundholm (1993) and Healy et al. (1999) provide evidence that firms provide more voluntary disclosure before debt or equity offerings.

2.1.1.2 Corporate-control contests

Several studies assert that investors — and boards of directors — hold managers responsible for current stock price performance. For example, Watts et al. (1988), and Weisbach (1988) find evidence that CEO turnover is associated with poor stock price performance. Poor stock price performance is also associated with hostile takeovers, which result in high CEO turnover (Palepu, 1986; Morck et al., 1990). Such corporate-control events would motivate managers to use voluntary disclosures in order to reduce the likelihood of undervaluation and to justify poor earnings performance (Healy and Palepu, 2001).

2.1.1.3 Stock compensation

Different types of stock-based compensation schemes — e.g. stock option grants and stock appreciation rights — provide managers with incentives to engage in voluntary disclosures for several reasons. First, managers interested in trading their stock holdings have incentives to disclose private information to meet restrictions imposed by insider-trading rules. Second, managers acting in the interests of existing shareholders have incentives to provide voluntary disclosures to reduce contracting costs associated with stock compensation for new employees (Healy and Palepu, 2001). Several studies find support in favor of the stock-compensation hypothesis. For instance, Healy et al. (1999) find that CEOs of firms that increase voluntary disclosure have options at risk, which expire subsequent to the disclosure increase. Miller and Piotroski (2000) find that managers of firms in

turnaround situations are more likely to provide earnings forecasts if they have higher stock compensation at risk.

2.1.1.4 Shareholder litigation

The threat of shareholder litigation can have at least two possible effects on managers' voluntary disclosure decisions. First, legal actions against managers for inadequate or untimely disclosures can encourage them to increase voluntary disclosure. Second, litigation can potentially reduce managers' incentives to provide disclosure, particularly of forward-looking information. Skinner (1994) tests the first of these two potential effects and conjectures that managers of firms with bad forthcoming earnings news have an incentive to pre-disclose that information to reduce the cost of litigation. There is, however, conflicting empirical evidence on these arguments. Skinner (1994, 1997) finds that firms with bad earnings news are more than twice as likely to pre-disclose the poor earnings performance than are firms with good news. His findings also indicate that litigation costs are lower for firms that pre-disclose earnings than for those that do not. In contrast, Francis and Schipper (1994) find that 62% of the firms in their litigation sample were sued over earnings forecasts or pre-emptive earnings disclosures. In contrast, 87% of their sample of no-litigation firms with comparable stock-price declines pre-announced an earnings decline. They conclude that pre-disclosure does not seem to be a deterrent to litigation.

2.1.1.5 Management-talent signaling

Trueman (1986) hypothesizes that talented managers have an incentive to make voluntary earnings forecasts to reveal their type. A firm's market value is a function of its investors' perception of its managers' ability to anticipate and respond to future changes in the firm's economic environment. The earlier those investors infer that a manager has received information, the more favorable will be their assessment of that manager's ability to anticipate future changes. Hence the firm will have higher market value.

2.1.1.6 Proprietary cost hypothesis

Some researchers theorize that firms' decisions to disclose information to investors are influenced by a concern that such disclosures can harm their competitive market position (Verrecchia, 1983; Darrough and Stoughton, 1990; Wagenhofer, 1990; Feltham and Xie, 1992; Newman and Sansing, 1993; Darrough, 1993; Gigler, 1994). These studies argue that firms have an incentive not to disclose information that will reduce their competitive position, even if it makes it more costly to raise additional equity capital. Hayes and Lundholm (1996) argue that proprietary costs induce firms to provide disaggregated data only when they have similarly performing business segments. When firms have different levels of performance across different business segments, they have incentives to conceal these performance differences from competitors by only reporting aggregate performance. Piotroski (1999) examines firms' decisions to provide additional voluntary segment disclosures. He finds that firms with declining profitability and

with less variability in profitability across industry segments are more likely to increase segment disclosures, supporting the proprietary cost hypothesis.

The level of disclosure is only one element of a firm's overall disclosure strategy. Disclosure frequency is also important in order to evaluate the overall disclosure strategy (Botosan and Harris, 2000). Botosan and Harris (2000) examine managers' motives to increase disclosure frequency. They find that firms experiencing a decrease in liquidity — as measured by trading volume — and an increase in information asymmetry — as measured by analysts' consensus, or trying to acquire another company, are more likely to increase the frequency of voluntary interim disclosures.

2.1.2 Credibility of voluntary disclosure

Since managers have incentives to make self-serving voluntary disclosures, it is unclear whether or not these disclosures are credible. There are some possible mechanisms for increasing the credibility of voluntary disclosures. First, third-party intermediaries can provide assurance about the quality of management's disclosures. Second, there can be validation of prior voluntary disclosures through required financial reporting (Healy and Palepu, 2001). Also, managers can increase the credibility of voluntary disclosures, like management earnings forecasts, by supplementing them with more detailed and reliable information such as "verifiable forward-looking statements" (Hutton et al., 2003).

Much of the evidence of the credibility of voluntary disclosure focuses on the accuracy and stock-price effects of management forecasts. Waymire (1984) and Ajinkya and Gift (1984) show that there are positive stock-price reactions to management forecasts of earnings increases, and negative reactions to forecasts of earnings decreases. Amir and Lev (1996) provide further evidence of the credibility of voluntary disclosure. They report that voluntary disclosures such as market-population size and market penetration, have a more significant relationship to stock prices than required financial statement information. This result indicates that investors view such voluntary disclosures as credible.

2.1.3 Economic consequences of voluntary disclosure

Several studies examine the economic consequences of voluntary disclosure. Theoretical and empirical studies show that, for firms that make extensive voluntary disclosures, there are two types of capital-market effects: improved liquidity in the capital markets and reductions in their cost of capital.

2.1.3.1 Improved stock liquidity

Diamond and Verrecchia (1991) argue that voluntary disclosure reduces pre-disclosure information asymmetries existing between informed and uninformed investors. As a result, for firms with high levels of disclosure, investors can be relatively confident that any stock transactions occur at a “fair price,” increasing liquidity in the firm’s stock. Several empirical papers provide evidence consistent with this hypothesis. Healy et al. (1999) find that firms with higher voluntary

disclosure experience significant contemporaneous increases in stock prices that are unrelated to current earnings performance. Similarly, Gelb and Zarowin (2000) find that firms with high disclosure ratings have high stock price associations with contemporaneous and future earnings relative to firms with low disclosure ratings. In addition, some studies attempt to measure stock liquidity and to test its relation to firm disclosure proxies. For instance, Welker (1995) tests the relationship between firms' disclosure policies and bid-ask spreads. The results of his study reveal that there exists a negative relationship between a disclosure policy and the bid-ask spread even after controlling for return volatility, trading volume, and share price.

2.1.3.2 Reduced cost of capital

The "lemon" problem,⁶ as described by Akerlof (1970), creates an incentive for managers to provide voluntary disclosure to reduce the cost of capital. Botosan (1997) provides empirical evidence supporting this theory. She asserts that for firms with a low analyst following, there is a negative relationship between the cost of equity capital and the extent of their voluntary disclosure. Sengupta (1998) investigates the link between a firm's overall disclosure quality, as measured by the Financial Analysts Federation (FAF), and its cost of debt financing. He finds that firms with high disclosure quality ratings have a lower cost of debt capital. Botosan and Plumlee (2000) investigate the association between the expected cost of equity capital and the disclosure level. They use the disclosure scoring provided by the

⁶The "lemon" problem discussed by Akerlof (1970) refers to information asymmetry between buyers and sellers. Information asymmetry exists when sellers know something about the goods being traded that buyers do not know.

Association of Investment and Management Research (AIMR) as a proxy for firms' disclosure levels. They find a negative cross-sectional relationship between the cost of capital and the disclosure level.

2.1.4 Voluntary disclosure of interim data

Botosan and Harris (2000) investigate the factors that might influence managers to voluntarily disclose interim segment data. They find that the firms initiating voluntary quarterly segment disclosure experienced a decline in liquidity and an increase in information asymmetry during the two years preceding the change in disclosure frequency. Additionally, firms introducing voluntary disclosure of quarterly segment data are more likely to have an acquisition and to have operations in industries in which other firms also provide quarterly segment data. Their study also shows that in the year voluntary interim segment data is initiated, firms experience an increased analyst following. However, they find no substantial differences between firms that initiated voluntary reporting of quarterly segment data and those that did not, with respect to their propensity to access capital markets, their competitive environment, or the number of analysts following the firm in the pre-disclosed period.

Sivakumar and Waymire (1994) tested stock market behavior associated with voluntary interim earnings and marketing-production disclosure by the New York Stock Exchange (NYSE) industrials during 1905-1910. First, they evaluate the degree to which these voluntary disclosures served as "vehicles to selectively

disclose favorable information” (p. 690). They do not find evidence that there is a greater tendency to disclose favorable information voluntarily. Then they investigate the credibility of such interim voluntary disclosures as measured by contemporaneous price changes and trading volume and find significant volume effects in the announcement week and prior weeks. However, they observe significant price effects two or three weeks before public disclosure and not in the announcement week. Based on these findings they argue that the interim voluntary disclosures were viewed as at least partially credible during 1905-1910.

Leftwich et al. (1981) examine firms' incentives to voluntarily disclose interim reports. They conjecture that a firm's decision to provide voluntary interim disclosure is influenced by the ratio of assets in place compared to total assets, the use of outside directors, the reporting frequency ten years beforehand, and the exchange listings. They tested the disclosure frequency of NYSE and American Stock Exchange (ASE) firms separately to evaluate what factors determine interim voluntary disclosure decisions of firms listed in these two stock exchanges. They find that NYSE firms are more likely to provide interim disclosure compared to their ASE counterparts. The results also indicate that the reporting frequency of NYSE firms, and not ASE firms, in 1948 was significantly associated with a firm's reporting frequency in 1937. This suggests that NYSE firms have more stable reporting frequencies over the period 1937-1948. For ASE (NYSE) firms, it is observed that the number of outside directors is significantly (insignificantly) and positively related to disclosure frequency. For both NYSE and ASE firms, the

higher are the assets in place — or the lower the growth opportunity, the lower is the disclosure frequency. Overall, the results suggest that managements' decisions to disclose voluntary interim data are influenced by growth opportunities, stock listings, the presence of outside directors, and the disclosure frequency in the previous ten years.⁷

McNichols and Manegold (1983) investigate the association between changes in a firm's disclosure environment and its security price behavior. They conjecture that the marginal information content of an annual report is greater when it has not been preceded by voluntary interim reports, and there would be greater return variability at the annual announcement date. They compare the variance of returns upon release of the annual report across "annual-report-only" and "annual-plus-quarterly reports" environments. The empirical findings support their hypothesis. That is to say, they find that return variability is significantly greater in the "annual-report-only" environment.

2.2 Effects of mandating disclosures

Dye (1990) shows that the regulation of a previously voluntary disclosure may not benefit investors if this regulation merely formalizes a common practice. The findings of Ajinkya (1980) and Benston (1973) support Dye's theory. Ajinkya (1980) tests whether or not mandating a disclosure affects returns, by comparing segment disclosures of firms before and after mandating such disclosures. His

⁷ The results are not totally robust across NYSE and ASE firms.

study finds no difference in risk-adjusted returns between two groups of firms either before or after regulation. Benston (1973) examines the effects of the SEC's initial regulation of financial disclosure on the stock market. He finds no change in the estimated risk, average monthly abnormal returns, or the variance in abnormal returns for firms implementing the SEC regulation of financial disclosure.

Nagarajan and Sridhar (1996) show that mandating disclosure may cause firms to decrease their disclosure levels. Their theoretical model demonstrates that, if regulatory requirements increase proprietary costs, firms that voluntarily disclose may have incentives to conceal the same data. Their conclusion is that mandating a previously voluntary disclosure may cause a firm to provide less value-relevant data. Harris (1998) finds that managers manipulate segmentation for the purpose of not disclosing proprietary information, which supports the theory of Nagarajan and Sridhar (1996).

Berger and Hann (2003) examine the effect of mandating SFAS 131 on the information and monitoring environment. They compare the re-stated SFAS 131 annual segment data with the historical SFAS 14 data for the final SFAS 14 fiscal year. Their study shows that SFAS 131 increases the number of reported segments and provides more disaggregated information. They find that analysts and the market had access to a portion of the new segment data before it was made public. However, analyst and market expectations are still altered by the segment data released under the post-adoption period of SFAS 131. They argue that SFAS 131

increases information disaggregation and induces firms to reveal previously “hidden” information about their diversification strategies. Based on the findings, they conclude that “the new information affects market valuations and is associated with changes in firm behavior that are consistent with the new disclosures facilitating improved monitoring” (p. 212).

2.3 Value-relevance and usefulness of accounting numbers to investors

Literature concerning the value-relevance of accounting numbers typically examines the association between market values and accounting summary measures such as earnings and book values. While “value-relevance” and “information content” are sometimes used synonymously in accounting and finance literature, Lo and Lys (2000) argue that these two terms do not convey the same meaning. First, the information-content approach focuses on an accounting disclosure in its entirety — e.g. earnings announcements, 10-Ks and 10-Qs. In contrast, value-relevance examines specific accounting summary metric(s) — e.g. net income, sales, and expenses — that are contained in the disclosure. Second, because of the aggregative nature of the information-content approach, and the lack of an explicit aggregation function, the information-content tests must be non-directional. However, value-relevance studies can be either directional or non-directional, although the latter is uncommon because it unnecessarily sacrifices power. A classic information-content study is conducted by Beaver (1968). He examines the investor reaction to earnings announcements “as reflected in the

volume and price movements of common stocks in the weeks surrounding the announcement date” (p. 67).

The seminal study of Ball and Brown (1968) can be categorized as a value-relevance study. They examine a sample of 261 NYSE firms over nine years, from 1957 to 1965, to test whether the share-price movements of these sample firms are associated with a specific accounting number, earnings. This study first measures the value-relevance of earnings, that is, whether reported earnings are greater or less than the market had expected. Next, it evaluates the market return on the shares of the sample firms near the time of each earnings announcement, using monthly returns.

Holthausen and Watts (2001) criticize value-relevance research, since they believe that value-relevance studies have very limited implications for setting standards. They criticize value-relevance studies as being neither necessary nor sufficient for standards setters’ decision making.⁸ However, Barth et al. (2001), while discussing Hothausen and Watts’s paper, argue that even though value-relevance studies are neither necessary nor sufficient for standards-setting, this does not diminish its relevance to standards setters. According to Barth et al., the main objective of value-relevance research is to provide evidence to accounting standards setters that can “update their prior beliefs about how accounting amounts

⁸ Holthausen and Watts (2001) argue that value-relevance research can be neither a necessary nor a sufficient condition for standards-setting because such studies focus on equity investors, and equity investors are not the only users of financial statements.

are reflected in share prices and, thus, can be informative to their deliberations on accounting standards” (p. 89).

An accounting number is considered value-relevant if it has a predicted association with equity market values (Barth et al., 2001). Barth et al. argue that “tests of value-relevance represent one approach to operationalizing the FASB’s stated criteria of relevance and reliability.”⁹ Value-relevance is considered as an empirical operationalization of these criteria since an accounting number will be value-relevant only if it conveys information relevant to the investors’ valuation of the firm and is measured reliably enough to be reflected in share prices. Various valuation models are used in value-relevance studies. Typically, such studies use equity market value as the valuation benchmark in order to assess how well particular accounting numbers reflect information used by investors. The tests often examine the coefficients on the accounting numbers in the estimation equation. For example, some studies test whether the coefficient on the accounting number being studied is significantly different from zero with the predicted sign (Barth, 1994; Barth et al., 1996; Eccher et al., 1996; Nelson, 1996). Rejecting the null hypothesis of no significance or an unpredicted sign is interpreted as evidence that the accounting number is relevant, not totally unreliable, and hence value-relevant. Disclosing different components of income is useful to investors only if the

⁹ Relevance and reliability are two major criteria used by FASB for choosing among different alternatives, as specified in its “Conceptual Framework.” The FASB’s Conceptual Framework is set forth in Statement of Financial Accounting Concepts (SFAC) No. 1 through 7. According to SFAC No. 2 (FASB, 1980), an accounting number is relevant if it is capable of making a difference to financial statement users’ decisions. Also, this statement says that an accounting number is reliable if it represents what it purports to represent and is free from error and bias.

components are valued differently from each other (Jennings, 1990; Boatsman et al., 1993).

2.4 Economic consequences of disclosed data on foreign operations

Several studies examine the value-relevance of the disclosure of data on multinational companies' foreign operations. Boatsman et al. (1993) conduct an event study surrounding annual report release dates to test whether the equity valuation of U.S. multinational companies is influenced by the annual geographical segment disclosures, as mandated by SFAS 14 (FASB, 1976). Their results indicate only a weak association between stock prices and mandatory annual disclosures of foreign earnings.

Bodnar and Weintrop (1997) test the value-relevance of both combined foreign and domestic earnings of multinational companies, by conducting an association study between yearly foreign earnings, domestic earnings, and stock price. They collect yearly foreign earnings data from the footnote on foreign income taxes. Using a sample of 2,570 firm-year observations for the fiscal years 1985-1993, they find that both domestic and combined foreign earnings are associated with firm value. However, their findings indicate that the association coefficient on foreign income is significantly larger than that for domestic income. The authors show that the coefficient on foreign earnings is comparatively larger, which, they argue, is due to relatively higher growth opportunities for foreign operations.

Christophe (2002) argues that the study of Bodnar and Weintrop (1997) does not address one important issue, the possibility that there might be different market reactions to earnings changes depending upon the sign of the change — whether positive or negative.¹⁰ As an extension of the Bodnar and Weintrop study, Christophe (2002) tests how investors value positive and negative domestic and foreign earnings changes separately. To make his study comparable to that of Bodnar and Weintrop, Christophe collects the data in the same way, i.e. from the footnote on foreign income taxes. Using 3,041 firm-year observations for the period 1990-1996, Christophe shows that investors do not value positive domestic and foreign earnings changes differently. However, Christophe's paper provides strong evidence that negative domestic and foreign earnings changes are valued differently by investors: negative foreign earnings change results in a significantly larger negative stock price reaction. The results of this study indicate that the greater valuation of foreign earnings changes compared to domestic earnings is primarily due to a large negative price response associated with negative foreign earnings changes. Wysocki (1998) finds similar evidence regarding the investors' valuation of profit versus loss segments of an enterprise. Using a real-options framework, Wysocki shows that there is virtually no association between stock

¹⁰ According to Christophe, if investors anticipate higher future potential in foreign markets, and the foreign earnings change is positive, there should be a greater — more positive — stock price reaction than the stock price reaction to a comparable change from domestic operations. On the other hand, if investors perceive a greater risk, uncertainty and potential agency problems associated with foreign operations, and the foreign earnings change is negative, then the stock price reaction would be greater — more negative — than the stock price reaction to a comparable negative earnings change from domestic operations. However, Christophe argues that there is no a priori reason to argue that positive and negative price changes should be symmetric.

prices and segment losses, whereas a strong positive association exists between stock prices and segment profits.¹¹

Shoaf (1997) examines whether or not regulating foreign earnings disclosures changes the association between foreign earnings and returns. Her study tests whether mandating SFAS 14 changed this association. Considering the time period 1966-1979, she finds that for firms that voluntarily disclosed yearly foreign earnings before the adoption of SFAS 14 the foreign earnings are value-relevant. However, using retrospective data presented according to SFAS 14, she finds that for previously non-disclosing firms such retroactive data is not value-relevant. The results of her research also indicate that this difference in association between returns and annual foreign earnings persist after 1970, when SFAS 14 was mandated.

In this dissertation, I employ a short-window event-study methodology to test the value-relevance of quarterly disclosed data on foreign operations, rather than the association-study methodology used by Bodnar and Weintrop (1997), Shoaf (1997), and Christophe (2002). Association studies test whether or not there is a positive correlation between performance measures such as earnings and stock returns over relatively long time periods, such as one year. These studies do not

¹¹ Chen and Zhang (2003) use a similar approach — real-options framework — and investigate the value-relevance of segment data beyond aggregate firm-level data. They predict that incremental value-relevance of segment data varies systematically with overall firm profitability, overall growth opportunity, and the distribution of growth opportunities within a firm. The empirical results generated by their study are consistent with these predictions.

presume that accounting numbers are the only source of information to the investors, since they have access to many more timely sources of information about a firm. Therefore, association studies do not infer a causal connection between accounting data and security price changes. The main objective of such studies is to examine whether accounting measures capture changes in the information set that is reflected in security returns over a given period (Kothari, 2001).

In contrast, event studies test whether an event such as earnings announcement conveys new information to investors, as measured by the change in the level of variability of security prices or trading volume over a short time period around the event (Kothari, 2001). The methodology used in this dissertation captures the effect of the event — i.e. announcement date of quarterly data on foreign operations or filing date of 10-Q — on stock prices, unlike the studies of Bodnar and Weintrop (1997) and Shoaf (1997), which measure whether or not there is an association between foreign-operations-related data and stock returns over a long period of one year.

In this dissertation, I test the investors' valuation of quarterly foreign sales data. The valuation consequence of foreign sales, not foreign earnings, is tested since most multinational companies provide data on interim foreign sales, not foreign earnings. Also, Christophe and Pfeiffer (2000) use foreign sales as their measure of multinational companies' performance of foreign operations. They argue that foreign earnings are not the appropriate metric for measuring a firm's

efficiency of foreign operations, since accounting regulations in different countries allow firms to report either operating profit, net income, or some other measure of profitability. They state, "such wide discretion seems likely to undermine the usefulness of this data item in a cross-sectional regression analysis" (p. 121). Foreign sales data seems to be less noisy and facilitates a better comparison of efficiency of foreign operations across firms.

Some empirical studies examine the value-relevance of total sales. There is contradictory evidence from these studies about the value-relevance of the total revenues of firms. Using a time-series approach, Wilson (1986), Hopwood and McKeown (1985), and Hoskin et al. (1996) find that total revenue data is not value-relevant.¹² However, using the *Value Line* forecasts of revenues as a proxy for the market's expectations of revenues, Swaminathan and Weintrop (1991) show that total revenues are value-relevant. Based on the findings of Swaminathan and Weintrop, it can be argued that disclosure of quarterly foreign sales is likely to be value-relevant.

¹² Wilson (1986) uses prior periods' revenues to predict this period's revenues. Hopwood and McKeown (1985) use the Box-Jenkins method to estimate quarterly revenues. Hoskin et al. (1986) use a martingale model as expectation for revenues.

Chapter 3: Segment Disclosure Regulations

3.1 Initial segment disclosure regulation

The first standard for segment reporting was established in 1967 by the Accounting Principles Board (APB). The APB issued Statement No. 2, "Disclosure of Supplemental Financial Information by Diversified Companies." Statement No. 2 encouraged, but did not mandate, companies to provide sales and profits data for significant business segments on an annual basis. In 1969, the SEC realized that Statement No. 2 was insufficient for reporting purposes and issued Securities Act of 1933 Release No. 4949 (SEC Act of 1934 Release No. 8530), proposing a revision of securities registration requirements contained in Forms S-1, S-7, and F-10, to include segment data on revenues and earnings. After considering the comments received, the SEC amended and formally adopted this requirement on September 14, 1969 (Release No. 33-4988 and No. 34-8650). This regulation mandates that the amount or percentage of segment revenues and profits be reported for the last five years for all business segments constituting at least 10% of either revenues or earnings — 15% for firms with revenues under \$50 million.

The SEC regulation was subsequently expanded to include all 10-K reports for years ending after December 31, 1970 and also requires five years of

retrospective data (Release No. 34-9000). In 1974, the SEC required that the same segment data be included in the annual reports to shareholders of companies filing with the SEC.

The FASB replaced the APB in 1971 and undertook a new project on segment reporting as part of its initial agenda in April, 1973. In 1974, the FASB issued a Discussion Memorandum regarding segment reporting. Following this Discussion Memorandum, an Exposure Draft was issued in 1975, and the FASB adopted Statement of Financial Accounting Standards No. 14: *Financial Reporting for Segments of a Business Enterprise* (FAS 14) in 1976.

SFAS 14 encompasses the prior SEC requirements for segment disclosures and expands upon them. Statement 14 defines reportable segments by line-of-business and geographic area. Firms were required to separately report segment revenues, profits, and identifiable assets if the segment supplies 10% of total revenues or constitutes 10% of total assets.

The AIMR expressed its concern by stating that the flexibility in applying the segment definition criteria in SFAS 14 was being exploited by firms to suit their own financial-reporting purposes (AIMR, 1993). In effect, the discretion of management to determine reportable segments results in less useful financial information for investors. The AIMR, a body that represent financial analysts worldwide, recommended that segment information be disclosed at a much more

detailed level than required by SFAS 14. An American Institute of Certified Public Accountants (AICPA) special Committee on Financial Reporting, the Jenkins Committee formed in 1994, also suggested that companies should provide financial information for a greater number of segments and more information for each segment should be disclosed. The FASB decided to re-examine the segment disclosure requirements of SFAS 14, based on the recommendations of the AIMR and the AICPA, and decided to change the segment reporting requirements.

3.2 Segment disclosure after adoption of SFAS 131

At the end of June, 1997, the FASB issued *SFAS 131: Disclosures about Segments of an Enterprise and Related Information*, superseding SFAS 14. Statement 131 requires a business enterprise to present segment data using a new approach referred to as the "management approach." According to this approach, segment data should be presented based on how the management of an enterprise internally evaluates the operating performance of its business segments. Therefore, considering the internal management reporting system, the concept of an "operating segment" is introduced in SFAS 131. Statement 131 defines an *operating segment* as part of a business enterprise that has three different characteristics: (1) It engages in business activities from which it earns revenues and incurs expenses; (2) its operating results are regularly reviewed by the enterprise's chief operating decision maker¹³ to assess the performance of the segment and to make resource allocation

¹³ The term "chief operating decision maker" identifies a function, not necessarily a manager. Sometimes the chief operating decision maker of an enterprise is its chief executive officer or chief operating officer. However, it may also be a group consisting of, for example, the enterprise's president, executive vice-presidents, and others. (SFAS 131, ¶ 12)

decisions; (3) Discrete financial information about the segment is available from the enterprise's internal financial reporting system (Street et al., 2000).

The above three features may apply to more than one overlapping component for which managers are held responsible. That structure is sometimes called the "matrix" form of organization. For instance, certain managers may be responsible for different products and services worldwide. At the same time, other managers may be responsible for specific geographic areas. The chief operating decision maker regularly reviews the operating results of both set of components, and financial information is available for both. In such a situation, the components based on products and services constitute the operating segments (SFAS 131, ¶ 15).

According to SFAS 131, every part of an enterprise is not necessarily an operating segment. For example, corporate headquarters or some functional divisions may not earn revenues or may earn revenues that are only incidental to the activities of the company and would not be considered as operating segments (SFAS 131, ¶ 11).

An operating segment usually has a segment manager who is responsible for discussing, with the chief operating decision maker, operating activities, financial results, forecasts, or plans for the segment. More than one operating segment may have a single manager. The chief operating decision maker may also be the segment manager for certain operating segments (SFAS 131, ¶ 14).

If operating segments have similar economic characteristics, they often provide similar long-term financial performance. For example, if the economic features of two operating segments are identical, similar long-term gross margins for these two segments would be expected. More than one operating segment may be aggregated, according to SFAS 131, if they have similar economic features, products or services, production processes, customers for their products and services, distribution channels, and, if applicable, a similar regulatory environment — for example, banking, insurance, or public utilities (SFAS 131, ¶ 17).

SFAS 131 is effective for public entities with fiscal years beginning after December 15, 1998, although earlier application is encouraged. In the initial year of application, segment information reported for earlier years is re-stated unless it is impracticable to do so (SFAS 131, ¶34). However, Statement 131 disclosure is not required in the interim financial statements in the initial year of its adoption. For most calendar-year-end companies, this would require no disclosure in their 1999 quarterly reporting, but would require adoption in their December 31, 1999 annual financial statements. An enterprise's quarterly reporting after December 31, 1999 would require application of SFAS 131.

The FASB believes that investors would prefer the management approach to the industry segment approach for many reasons. First, the management approach focuses on an enterprise's internal management. This approach highlights

the risks and opportunities management believes are important. As a result, the management approach allows investors to evaluate the performance of different operating segments in the same way that management reviews performance and makes decisions. Second, since the data is already generated for internal use, the incremental cost of reporting should be relatively low. To comply with the requirements of SFAS 131, management should not need to prepare any new reports. Third, under the industry segment approach to disaggregated reporting, management had too much discretion with respect to segment identification. Identification of industry segments under SFAS 14 was based on the judgment of management¹⁴, and did not necessarily mirror the company's internal reporting of operations. Since management had considerable flexibility in selecting an "industry segment", this opportunity was exploited by companies to suit their own financial purposes (AIMR 1993, p. 60). For instance, many companies had two sets of segment data: data used internally by management, and information reported externally in conformance with the industry segment definition of SFAS 131 (Herrmann and Thomas, 2000). In contrast, SFAS 131 requires that the same segments reported internally for decision-making purposes also be reported externally. Therefore, under SFAS 131, management does not have the scope to prepare internal reports in one way and to provide external segment reporting in a different way.

¹⁴ For example, a manufacturer might combine activities involving the production and sales of plugs, instrument panels, and windshield wiper blades as a segment in the automobile parts industry under SFAS 14.

Chapter 4: Hypotheses Development

As previously stated, this dissertation examines: (1) how investors value voluntarily disclosed interim data on foreign operations before SFAS 131 was mandated; (2) the investors' valuation of mandatorily disclosed interim data on foreign operations after SFAS 131 is adopted; (3) how adoption of SFAS 131 changes the investors' valuation of interim data on foreign operations. For this examination, I consider two types of firms: (1) firms that disclosed interim data on foreign operations both before and after the adoption of SFAS 131; (2) firms that previously did not disclose such data but did disclose them after the adoption of SFAS 131.

The first set of hypotheses relates to the firms that voluntarily disclose interim foreign operations' data before the adoption of SFAS 131. Prior literature suggests that an important motive for firms to disclose data voluntarily is to provide good news to the market, especially when the managers feel that the market otherwise may not correctly value the data (Healy et al., 1999; McNichols, 1989; Watts and Zimmerman, 1986; Chambers and Penman, 1984; Verrecchia, 1983). It may be inferred that for the voluntarily disclosing firms, the benefits of disclosing are higher than its costs. Also, disclosing firms have higher benefits or lower costs,

or both, compared to non-disclosing firms. Hence, I hypothesize that for the voluntarily disclosing firms, voluntarily disclosed data on foreign operations is value-relevant. The first hypothesis in alternative form is as follows:

H₁: For firms voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, this data is value-relevant.

Empirical results supporting this hypothesis would indicate that voluntarily disclosed interim data for foreign operations is significant in the investors' valuation of the firm. However, it is possible that such quarterly data is not disclosed in a usable way. In such a case, voluntarily disclosed interim data on foreign operations would not be important for investors' valuation decisions. Also, since investors sometimes perceive voluntary disclosures as merely self-serving (Lewellen et al., 1996), they might not consider the voluntarily disclosed interim geographic segment data while valuing the company.

If I find that quarterly data on foreign operations of previously disclosing firms is value-relevant, it does not automatically imply that these voluntarily disclosed data are important to investors. Jennings (1990) argues that disclosing different components of income is useful to investors only when the components are valued differently from each other. Based on this line of argument, I claim that quarterly foreign data of previously disclosing firms is incrementally informative to the investors if it can be shown that foreign data are capitalized at a different rate

than domestic data. I conjecture that investors value foreign sales data differently than domestic sales data. The second hypothesis in alternative form is:

H₂: For firms voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, the data on foreign operations is valued differently than the data on domestic operations.

Most likely, investors do not perceive the domestic business environment and the foreign business environment as having an equal degree of risk — because of the different economic and political situations of domestic and foreign countries. Therefore, there is a strong possibility that investors place different values on quarterly domestic and foreign sales data. Providing the data of multinational companies in decomposed form — with local and foreign data disclosed separately — helps investors to better estimate future cash flows of these firms. As a result, they would be able to estimate more accurately the intrinsic value of the stocks of multinational companies. If this hypothesis is rejected, I can argue that from the investors' point of view, disclosing quarterly foreign and domestic data separately is not incrementally informative.

Under SFAS 131, companies must disclose interim data on geographic segments if they are considered as “operating segments.” In other words, under SFAS 131, the management of a company must disclose interim data on geographic segments only if such segments are used internally for operating decisions and

performance evaluation. Since such disclosures of quarterly foreign segment data help investors to view and evaluate the organizational performance in the same manner as management, I predict that such data is value-relevant to investors. Hence, I form the next hypothesis in alternative form as follows:

H₃: For firms voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, during the post-adoption period mandatorily disclosed interim foreign segment data is value-relevant.

As stated previously, having value-relevance does not imply that investors would find any disclosure useful. To test whether mandatory disclosure of the quarterly foreign data is incrementally value-relevant to the investors, I need to examine whether foreign and domestic data are valued at different rates. According to the "operating segment" definition of SFAS 131, different segments should have different business conditions. Therefore, if domestic and foreign segment data are available separately, it is quite likely that investors perceive domestic and foreign segment operations as having a different level of risk. Hence, I hypothesize that investors value the mandatory disclosure of quarterly foreign data differently than mandatory disclosure of quarterly domestic data. I state my fourth hypothesis in alternative form as:

H₄: For firms voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, during the post-adoption period mandatorily disclosed

interim foreign segment data is valued differently than mandatorily disclosed interim domestic segment data.

Next, I investigate whether the adoption of SFAS 131 changes the usefulness of firms' interim data on foreign operations to investors. It is quite possible that investors value mandatory disclosures more highly. They might feel that mandatory disclosures are more reliable since they are subject to closer monitoring by the SEC. Therefore, my next hypothesis asserts that investors put more value on quarterly foreign data compared to quarterly domestic data during the post-adoption period than during the pre-adoption period, for the firms that voluntarily disclosed such data. In alternative form, the hypothesis is:

H₅: For firms voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, during the post-adoption period investors put more value on interim foreign segment data compared to that in the pre-adoption period.

It is possible that investors might not consider the data more reliable after it becomes mandatory. Ronen and Livnat (1981) argue that one reason why voluntary disclosure is made is that the management finds that the disclosure is relevant. If the managers feel that required disclosure supplies too much proprietary information to the outsiders, they might deliberately obscure their disclosures (Nagarajan and Sridhar, 1996). Also, investors may consider mandated disclosures

as less reliable, since they might perceive that such disclosures do not provide any signal of operational efficiency, and only a minimum amount of data is provided after the regulation. Hence, for the previously disclosing firms, investors might find foreign data less value-relevant after the adoption of SFAS 131.

The second set of hypotheses is related to those firms that disclose interim foreign operations' data after the adoption, but did not disclose it before. After making the disclosure of quarterly foreign data mandatory, firms with foreign operations are forced to disclose their quarterly foreign data, if foreign segments qualify under the definition of "operating segment," as mentioned under SFAS 131. In the initial year of application of SFAS 131, firms are required to provide the previous year's re-stated interim data conforming to the new segment definition under SFAS 131 for comparative purposes. Even though such data were not disclosed for some firms before the adoption of SFAS 131, in an efficient market it can be expected that investors would have to gather such data from other sources if it is important in investment decision making (Fama, 1970). Assuming that investors could gather such data from alternative sources, and they used it to form their expectations for the next year's foreign operations, I conjecture that in the initial year of adoption of SFAS 131, the interim data on foreign operations is important for the investors' valuation. The sixth hypothesis in alternative form is as follows:

H₆: For firms not voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, during the initial year of adoption of SFAS 131 investors value the interim data on foreign operations.

Rejection of the null in favor of this hypothesis would imply that investors could gather the interim data on foreign operations before adoption of SFAS 131. However, if the empirical results do not support this hypothesis, it could be argued that investors could not get such expectations data before the adoption of SFAS 131, or even if they got it, it was not value-relevant to them.

From the second year of adoption of SFAS 131, investors got the previous year's as well as the current year's interim foreign segment data. Since they also had access to the previous year's disclosed interim data at no cost, it is quite reasonable to anticipate that they would use it to form their expectation about the current year's interim foreign operations. I therefore anticipate that from the second year of adoption of SFAS 131 and thereafter, the interim disclosure of segment data on foreign operations is important to the investors' valuation, assuming that the previous year's actually disclosed interim foreign segment data is used by them to form their expectations regarding the current year's interim foreign operations. Hence, the next hypothesis in alternative form is:

H₇: For firms not voluntarily disclosing interim foreign segment data before the adoption of SFAS 131, during the second and subsequent years following the

adoption of SFAS 131 investors value the quarterly data on foreign operations.

Alternatively, as mentioned earlier, non-disclosure during the pre-adoption period may indicate that management did not consider such disclosures as relevant. Therefore, investors might think that this disclosure during the post-adoption period has been made to meet the FASB regulation, but it is not important. Hence, they might not value the mandatorily disclosed quarterly foreign data of the previously non-disclosing multinational companies.

My final hypothesis compares the investors' valuation of interim foreign operations' data of previously disclosing and non-disclosing firms in the post-adoption period. For the previously non-disclosing firms, there is expected to be more pre-announcement uncertainty about interim foreign operations. The market most likely has not impounded as much information on interim foreign operations for previously non-disclosing firms during the pre-adoption period. On the other hand, for the previously disclosing firms, there is relatively less pre-announcement uncertainty on interim foreign operations. Investors are likely to know more about interim foreign segment information that is disclosed during the post-adoption period for such firms. Therefore, it is possible that investors would find mandated interim foreign segment data to be more informative for previously non-disclosing firms compared to firms that previously disclosed this data on a voluntary basis. Alternatively, in the post-adoption period, investors might value the interim foreign

data of previously disclosing firms at a higher rate than that of previously non-disclosing firms. Ronen and Livnat (1981) show that companies make voluntary disclosure only if they find such disclosure to be relevant. Therefore, it is possible that investors would feel that during the post-adoption period, interim disclosed data on foreign operations is still important to value the firm. On the other hand, investors might infer that previously non-disclosing firms disclose the interim foreign segment data since it is mandatory to do so, and not because such disclosure is material to value the firm. Hence, my last hypothesis in alternative form is as follows:

H₈: During the post-adoption period of SFAS 131, investors put a different value on the interim foreign segment data for the firms that did not disclose such data previously, compared to those firms that previously disclosed this data on a voluntary basis.

However, in an efficient market, investors would get the interim foreign segment data of previously non-disclosing firms. In such a case, even for these firms, the newly disclosed data on interim foreign operations would not have any incremental information for investors. Therefore, it is also possible that there is no difference in the investors' valuation of interim foreign segment data of previously disclosing and non-disclosing firms during the post-adoption period.

Chapter 5: Research Design

The research design is based on two types of sample firms, the PRE and the POST firms. The PRE sample consists of firms disclosing quarterly data on foreign operations both before and after the adoption of SFAS 131. The POST sample, on the other hand, consists of firms that disclose quarterly data on foreign operations only in the post-adoption period, but not in the pre-adoption period.

I test my hypotheses using a short-window-event study methodology. Most event studies focus on the behavior of share prices to examine whether or not their behavior is affected by the disclosure of firm-specific data (Strong, 1992). Morse (1984), Brown and Warner (1985), and Dyckman et al. (1984), show that shorter windows — e.g. a few days surrounding the event date — detect value-relevance better than longer windows — e.g. a few months surrounding the earnings announcement dates.¹⁵ Also, when events such as earnings announcements are considered to be the primary source of information to the investors, short windows

¹⁵ During a short-window (e.g. 2-3 days) surrounding earnings announcement date, it is most likely that a change in share price is caused by the information disclosed in earnings announcement releases and not by any other events. For instance, most likely there are no dividend declarations or other such events, within just a few days of earnings announcements, that cause share prices to change. On the other hand, in the case of a few-months-long window, there are many events — e.g. dividend declarations, changes in a reporting principle, management changes, new product introductions, and others — that could cause price changes.

are most suitable for event studies. Value-relevance in the context of event studies means that the release of new accounting data leads to a revision in the distribution of security returns (Foster, 1986). Hence, the disclosure of value-relevant accounting data generates abnormal returns surrounding the disclosure event.

In order to compute abnormal returns surrounding the disclosure date, it is essential to estimate normal returns for the test or estimation period. This normal return is the expected return computed based on the returns of the test period. The abnormal return is the actual ex post return, minus the expected or normal return over the event window. The abnormal returns for all days in the event windows are summed to calculate *cumulative abnormal returns (CARs)*.

In this study, event day – day 0 – is defined as the day on which quarterly foreign sales data is first publicly disclosed. The event date might be the earnings announcement date or the filing date for the 10-Q, depending on when foreign sales data is first disclosed.¹⁶ The event window is the three-day period (-1, 0, +1), surrounding the event date. Days -1 and +1 are included in the event window to allow for information leakage, and to consider the fact that the announcement may be released after the market closes on day 0. In both situations, part of the market response is most likely to occur outside of day 0. I use the *market model* to compute CARs for the event windows. The market model results in relatively smaller variances in abnormal returns compared to the mean or the market adjusted

¹⁶ Quarterly earnings announcement dates and filing dates of 10-Q's are extracted from CRSP quarterly tape and Lexis-Nexis respectively.

model, leading to more powerful statistical tests, and to smaller correlations across security abnormal returns, giving closer conformity to standard statistical tests (Beaver, 1981; Brown and Warner, 1985; Strong, 1992; Armitage, 1995). This model is not based on any assumption regarding how security prices are established. It assumes that the following mechanism is used to generate returns.

$$R_{it} = \alpha_{it} + \beta_{it}R_{mt} + \xi_{it} \quad (1)$$

Where, R_{it} = the daily return for firm i for day t ,

R_{mt} = the market return index (here the value-weighted market index) for day t obtained from CRSP tape,

ξ_{it} = independent disturbance term with mean zero in period t .

α_{it} and β_{it} are estimated using R_{it} and R_{mt} for the period $t = -251$ to $t = -2$ for all the firms in the sample for each quarter.¹⁷ Abnormal returns (AR_{it}) for each day of the event period ($t = -1$ to $t = +1$) is calculated using the following equation:

$$AR_{it} = R_{it} - (\alpha_{it} + \beta_{it}R_{mt}) \quad (2)$$

¹⁷ Similar estimation periods are used in papers testing the information content of quarterly earnings announcements using daily stock price data (e.g. Foster et al. 1984; Mackinlay, 1997).

5.1 Value-relevance tests for PRE firms

The value-relevance of quarterly disclosed foreign sales data for the PRE firms are examined using both sign and multivariate tests. To test hypotheses 1 and 3, these tests are performed for the pre-adoption and post-adoption periods separately.

I first conduct a sign test.¹⁸ This test is conducted in numerous studies (Ball and Brown, 1968; Patell and Wolfson, 1981; Foster et al., 1984). Using the naïve investor hypothesis,¹⁹ I classify my sample firms based upon whether or not their foreign sales of a particular quarter of a year increased or decreased compared to the same quarter of the previous year. I denote firms with a foreign sales increase (decrease) by F^+ (F^-). I then calculate CARs for both F^+ and F^- firms. I expect to get positive (negative) average CARs for F^+ (F^-) firms for both PRE and POST periods.

To further examine the value-relevance of quarterly disclosed foreign sales data of the PRE firms, I perform a multivariate test. The multivariate model used is based on the earnings response coefficient (ERC) literature. ERC literature has evolved from the work of Ball and Brown (1968), who test the value-relevance of

¹⁸ Sign-test methodology is used in this study, since some firms provide only qualitative data on foreign operations. Based on such data it is only possible to know the direction of change of foreign sales. Therefore, for these firms it is not possible to apply multivariate tests.

¹⁹ According to the naïve investor hypothesis, investors value a firm according to the accounting numbers that the accounting system generates for that firm. Based on this hypothesis, I assume that investors would consider a firm with a foreign sales increase (decrease) in a particular quarter compared to the same quarter of the previous year as more (less) operationally efficient than a firm that experiences a decrease (increase) in that quarter compared to the same quarter of the previous year.

earnings. Several studies, such as Collins and Kothari (1989) and Easton and Zmijewski (1989), use the ERC method to investigate the value-relevance of accounting earnings by examining the relationship between unexpected earnings and abnormal stock returns. This relationship is tested by regressing abnormal returns against unexpected earnings. The unexpected earnings are scaled to normalize the coefficient values and to reduce heteroscedasticity (Christie, 1987; Kothari and Zimmerman, 1995). The main objective of ERC studies is to test whether or not the investors' belief about the value of the stocks, as measured by abnormal returns, is revised due to unexpected earnings. If the coefficient of the unexpected earnings is positive and statistically significant in a study regressing abnormal returns on the unexpected earnings, it is argued that the unexpected earnings cause changes in the investors' belief about the stocks. The basic regression used in ERC studies is:

$$CAR_{it} = a + b UXE_{it} + e_{it} \quad (3)$$

Where CAR_{it} is the cumulative abnormal return for stock i for period t (discussed previously), UXE_{it} is the unexpected earnings — appropriately scaled, and e_{it} is the random disturbance term. The slope coefficient b is the earnings response coefficient.

In order to calculate the unexpected earnings UXE_{it} , a proxy for the expected earnings must be used. Typically the proxies used in the literature are:

(1) the previous period's earnings (Bernard and Thomas, 1989, 1990; Dhaliwal and Reynolds, 1994); (2) estimations based on various time-series models (Beaver, 1970; Ball and Watts, 1972; Albrecht et al., 1977; Watts and Leftwich, 1977; Foster, 1977; Brown and Rozeff, 1979; Lipe, 1986; Hopwood and McKeown, 1992; Finger, 1994); (3) analysts' forecasts (Swaminathan and Weintrop, 1991; Elgers and Lo, 1994).

As mentioned above, I use the interim foreign sales data as a proxy for the interim foreign operations. Therefore, instead of using the unexpected earnings, I use the unexpected sales as the independent variable. I use the previous year's sales as a proxy for this year's sales expectation. It is not possible to employ the analysts' forecasts as proxies for quarterly foreign sales since analysts typically do not provide separate forecasts on foreign and domestic sales. Also, the number of previous observations needed for conducting time-series forecasting would not be available for most of the firms in the sample. For instance, Ball and Watts (1972) use the annual data for 20 years in their time-series earnings estimation. They exclude firms with fewer years of relevant data based on the argument that the estimation procedure would be sensitive to both the few and the missing observations.

The following multivariate regression model is used to test hypotheses 1 and 3. It is based on the seasonal random walk model used in many studies

(Rangan and Sloan, 1998; Bernard and Thomas, 1990; Foster et al., 1984; Foster, 1977).

$$CAR(t = -1, 0, +1) = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \alpha_2 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q} \quad (4)$$

Where, $\Delta TEPS_{i,q}$ = Change in total earnings per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$P_{i,q}$ = The price of one share of firm i at the beginning of quarter q.

To isolate the investors' reaction to the announcement of foreign sales from the announcement of earnings, the change in earnings is used as a control variable. Similar to Bodnar and Weintrop (1997), I scale the change in earnings and the changes in both domestic and foreign sales by the market value of equity at the beginning of the quarter q, to normalize the coefficient values and to reduce heteroscedasticity.

As outlined in the hypotheses development section, showing that the quarterly foreign sales data is value-relevant does not prove that investors value such data. To show that investors value the foreign sales data, it is necessary to show that foreign sales are valued at a different rate than other accounting data. Here, I examine whether the voluntarily (mandatorily) disclosed quarterly foreign sales data are valued at a different rate than the voluntarily (mandatorily) disclosed quarterly domestic sales data for the PRE firms.

Here, also, I first apply a sign test. I classify the sample firms based on whether their foreign and domestic sales of a particular quarter of a year increase or decrease compared to the same quarter of the previous year. I denote foreign sales increases (decreases) by F^+ (F^-) and domestic sales increases (decreases) by D^+ (D^-). I consider the change in both domestic and foreign sales together. Hence, I get four different sets of firms: $(D^+ F^+)$, $(D^- F^-)$, $(D^+ F^-)$, $(D^- F^+)$. I compute the CARs for these four sets of firms for both the pre- and post-adoption periods. The objective of this test is to examine whether or not CARs surrounding quarterly earnings announcements are driven more by the direction of change of domestic sales or foreign sales. For instance, if investors value interim foreign sales more than interim domestic sales, irrespective of the direction of change of domestic sales there would be a positive relationship between the sign of the CAR and the direction of the foreign sales change. In other words, in such a case for either $D^+ F^+$ and $D^- F^-$ firms there would be positive CARs surrounding quarterly earnings announcement dates.

The following multivariate test is then conducted to examine if the coefficients of domestic sales change and foreign sales change are different:

$$CAR(t = -1, 0, +1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q} \quad (5)$$

Where, $\Delta DSPS_{i,q}$ = Change in domestic sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

The other variables used in equation (5) are defined earlier.

The second and fourth hypotheses, in null form, can be tested by examining whether $\alpha_2 = \alpha_3$ — for the pre- and post-adoption periods separately. If these two coefficients are equal, I conclude that investors do not consider voluntarily (mandatorily) disclosed quarterly foreign sales while valuing the stocks of multinational companies. If the null is rejected, indicating that $\alpha_2 \neq \alpha_3$, then hypotheses 2 and 4 are supported.

Christophe (2002) argues that Bodnar and Weintrop (1996) did not address market reaction changes based on the sign of the change. According to Christophe (2002), it is important to test whether abnormal stock returns are associated with a positive change in foreign performance — good news, a negative change in foreign

performance — bad news, or both. Hence, to address Christophe's concern, I also use a modified version of equation (5), testing the relationship of returns with good news and bad news separately.

$$\begin{aligned}
 CAR(t = -1, 0, +1) = & \gamma_0 + \gamma_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \gamma_2 \frac{\Delta DSPS_{i,q}^+}{P_{i,q}} + \gamma_3 \frac{\Delta DSPS_{i,q}^-}{P_{i,q}} \\
 & + \gamma_4 \frac{\Delta FSPS_{i,q}^+}{P_{i,q}} + \gamma_5 \frac{\Delta FSPS_{i,q}^-}{P_{i,q}} + \varepsilon_{i,q} \quad (6)
 \end{aligned}$$

Where, $\Delta TEPS_{i,q}$ = Change in total earnings per share of firm *i* in quarter *q* compared to quarter *q*-1, which is the same quarter in the previous year,

$\Delta DSPS_{i,q}^+$ = Change in domestic sales per share of firm *i* which reports a positive change in quarter *q* compared to quarter *q*-1, which is the same quarter in the previous year,

$\Delta DSPS_{i,q}^-$ = Change in domestic sales per share of firm *i* which reports a negative change in quarter *q* compared to quarter *q*-1, which is the same quarter in the previous year,

$\Delta FSPS_{i,q}^+$ = Change in foreign sales per share of firm *i* which reports a positive change in quarter *q* compared to quarter *q*-1, which is the same quarter in the previous year,

$\Delta\text{FSPS}_{i,q}$ = Change in foreign sales per share of firm i which reports a negative change in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

5.2 Effect of SFAS 131

To test hypothesis 5, I run regression equation (5) for the PRE sample firms for the pre-adoption period. The same regression equation is run for the same sample firms for the post-adoption period, and the coefficient of changes of foreign sales for pre and post periods are compared. If the coefficient of changes in foreign sales (α_3) during the post-adoption period is higher than that for the pre-adoption period, this would provide support for hypothesis 5. On the other hand, if the value of α_3 does not change during the post-adoption period compared to the pre-adoption period, I could conclude that investors do not value the interim foreign sales data of PRE firms differently in the post period compared to that of pre period.

In order to test the impact of SFAS 131 on the investors' valuation of quarterly foreign sales directly, I add a dummy variable, which has a value of one for years after implementation of SFAS 131 and zero for the prior years. I also use

interaction terms showing the interaction between the regulation dummy and the earnings and sales components. The modified model²⁰ is:

$$\begin{aligned}
 CAR(t = -1, 0, +1) = & \theta_0 + \theta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \theta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \theta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} \\
 & + \theta_4 * FAS + \theta_5 \frac{\Delta TEPS_{i,q}}{P_{i,q}} * FAS + \theta_6 \frac{\Delta DSPS_{i,q}}{P_{i,q}} * FAS + \theta_7 \frac{\Delta FSPS_{i,q}}{P_{i,q}} * FAS \\
 & + v_{i,q} \quad (7)
 \end{aligned}$$

Where FAS is the regulation dummy and $(\Delta FSPS_{i,q} / P_{i,q}) * FAS$, for instance, is the interaction between FASB regulation and the change in foreign sales-per-share scaled by share price beginning at the beginning of the quarter. A significant value of θ_4 would indicate a significantly different intercept for the same firms disclosing before and after the adoption of FAS 131. Positive and significant values of the coefficients of interactive terms (θ_5 , θ_6 , and θ_7) would support hypothesis 5.

5.3 Value-relevance tests for POST firms

Hypothesis 6 is tested using a modified version of equation (5). In the modified model, I compute $\Delta DSPS_{i,q}$ and $\Delta FSPS_{i,q}$ comparing domestic and foreign sales of quarter q with the re-stated domestic and foreign sales of quarter $q-1$.²¹ Different values of α_2 and α_3 , as well as a statistically significant value of α_3 ,

²⁰ This model is developed based on the *Chow test*, which examines if there is any change in parameter value from one data set to another (Kennedy, 1998, p. 229).

²¹ According to SFAS 131, in the initial year of adoption of SFAS 131, firms previously not disclosing interim data on foreign operations are required to provide such data conforming to the new segment definition under SFAS 131 for comparative purposes.

would support hypothesis 6. However, if α_3 is not statistically different from zero, I can reject hypothesis 6.

Hypothesis 7 is also tested using equation (5). Unlike testing hypothesis 6, testing hypothesis 7 involves computing $\Delta\text{DSPS}_{i,q}$ and $\Delta\text{FSPS}_{i,q}$, comparing the domestic sales-per-share and foreign sales-per-share data of the POST sample firms for the second and subsequent years with those of the same quarter of the previous year — here these data are actually disclosed. Again different values of α_2 and α_3 , as well as statistically significant value of α_3 , would support hypothesis 7.

In order to test hypothesis 8, the results of running regression equation (4) for the previously disclosing and non-disclosing firms during the post-adoption period are compared. If the coefficient on change in foreign sales is different across previously disclosing and non-disclosing firms in the post-adoption period, support for hypothesis 8 is established. However, if the coefficients are found to be the same, hypothesis 8 could be rejected. I use a t-test to see if the value of α_3 varies across previously disclosing and non-disclosing firms.

Chapter 6: Sample Selection and Summary Statistics

6.1 Sample selection procedure

I extract a list of all companies that disclose annual foreign earnings (COMPUSTAT data item no. 272) from COMPUSTAT industrial annual tape for the year 1996. There are 507 such companies. From these 507 companies, I select 400 companies randomly. I review the quarterly earnings announcements of all these 400 firms, available in the Press Release Newswire, to see if any voluntary data on their foreign operations is available in those earnings announcements.

Foreign segment data are provided in a wide variety of ways. For instance, some firms merely provide some indication about how their foreign operations changed in a particular quarter of the current year, compared to that of the same quarter of the previous year and no numerical data. On the other hand, some companies provide detailed data on foreign sales or assets. I find only three companies that provide foreign income data. The *Appendix* provides examples of how differently multinational companies provide interim data on foreign operations.

Initially to conduct a sign test for PRE firms, I need to know at least the direction of change of foreign and domestic operations. This data is available on 67 companies. To perform multivariate analysis, I use the following screening criteria:

1. The earnings per share (EPS), and total number of shares used for calculating EPS, and total sales data are available in COMPUSTAT quarterly tape.
2. The total foreign and domestic sales data are available in the quarterly earnings announcements.
3. The daily stock price data is available in the CRSP database for at least 250 days before the quarterly earnings announcement dates.

My sample is reduced to 47 firm observations for multivariate analysis. For these 47 firms I find 395 quarterly earnings announcements in the Press Release Newswire for the years 1996 to 1999.

333 firms out of the 400 randomly selected multinational companies did not disclose quarterly data on foreign operations during the pre-adoption period. Out of these 333 firms, I randomly select a sample of 100 firms and examine whether such firms disclose data on geographic segments in their earnings announcements in the post-adoption period. While none of these 100 firms disclose interim geographical data in the quarterly earnings announcements, 26 of these firms disclose such data in their 10-Q's. Using LEXIS-NEXIS, I was able to

retrieve 10-Q's of these 26 firms, which are used to collect data and perform a multivariate analysis for the POST firms. Table 1 summarizes the sample selection process.

6.2 Sector membership and summary statistics of firm observations

Table 2 shows the distribution of PRE and POST firm observations by their sector memberships. I determine the sector membership of the sample firms based on North American Industrial Classification System (NAICS).²² The distribution of firm observations in each sector is similar across PRE and POST firms. From a total of 67 pre-disclosing firms, the most represented sector is machinery manufacturing with 18 firms (26.9% of firm observations) followed by chemical manufacturing with 10 firm observations (15% of total firm observations). For the post-disclosing firms, the two most represented sectors are similar to those in the pre-disclosing firm observations. Among 46 post-disclosing sample firm observations, 12 firms (26.1%) belong to machinery manufacturing sector and 6 firms (13%) are chemical manufacturing firms.

Table 3 provides the descriptive statistics for the PRE and the POST firm observations used in sign and multivariate tests. Panel A of Table 3 shows that for PRE firms, the average book value of quarterly firm assets (COMPUSTAT item#44) is \$14.836 million with average quarterly total sales (Compustat item#2)

²² Krishnan and Press (1994) show that NAICS are better than Industry Classification System (SIC) with respect to industry homogeneity. They state, "we use financial ratio variances to measure intra-industry homogeneity, and find NAICS offers some improvement over the SIC system in defining manufacturing, transportation, and service industries."

and earnings (COMPUSTAT item#69) of \$2,869 million and \$211 million respectively. Panel B of Table 3 shows the descriptive statistics for POST firms. The average quarterly book value of assets for POST firms is 12,084.21 million. Note that the average book value of firm assets and total sales for PRE firms used in sign tests are substantially lower than those for the PRE firms used in multivariate tests.²³ This indicates that for the sample firms, firms providing enough data for conducting multivariate analysis are relatively larger in size.

As reported in Panel B of Table 3, the average value of assets, total sales, earnings, foreign sales and domestic sales of PRE firms are substantially higher than those of POST firms.²⁴ This suggests that on average PRE firms are bigger in size with more sales and earnings. However the percentage of foreign sales compared to total sales for PRE and POST firms are almost the same.

Panel C of Table 3 presents the summary statistics of the empirical variables used in multivariate regression analysis. The average CAR (-1,1) for PRE and POST firms are 0.57% and 0.27% respectively. This result reveals that, on average, three day cumulative abnormal returns surrounding quarterly earnings announcements are higher for PRE firms compared to that of POST firms. Average change in both total earnings and foreign sales per share scaled by share price at the beginning of the quarter are negative for both PRE and POST firms. On the other

²³ I get a t-statistic of 2.56 (which is significant at 5% level) after comparing the mean values of PRE and POST firms' total sales used in the multivariate tests.

²⁴ The results of t-tests (not reported here) confirms these results.

hand, change in domestic sales per share, scaled by share price is positive for both PRE and POST firms.

Table 4 depicts the Spearman²⁵ correlation among the variables used in this study for both PRE and POST firms. In Panel A, for PRE firms, there is a positive relationship (with correlation coefficient of 0.186) between changes in earnings per share and foreign sales per share. Even though CARs do not have statistically significant correlation (with p-value of 0.294) with changes in earnings per share, both changes in domestic sales per share and foreign sales per share have significant positive correlation with CAR'S. Panel B shows that for POST firms, statistically significant and positive correlations exist among CARs and changes in earnings per share (with p-value of 0.052), domestic sales per share (with p-value of 0.000) and foreign sales per share (p-value of 0.000). Also we observe that significant positive correlation exists among changes in earnings per share and changes in both domestic and foreign sales per share (with Spearman correlation coefficients of 0.086 and 0.218 respectively).

²⁵ Initially I calculate Pearson correlation coefficients among the variables. Since for the PRE firms, there is a negative correlation between changes in earnings per share and foreign sales per share variable, driven by outliers, I use the Spearman correlation test.

Chapter 7: Empirical Findings

7.1 Value-relevance of voluntarily disclosed interim foreign sales data

Table 5 presents the results of testing hypothesis 1 (that is if voluntarily disclosed interim voluntary foreign segment data is value-relevant for PRE firms) using sign tests. Here I analyze the abnormal returns of F^+ and F^- firms²⁶ calculated under the market-model approach, for the window (-1,1), surrounding quarterly earnings announcement dates. Table 5 shows the average cumulative abnormal returns for both F^+ and F^- firms for the days -1, 0 and +1, where 0 represents the day of quarterly earnings announcement. For F^+ firms, the average cumulative returns for the three days, -1, 1 and 1 are 0.33%, 0.34% and 0.30% respectively (each of these average cumulative returns is significant at the 1% level). For the F^- firms, the average abnormal returns for each of these three days are negative (with average cumulative abnormal returns of -0.51%, -0.57% and -0.55%, for days -1, 0 and +1 respectively) and statistically significant at 1% level. Table 5 also reports that F^+ firms have a positive cumulative average abnormal return of 1.00% (significant at 1% level) for the three-day window. On the other hand, F^- firms have

²⁶ F^+ (F^-) firms are the firms that have positive (negative) change in foreign sales in a particular quarter compared to the same quarter of the previous year.

a negative cumulative average abnormal return of -1.63% (significant at 1% level) for the three-day window. Overall, the results of the sign tests indicate that voluntarily disclosed interim foreign segment data is value-relevant for PRE firms before the adoption of SFAS 131.

The results of the multivariate regressions to test hypothesis 1 are presented in Table 6. CARs for the window (-1,1) are regressed against changes in foreign sales per share, scaled by the price of stock at the beginning of the quarter after controlling for changes in earnings per share. Table 6 documents the cross-sectional regression results for the pooled sample and for each year separately. For the pooled sample, change in foreign sales per share is positive (+0.089) and statistically significant at 1% level (with two-tailed t-statistic of 3.87). This implies that for the sample firms, foreign sales data is value-relevant for the investors.

I test whether the above findings are driven by any particular year's observations. I test the association among CARs and changes in earnings per share and foreign sales per share, individually for the three years 1996-1998. As noted at Table 6, for each of the three years, the coefficient on changes in foreign sales per share is positively (with coefficient of 0.319, 0.070 and 0.230 for the years 1996, 1997 and 1998 respectively) significant. For 1996 and 1998, it is significant at 5% level, while for the year 1997, it is significant at 10% level. Hence, I conclude that for the sample firms, positive and statistically significant association between short window CARs around quarterly earnings announcement and changes in foreign

sales per share is not driven by any particular year's observations. One interesting aspect of the results presented in Table 6 is that changes in total earnings per share is not significantly associated with cumulative abnormal returns surrounding quarterly earnings announcements.²⁷

7.2 Investors' valuation of voluntarily disclosed interim foreign sales data

Hypothesis 2 (expecting that in the pre-adoption period, interim domestic and foreign sales for PRE firms are valued by investors at different rates) is also examined using both sign and multivariate tests. The results of the sign test are presented in Table 7. The abnormal returns surrounding quarterly earnings announcements are examined with respect to change in both foreign and domestic sales per share. Panel A of Table 7 shows that for $F^+ D^+$ ($F^- D^-$) firms,²⁸ positive (negative) average abnormal returns are observed in each of the three days of the event window.

For $F^+ D^+$ firms, we observe significant (each at 1% level) positive average abnormal returns (0.22%, 0.36% and 0.41% respectively for days -1, 0 and +1) in each of the three days. The cumulative average abnormal return for these firms for the three-day window (-1 to +1) is 0.99%, which is statistically significant at 1% level. For $F^- D^-$ firms, average negative abnormal return of -0.34% is significant at

²⁷ The coefficient of earnings per share change is not statistically significant. Since, the companies in the sample are large multinational companies, they are closely followed by analysts and news media. Therefore, investors might not find the quarterly earnings per share data available in the quarterly earnings announcements to be informative.

²⁸ D^+ (D^-) firms are the firms that have positive (negative) change in domestic sales in a particular quarter compared to the same quarter of the previous year.

day 0. However, we observe statistically insignificant negative abnormal returns of -0.21% and -0.30% for $F^- D^-$ firms for days -1 and $+1$ respectively. For the three-day window, the average abnormal return for $F^- D^-$ firms is -0.85% , which is significant at the 1% level.

For $F^+ D^-$ firms, positive average abnormal returns are observed on days -1 and 0 ($+1.32\%$ on day -1 , and 0.08% on day $+1$), even though the positive returns are not statistically significant on day 0 (with a t-statistic of 0.275). However, the event study results show that $F^+ D^-$ firms have average cumulative abnormal returns of 1.04% for the three-day window, and it is significant at the 1% level (with t-statistic of 2.901). Finally for $F^- D^+$ firms, negative average abnormal returns are observed in each of the three days (-0.34% , -0.17% and -0.52% in days -1 , 0 and $+1$ respectively) with day $+1$ having statistically significant negative average abnormal returns, with t-statistic of -2.535 . For the given three-day window, we observe a statistically significant (with a t-statistic of -2.102) negative cumulative abnormal return (-1.11%) for $F^- D^+$ firms.

Panel A of Table 7 also shows that irrespective of increase or decrease of domestic sales, the cumulative abnormal returns for F^+ (F^-) firms are positive (negative). Phrased differently, there is a direct relationship between the direction of changes in foreign sales per share and cumulative abnormal returns. Overall, the results of the sign tests indicate that the sign of abnormal returns are driven more

by the change in foreign sales rather than that of domestic sales. That is to say, the sign test supports hypothesis 2.

To examine whether the results of this sign tests are influenced by the observations of any particular year, I conduct a detailed event study for all the four sets of firms ($F^+ D^+$, $F^- D^-$, $F^- D^+$, $F^+ D^-$). The results are presented in Panel B of Table 7. As shown in Panel B, the three day cumulative abnormal returns for $F^+ D^+$ firms for all the three years, 1996, 1997, 1998 are positive (1.00%, 0.41% and 1.60% respectively), even though they are statistically significant (t-statistic of 3.385 and 4.481 for 1996 and 1998) for the years 1996 and 1998, but not for 1997. For $F^- D^-$ firms, the cumulative abnormal returns for each of the three years are significantly negative (-1.99%, -2.55% and -0.92% for years 1996, 1997 and 1998 respectively). For $F^+ D^-$ firms, we observe positive cumulative abnormal returns for the three-day window. The cumulative abnormal returns are significant for all the three years, 1996-1998 with t-statistic of 1.599, 1.543 and 1.558 for 1996, 1997 and 1998 respectively. Finally, for $F^- D^+$ firms, I find negative abnormal returns of -0.26% (statistically insignificant), -0.67% (statistically insignificant) and -1.49% (significant at 1% level having a t-statistic of -2.966) for the years 1996 through 1999, respectively. The results presented in Panel B indicate that for each set of firms the results are generally robust for each of the three years. In other words, the results of testing hypothesis 2 using sign tests are not influenced by the observations of a particular year.

To further examine whether domestic and foreign sales are valued by investors at different rates, I conduct a multivariate regression analysis. The results of the multivariate tests are presented in Table 8. The results of pooled regression for the years 1996-1998 show that the coefficient of foreign sales change (+0.085) is higher than that of domestic sales change (+0.006). Also, while the coefficient of domestic sales is not statistically significant (with t-statistic of 0.50), the coefficient of foreign sales is statistically significant (with t-statistic of 3.50) at 1% level. I conduct an F-test to examine whether the coefficients on domestic sales change and foreign sales change are different or not (i.e. whether $\beta_2 = \beta_3$). I get an F-statistic of 6.82, which is substantially higher than critical F-statistic at 10% level (2.71). Hence, the empirical results for the years 1996-1998 support hypothesis 2.

To investigate whether the results of multiple regression are influenced by any particular yearly observation, the results of year by year regression are also presented in Table 8. I find that in every year, foreign sales are valued at a higher rate than domestic sales. Also the coefficients of domestic sales change (0.053, 0.001 and 0.018 for the years 1996, 1997 and 1998 respectively) are not statistically significant. On the other hand, the coefficients for change in foreign sales (0.318, 0.069 and 0.212 respectively for the years 1996, 1997 and 1998 respectively) are significant (at 5% level for the years 1996 and 1998; at 1% level for the year 1997) for all the three years. The F-statistic testing $\beta_2 = \beta_3$ for 1996, 1997 and 1998 are 3.28, 5.24 and 4.29 respectively (each indicating that foreign

and domestic sales change are not valued equally by investors). Hence, support for hypothesis 2 is robust across all three years.

7.3 Value-relevance of mandatorily disclosed interim foreign sales data of PRE firms

I use multivariate regression method to test the value-relevance of quarterly foreign sales data of PRE firms for the post-adoption period of SFAS 131 (hypothesis 3). The results of this analysis are shown in Table 9. For pooled sample, after controlling for changes in earnings per share, changes in foreign sales per share are valued positively (with a coefficient of 0.244) with statistical significance at the 1% level (t-statistic 2.80). The results of year-by-year regressions indicate that the coefficient on foreign sales change (0.320 in year 1999 and 0.265 in 2000) is not particularly influenced by any particular year's observations. However the coefficient on change in earnings per share is driven by 1999 and not 2000. The coefficient on change in earnings per share is significantly positive (with coefficient of 0.326 and t-statistic of 1.76) for 1999. However, for 2000, the coefficient on change in earnings per share is positive (0.023) but not statistically significant (t-statistic 0.77).

7.4 Investors' valuation of mandatorily disclosed interim foreign sales data of PRE firms

The results of testing whether investors value interim foreign sales data differently compared to interim domestic sales data of PRE firms (hypothesis 4)

using multivariate regression are presented in Table 10. The results of pooled regression show that for POST firms, foreign sales are valued at a different rate than domestic sales (coefficients on domestic sales change and foreign sales change are 0.167 and 0.305 respectively). The F-statistic testing the coefficients on changes in domestic and foreign sales per share is 2.81 which is significant at 10% level. That is to say, foreign sales changes for previously disclosing firms are valued at a different rate than domestic sales changes. Also both the coefficients on domestic sales change and foreign sales change are significant at 5% and 10% respectively.

The year-by-year regression results indicate that for 1999 domestic sales are valued at a higher rate than foreign sales (0.273 vs. 0.205). However, the coefficient of foreign sales change (domestic sales change) is marginally significant (insignificant). For 2000, the coefficient on changes in foreign sales per share (0.559) is higher than that on domestic sales per share (0.263). Also for the year 2000, both domestic and foreign sales are statistically significant at 5% and 10% level respectively. F-statistic (4.41) testing the equality of changes in domestic and foreign sales per share also indicates that foreign and domestic sales changes are not valued equally in the year 2000. Surprisingly, the coefficient on change in earnings per share for year 2000 is negative (-0.494), but not significantly different from zero (with a t-statistic of -0.81). Overall, the results provided by Table 10 supports hypothesis 4 for the sample firms.

7.5 Impact of mandating interim disclosure of foreign operations on investors' valuation of quarterly disclosed foreign sales data

The results of testing whether adoption of SFAS 131 changes the value-relevance of interim foreign sales data of PRE firms (hypothesis 5) is first tested by comparing the coefficients on change in foreign sales shown in Table 8 and Table 10. Comparing the results of pooled regression of Table 10 with that of Table 8 depicts that for the PRE firms, investors value quarterly foreign sales at a higher rate (with coefficient of 0.305 vs. 0.085) during the post-adoption period, compared to that in the pre-adoption period. To further test this hypothesis, the results of conducting Chow's test are presented in Table 11. The positive value of θ_4 (0.001) indicates that the intercept changed during the post-adoption regime, even though this value is not statistically significant (t-statistic 0.27). Also the positive value of θ_7 (0.220) with significantly high t-statistic (2.76), clearly portrays that during the post-adoption regime, investors' value foreign sales at a higher rate. It is interesting to note that investors put higher value on domestic sales ($\theta_6 = 0.161$, which is significant at 5% level) during the post-adoption period, compared to that in pre-adoption period. In essence, the empirical results are consistent with hypothesis 5, which predicts that the value-relevance of interim foreign segment data for previously disclosing firms increases during the post-adoption period.

7.6 Forming of investors' expectations of interim foreign operations based on previous year's re-stated and actually disclosed data on foreign operations

Table 12 displays the results of testing hypothesis 6 (i.e. examining whether in the initial year of adoption of SFAS 131 investors value the interim data on foreign operations). We observe that the coefficients on both domestic sales per share (-0.003) and foreign sales per share²⁹ (-0.011) are negative and not statistically significant (with t-statistics of -0.629 and -0.109 respectively). That is to say, these coefficients are not significantly different from zero. These results indicate that for the previously non-disclosing firms, investors did not gather interim data on foreign operations in the initial year of adoption of SFAS 131, or even if they could gather it, they did not use it to form their expectations for the next year. In other words, the results presented in Table 12 does not support hypothesis 6.

The results of testing whether investors value interim foreign sales data of POST firms during the second and subsequent year of adoption of SFAS 131 (hypothesis 7) are presented in Table 13. The results presented in Table 13 demonstrate that previous year's actually disclosed data on foreign operations is used by investors to form expectations for the second and subsequent year of post-adoption period, since change in foreign sales is valued positively (0.131) and statistically significantly (t-statistic of 2.86). Overall, this provides support for hypothesis 7.

²⁹ As explained in the research design section, the retrospective data on foreign and domestic sales for the same quarter of the previous year are used as proxies for investors' expectation of foreign and domestic and foreign sales for the initial year of adoption of SFAS 131.

7.7 Difference in investors' valuation of interim data on foreign operations of PRE and POST firms in the post-adoption period

The prediction that interim foreign sales data of PRE and POST firms are valued at a different rate by investors during the post-adoption period (hypothesis 8) can be tested by comparing the results of Table 10 with those of Table 13. Based on the results provided by both the two tables, we see that the coefficients on changes in foreign sales per share are positive and statistically significant in both the two cases. However, the coefficient on foreign sales in the pooled regression results presented in Table 10 (0.305) is much higher than the coefficient on foreign sales shown in Table 13 (0.131). I conduct a t-test to verify if the difference in foreign sales change coefficient values is statistically significant. The calculated t-value is 1.704, which is higher than the critical t-value (at 95% significance level) of 1.645. These results indicate that during the post-adoption period of SFAS 131, the interim data on foreign sales of previously disclosing firms are valued at a higher rate than that of previously non-disclosing firms. Put differently, the results are consistent with hypothesis 8.

7.8 Impact of direction of foreign sales change on investors' valuation

Table 14 presents the empirical results of testing whether the investors' valuation of quarterly foreign sales data is influenced by the direction of change in foreign sales per share. The results indicate that during the pre adoption period, the coefficient on positive changes in interim foreign sales per share for PRE firms is positive (0.052) but not significant (t-statistic 1.14). However, the coefficient on negative change in foreign sales per share is positive (0.107) and statistically

significant (t-statistic of 2.38). For the PRE firms during the post-adoption period, the coefficients on both positive changes (0.330) and negative changes (0.302) in foreign sales per share are positive and significant (t-statistics of 1.97 and 2.28 respectively for positive and negative changes in foreign sales per share). Similar results are observed for the POST firms in the post-adoption period. More specifically, for POST firms, we observe positive and statistically significant coefficient on positive foreign sales per share change (0.240 with t-statistic of 2.09) and negative foreign sales per share change (0.108 and t-statistic of 1.85). The overall results support the findings of Christophe (2002).

7.9 Multivariate analysis after dropping outliers

In order to test whether outliers affect the results of multivariate analysis, I conduct multivariate tests after dropping outliers. Outliers are dropped based on the approach described by Belsey et al. (1980, p. 28) approach.³⁰ The results of multivariate regressions after dropping outliers are shown in Table 15.

I present the results of testing hypotheses 1 and 3 after dropping outliers in Panel A of Table 15. Dropping 13 outliers does not alter the results for the PRE firms during the pre-adoption period. For instance, the coefficient on changes in foreign sales per share becomes 0.112, compared to 0.089 in the pooled regression results reported in Table 6. Like Table 6, this coefficient remains significant at 1% level. As reported in Panel A of Table 15, the results of dropping 15 outliers do not

³⁰ Belsley et al. (1980, p.28) suggest that an observation having DFFITS value exceeding $2[(m+1)/n]^{1/2}$ (where m is the number of independent variables and n is the number of observations in the sample), should be considered as an outlier.

alter the results shown in Table 9 testing hypothesis 3 considerably. The coefficient on changes in foreign sales per share for PRE firms during the post-adoption period is 0.240 according to Panel A, Table 15, which is almost identical to the same coefficient (0.244) reported for pooled sample in table 9. Both the two coefficients on foreign sales change before and after dropping the outliers are significant at 5% level.

Panel B of Table 15 depicts the results of testing hypotheses 2 and 4 after removing outliers. 13 (395 vs. 382) observations are dropped for PRE firms during the pre-adoption period. It could be noticed that compared to the pooled regression results presented table 8, both foreign sales (0.104 vs. 0.085) and domestic sales (0.010 vs, 0.006) are valued at higher rates. However, still foreign sales are valued at a significant rate (t-statistic 3.34), whereas the coefficient on domestic sales still remains insignificant (t-statistic 0.50). The F-statistic (4.20) testing $\beta_2=\beta_3$ indicates that the coefficient on foreign sales change is not equal to coefficient on domestic sales change. Overall, the results of testing hypothesis 2 are not changed considerably, after removing outliers.

As is shown in Table 15, Panel B, 15 outliers (199 minus 184) are dropped while testing the investors' valuation of interim foreign sales data of PRE firms during the post-adoption period. I notice that compared to the results shown in Table 10, overall results are not altered (with coefficient on foreign sales per share of 0.264 in Table 15 vs. 0.305 in Table 10 and coefficient on domestic sales of

0.171 in table 15 vs. 0.167 in table 10) after removing outliers. Also the F-statistic (3.02) reported indicates that $\beta_2 \neq \beta_3$, for pre firms during the post-adoption period.

According to Panel C of Table 15, after dropping 28 (594 minus 566) outliers, there is no substantial impact (comparing the results of Panel C with those of table 11) on the results of testing how mandating SFAS 131 changes the investors' valuation of interim data on foreign operations. For instance, there is no change in the value of θ_6 (0.161 in both Panel C, Table 15 and Table 11), and only slight difference in the value of θ_7 (0.159 in panel C, Table 15 vs. 0.220 in Table 11).

Comparing the results of Panel D of Table 15 with those of Table 12 reveals that dropping 8 outliers (138 minus 130) slightly change the results of testing hypothesis 6. While the coefficient on changes in domestic sales per share was negative (-0.003) and insignificant (t-statistic of -0.629) in table 12, after dropping the outliers it becomes negative (-0.024) but statistically significant (t-statistic of -1.936). However, it is quite unlikely that investors would value changes in interim domestic sales per share negatively while valuing a company. Also the coefficient on foreign sales per share becomes positive (0.018), but statistically insignificant (t-statistic of 1.10), after dropping outliers, while when the outliers were part of the total sample size this coefficient was negative (-0.011). However, the fact that after dropping outliers, the coefficient on foreign sales change still remains statistically insignificant indicates that this coefficient is not

considerably different from zero. Therefore, conducting multivariate tests to examine hypothesis 6, after dropping outliers fails to refute the results presented in Table 12.

The results provided by Panel E of Table 15 indicate that dropping 6 outliers (172 minus 164) does not affect the result that investors value interim foreign sales data significantly (with coefficient of 0.155 in Panel D, Table 15 vs. 0.131 in Table 13) in the second and subsequent years of adoption of SFAS 131. In essence, I conclude that running the same multivariate tests after removing outliers does not have any major impact on the empirical results.

Chapter 8: Summary, Conclusions, and Limitations

8.1 Summary and conclusions

This dissertation evaluates the regulation of disclosure of interim foreign segment data under SFAS 131. I test whether this disclosure was used by investors in the pricing of multinational companies both when the disclosure was voluntary (pre SFAS 131) and mandatory (post SFAS 131), and whether this usefulness to investors changes as a result of mandating this disclosure.

First, I apply both a sign test and multivariate regression analysis methodologies to test whether or not investors value voluntarily disclosed interim foreign sales data. Consistent with my prediction, the results show that investors use the interim foreign sales while valuing multinational companies.

Next, I investigate whether or not investors value mandatory disclosure of the same interim geographic segment data following the adoption of SFAS 131 which mandated this disclosure. More specifically, I test whether investors value mandatorily disclosed interim foreign sales data during the post-adoption period of SFAS 131. According to the results of the multivariate regression analysis, there is

no evidence that investors value the re-stated³¹ segment data of previous years in the initial year of adoption of SFAS 131 for previously non-disclosing firms. However, I find support in favor of the proposition that during the second year of adoption of SFAS 131, investors value mandatory disclosure of interim data on foreign operations.

Finally, I examine whether or not mandating the disclosure of interim geographic segment data changes its value-relevance to investors. The results of my study provide evidence that investors find interim data on foreign operations more useful under the mandatory disclosure regime (post-adoption of SFAS 131) than under voluntary regime (pre-adoption of SFAS 131).

This dissertation has policy implications for accounting regulation. The results indicating that the mandatory disclosure of interim geographic segment data during the post-adoption period of SFAS 131 is value-relevant indicate that investors consider these interim disclosures to be relevant and reliable.³² Also, this study shows evidence that the value-relevance of interim foreign operations' data increases during the post-adoption period compared to that in the pre-adoption period of SFAS 131. Based on this finding, it might be reasonable to argue that

³¹ According to SFAS 131, in the initial year of adoption of SFAS 131, firms previously not disclosing interim data on foreign operations are required to provide such data conforming to the new segment definition under SFAS 131 for comparative purpose.

³² Barth et al. (2001) argue that value-relevance is an empirical operationalization of "relevance" and "reliability." Relevance and reliability are the two primary criteria that the FASB uses to choose among different alternatives, governed by the Conceptual Framework. According to Statement of Financial Accounting Concept (SFAC) No. 2, accounting data is considered as "reliable" if it is verifiable and neutral and its users can depend on it to represent that which it is intended to represent (representational faithfulness).

investors perceive interim foreign sales data presented following the requirements of SFAS 131 to be more relevant and reliable compared to similar voluntary disclosures. SFAC 2 issued by the FASB dictates that the objective of financial reporting should be to provide relevant and reliable information to the external users of financial information. My results, thus, indicate that the interim geographic segment disclosure required under SFAS 131 increases the relevance and reliability of interim geographic segment data for investors, assuming that value-relevance operationalizes relevance and reliability. As a result, I argue that the application of SFAS 131 to geographical segment disclosure is beneficial in terms of the interests of investors.

8.2 Limitations

This study suffers from a number of limitations. First, in the data collection phase it was not possible to segregate export sales from sales from foreign segments for the PRE firms. Almost all of the firms did not provide foreign segment sales and export sales numbers separately in their press releases during the pre-adoption period of SFAS 131. However, in the post-adoption period this problem did not exist, since I collected the data from the segment disclosure section of 10-Q's, where firms are required to provide interim data on foreign operations. Put differently, in the segment disclosure section of 10-Q, a company can provide foreign sales data only if the foreign segment qualifies the definition of an "operating segment." If a firm has substantial export sales it can disclose it in 10-Q, but separately from segment sales.

Another serious drawback of this study is its inability to check the robustness of the results. As mentioned in the research design section, the only proxy available for the interim foreign sales expectations of investors would be the interim foreign sales of the previous year's same quarter. Therefore, it is not possible to check the robustness of the results using alternative proxies such as analysts' forecasts of quarterly sales and time-series forecasts of quarterly sales.

Another limitation is that I studied the relationship between share price and domestic sales and foreign sales data aggregately without being able to study the relationship between share price and specific foreign operating segments — e.g. Asia, Europe, Africa, etc. — because of lack of data. As shown in the Appendix, during the pre-adoption period of SFAS 131, all firms did not provide geographic segment data for different geographic locations, making it impossible to test the value-relevance of data for specific geographic segments. Also, during the post-adoption period, in accordance with SFAS 131, firms are not required to provide interim data on specific foreign segments. Therefore, firms provide such data in interim financial reports based on whether they consider different foreign segments to be different operating segments, or whether all foreign operations are simply considered as one operating segment. Hence, because of inconsistencies in the way firms provide data post SFAS 131, I could not test the value-relevance of interim foreign sales data for specific geographic segments during the post-adoption period.

Appendix – Example Disclosures

Baxter International Inc

“Baxter’s sales in the first quarter totaled \$1.44 billion, an increase of 11 percent over the \$1.30 billion in sales reported for the same period last year. Without the impact of a stronger U.S. dollar, sales increased 13 percent. Sales outside the United States grew 17 percent, to \$765 million, representing 53 percent of Baxter’s total sales in the first quarter.”

- Press Release Newswire, April 20,1997

Bausch and Lomb

“On a geographic basis, ongoing revenues in the U.S. were up 4% over last year. Outside the U.S., revenues were down 2% from the same period last year, but were up 6% when adjusted for currency exchange rates, with double-digit gains in the Asia-Pacific region.”

- Press Release Newswire, October 06,1997

IBM

“On an as-reported basis, fourth- quarter revenues from North America were \$10.4 billion, up 9 percent from the same period of 1996. Asia-Pacific revenues were essentially flat at \$4.4 billion (up 10 percent at constant currency). Revenues from the company’s Europe, Middle East, and Africa unit declined 4 percent (up 5 percent at constant currency) to \$7.7 billion. Latin America revenues grew 4 percent to \$1.2 billion (up 7 percent at constant currency).”

- Press Release Newswire, January 20,1998

General Motors

“GM North American Operations (GM-NAO) reported net income of \$764 million in the first quarter of 1997, compared with a net loss of \$279 million in the first quarter of 1996..... GM International Operations (GMIO) reported net income of \$317 million in the first quarter of 1997, compared with net income of \$432 million in the prior-year period.”

-Press Release Newswire, April 04,1997

The above statements are extracted directly from the quarterly earnings announcements of four different multinational companies from the Press Release Newswire for the year 1997. Note that Baxter International discloses the exact domestic and foreign sales numbers along with the percentage increases of domestic and foreign sales. On the other hand, Bausch and Lomb only discloses by what percentage local and foreign sales increase at a particular quarter compared to the same quarter of previous year. Hence this data can be used only for sign tests. IBM does not exactly disclose the domestic sales numbers. Instead, it discloses the sales data for North America, Europe/Middle East/Africa, Asia-Pacific and Latin America separately. Finally, as opposed to disclosure pattern of all these three companies, General Motors disclose data on foreign and domestic operations by means of total profit and not total revenue.

Table 1**Sample selection criteria****Panel A: PRE firms**

Number of multinational firms randomly selected for reviewing quarterly earnings	400
Less: Number of firms not meeting selection criteria	(333)
Number of firms used in sign test	67
Less: Number of firms not meeting the criteria for multivariate analysis	(20)
Number of firms retained for multivariate analysis	47
Total number of quarterly earnings announcement of firms used in sign tests for years 1996-1998	804
Less: Number of quarterly earnings announcements not available in Dow Jones Interactive	(154)
Total number of firm quarters used for univariate analysis	650

Number of firms used in multivariate analysis	47
Total number of quarterly earnings announcements for the firms used in multivariate analysis for the years 1996-1998	564
Less: Number of quarterly earnings announcements not available in Dow Jones Interactive	(169)
Number of firm quarters used in multivariate analysis	395

Panel B: POST firms

Total number of previously non-disclosing firms in the sample	440
Number of firms selected randomly for the study	154
Less: Number of firms not providing data on foreign operations in 10-Q's	(108)
Number of previously non-disclosing firms used in the study	46
Total number of 10-Q's filed by the sample previously non-disclosing firms	368
Less: Number of 10-Q's not available in Lexis-Nexis	(58)
Number of firms quarters of previously non-disclosing firms used in the study	310

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Table 2**Description of firm observations by their sector memberships**

NAICS Codes	Sectors	PRE firms	POST firms
448	Clothing Stores	1	
492	Couriers and Messengers	1	1
443	Electronic and Appliance Stores	1	2
452	General Merchandise Stores	2	3
212	Mining (Except Oil and Gas)	2	2
	<u>Manufacturing</u>		
312	Beverage and Tobacco	1	
325	Chemical	10	6
334	Computer and Electronic Product	6	3
335	Electronic Equipment, Appliance and Component	3	1
332	Fabricated Metal Product	4	3
311	Food	2	2
316	Leather and Allied Product	2	2
333	Machinery	18	12
339	Miscellaneous Manufacturing	2	
326	Plastic and Rubber Products	2	1
336	Transportation Equipment	1	
511	Publishing Industries	2	3
541	Professional, Scientific and Technical	4	2
562	Waste Management	1	1
421	Wholesale Trade (Durable Goods)	2	2
	Total	67	46

Notes: Sector membership of the sample firms is determined based on 2002 North American Industrial Classification System (NAICS). PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Table 3**Summary statistics of the sample firms****Panel A: Summary statistics of firms used in sign tests**

Variable	Mean	Standard Deviation	Q1	Median	Q3	N
PRE firms						
Assets (\$MM) ^a	14,836.29	44,335.40	932.16	3,352.82	9,597.50	650
Total Sales (\$MM) ^b	2,868.58	6,277.18	275.27	947.50	2,681.00	650
Earnings (\$MM) ^c	211.20	663.74	9.35	47.00	179.75	650

Panel B: Summary statistics of the firms used in multivariate test

Variables	Mean	Standard Deviation	Q1	Median	Q3	N
PRE firms						
Assets (\$MM) ^a	20,464.58	50,910.36	1,409.43	4,944.50	13,606.00	395
Total Sales (\$MM) ^b	4,282.91	8,460.04	416.91	1,222.80	3,429.50	395
Earnings (\$MM) ^c	310.22	937.10	20.22	72.72	298.50	395
Foreign Sales (\$MM) ^d	1,777.75	4,214.91	162.93	466.64	1,378.60	395
Domestic Sales (\$MM) ^d	2,278.91	4,745.45	255.97	656.35	1,880.00	395
Foreign Sales/Total Sales	0.41	0.18	0.29	0.42	0.53	395
POST firms						
Assets (\$MM) ^a	12,084.21	35,932.07	1,258.34	3,415.99	9,378.99	310
Total Sales (\$MM) ^b	2,444.32	5,689.34	269.90	685.07	2,498.90	310
Earnings (\$MM) ^c	197.53	461.31	2.47	42.23	200.00	310
Foreign Sales (\$MM) ^d	829.68	1,503.90	88.90	210.42	994.00	310
Domestic Sales (\$MM) ^d	1,047.07	1,615.73	139.41	434.30	1,314.00	310
Foreign Sales/Total Sales	0.42	0.21	0.28	0.41	0.55	310

^a Compustat item#44^b Compustat item#2^c Compustat item#69^d Foreign and domestic sales data are collected from quarterly earnings announcements from Press Release Newswire or 10-Q's

Descriptive statistics are prepared based on the data collected from CRSP, COMPUSTAT and Dow Jones Interactive. Q1 is the 25th percentile. Median is the 50th percentile. Q3 is the 75th percentile. N is the number of firms in the sample.

Panel C: Summary statistics for empirical variables for the years 1996-2000

	Mean	Median	Standard Deviation	Min	Max	N
<i>PRE firms</i>						
CAR(-1,1)	0.0057	0.0047	0.0528	-0.2198	0.1762	395
Δ TEPS/P	-0.0027	0.0005	0.2347	-0.8587	0.2683	395
Δ FSPS/P	-0.0002	0.0014	0.1154	-0.7338	0.8754	395
Δ DSPS/P	0.0217	0.0046	0.2348	-0.8587	2.5337	395
<i>POST firms</i>						
CAR(-1,1)	0.0027	0.0041	0.0538	-0.2047	0.1937	310
Δ TEPS/P	-0.0001	0.0009	0.0531	-0.3863	0.2513	310
Δ FSPS/P	-0.0243	-0.0012	0.1216	-0.7754	0.2561	310
Δ DSPS/P	0.1045	0.0092	0.402	-0.4756	2.9970	310

Variable definitions

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

Δ TEPS = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

Δ FSPS = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

Δ DSPS = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

P = Price of one share of firm i at the beginning of quarter q .

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Table 4**Spearman correlation coefficients among the firm variables****Panel A: PRE firms (N=395)**

	$\Delta\text{EPS}/P$	$\Delta\text{DSPS}/P$	$\Delta\text{FSPS}/P$	$\text{CAR}(-1,1)$
$\Delta\text{EPS}/P$	1			
$\Delta\text{DSPS}/P$	0.137 (0.000)	1		
$\Delta\text{FSPS}/P$	0.186 (0.007)	0.340 (0.000)	1	
$\text{CAR}(-1,1)$	0.053 (0.294)	0.202 (0.000)	0.382 0.000	1

Panel B: POST firms (N=310)

	$\Delta\text{EPS}/P$	$\Delta\text{DSPS}/P$	$\Delta\text{FSPS}/P$	$\text{CAR}(-1,1)$
$\Delta\text{EPS}/P$	1			
$\Delta\text{DSPS}/P$	0.086 (0.100)	1		
$\Delta\text{FSPS}/P$	0.218 (0.000)	0.160 (0.002)	1	
$\text{CAR}(-1,1)$	0.101 (0.052)	0.228 (0.000)	0.487 (0.000)	1

The numbers in parentheses are the p-values of the coefficients based on the two-tailed test of significance.

Variable definitions:

$\text{CAR}(-1,1)$ = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

Table 4 (Continued)

Δ TEPS = Change in total earnings per share in quarter q compared to quarter q-1, which is the same quarter in the previous year.

Δ FSPS = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

Δ DSPS = Change in domestic sales of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

P = Price of one share of firm i at the beginning of quarter q.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Table 5**Sign test of hypothesis 1: Market-model event study surrounding earnings announcements of PRE firms****Average abnormal returns around earnings announcement dates (pooled sample)**

Day (window)	Average Cumulative Abnormal Return (%)	t	N
<i>F⁺ firms</i>			
-1	0.33	3.521***	471
0	0.34	3.717***	471
1	0.32	3.495***	471
(-1,+1)	1.00	6.196***	471
<i>F⁻ firms</i>			
-1	-0.51	-2.675***	179
0	-0.57	-2.959***	179
1	-0.55	-2.862***	179
(-1,+1)	-1.63	-4.905***	179

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: F^+ (F^-) firms are the firms that have positive (negative) change in foreign sales in a particular quarter compared to the same quarter of the previous year.

Table 6

Multivariate test of hypothesis 1: Regression of short-window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in foreign sales per share for PRE firms in pre-adoption

Results of pooled and yearly time-series cross-sectional association regressions of quarterly excess returns and changes in earnings and foreign sales

$$CAR(-1, 1) = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \alpha_2 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

Year	α_0	α_1	α_2	Adj R ²	N
Pooled	0.006 (2.25)**	0.058 (0.68)	0.089 (3.87)***	0.032	395
1996	0.006 (0.00)	0.022 (0.09)	0.319 (2.16)**	0.025	110
1997	0.007 (1.59)	0.027 (0.31)	0.070 (1.67)*	0.050	164
1998	0.005 (0.82)	0.122 (0.77)	0.230 (2.35)**	0.029	121

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Note: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 7**Sign test of hypothesis 2: Market-model event study surrounding earnings announcements of PRE firms****Panel A: Average abnormal returns around earnings announcement dates (pooled sample)**

Direction of Change in foreign and domestic sales	Day (Window)	Average Abnormal Return(%)	t	N
$F^+ D^+$	-1	0.22	2.257**	420
	0	0.36	3.701***	420
	1	0.41	4.244***	420
	(-1,1)	0.99	5.890***	420
$F^- D^-$	-1	-0.21	-1.152	91
	0	-0.34	-1.859*	91
	1	-0.3	-1.605	91
	(-1,1)	-0.85	-2.665***	91
$F^+ D^-$	-1	1.32	4.440***	51
	0	0.08	0.275	51
	1	0.15	1.409	51
	(-1,1)	1.04	2.901***	51
$F^- D^+$	-1	-0.34	-1.644	88
	0	-0.17	-0.845	88
	1	-0.52	-2.535**	88
	(-1,1)	-1.11	-2.102***	88

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: F^+ (F^-) firms are the firms that have positive (negative) change in foreign sales in a particular quarter compared to the same quarter of the previous year. D^+ (D^-) firms are the firms that have positive (negative) change in domestic sales in a particular quarter compared to the same quarter of the previous year. PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131

Table 7 (continued)**Panel B: Mean cumulative abnormal returns for the window (-1,1) (year by year)**

Year	Direction of Change in Foreign and Domestic Sales	Mean Cumulative Abnormal Return (%)	t	N
1996	$F^+ D^+$	1.00	3.385***	158
	$F^- D^-$	-1.99	-2.421**	26
	$F^+ D^-$	1.66	1.599*	21
	$F^- D^+$	-0.26	-0.419	27
1997	$F^+ D^+$	0.41	1.366	135
	$F^- D^-$	-2.55	-2.698***	26
	$F^+ D^-$	1.86	1.543*	12
	$F^- D^+$	-0.67	-0.651	26
1998	$F^+ D^+$	1.6	4.481***	127
	$F^- D^-$	-0.92	-2.082**	39
	$F^+ D^-$	1.04	1.558*	18
	$F^- D^+$	-1.49	-2.966***	35

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: F^+ (F^-) firms are the firms that have positive (negative) change in foreign sales in a particular quarter compared to the same quarter of the previous year. D^+ (D^-) firms are the firms that have positive (negative) change in domestic sales in a particular quarter compared to the same quarter of the previous year. PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131.

Table 8

Multivariate test of hypothesis 2: Regression of short-window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in foreign sales per share for PRE firms in pre-adoption period.

Results of pooled time-series cross-sectional association regressions of quarterly excess returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

Year	β_0	β_1	β_2	β_3	Adj R ²	N	F-statistic ($\beta_2 = \beta_3$)
Pooled	0.006 (2.18)**	0.053 (0.62)	0.006 (0.50)	0.085 (3.50)***	0.030	395	6.82***
1996	0.007 (1.49)	0.019 (0.08)	0.053 (0.69)	0.318 (2.14)**	0.020	110	3.28*
1997	0.007 (1.80)	0.024 (0.21)	0.001 (0.17)	0.069 (2.98)***	0.044	164	5.24**
1998	0.005 (0.80)	0.109 (0.67)	0.018 (0.48)	0.212 (2.03)**	0.023	121	4.29**

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 9

Test of hypothesis 3: Regression of short-window (-1,1) average cumulative abnormal returns surrounding earnings announcement of PRE firms for the post-adoption period

Results of pooled and yearly regressions of quarterly excess returns around quarterly earnings announcements and changes in earnings and foreign sales

$$CAR(-1, 1) = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \alpha_2 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

	α_0	α_1	α_2	Adj R ²	N
Pooled	0.008 (1.49)	0.317 (1.78)*	0.244 (2.80)***	0.045	199
1999	0.01 (1.35)	0.326 (1.72)*	0.320 (1.76)*	0.040	104
2000	0.005 (0.82)	0.023 (0.77)	0.265 (2.35)**	0.014	95

***, **, and* indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Note: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 10

Test of hypothesis 4: Regression of short-window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for PRE firms in post-adoption period

Results of pooled and yearly regression of quarterly abnormal returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \epsilon_{i,q}$$

Year	β_0	β_1	β_2	β_3	Adj R ²	N	F-statistic ($\beta_2 = \beta_3$)
Pooled	0.007 (1.40)	0.278 (1.57)	0.167 (2.23) **	0.305 (3.37) ***	0.064	199	2.81*
1999	0.010 (1.41)	0.323 (1.72)*	0.273 (1.47)	0.205 (1.84)*	0.062	104	0.89
2000	0.006 (0.76)	-0.494 (-0.81)	0.263 (2.59)**	0.559 (3.10)***	0.072	95	4.41**

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 11

Test of hypothesis 5: Testing how mandating SFAS 131 affects investors' valuation of foreign sales data

$$CAR(-1,1) = \theta_0 + \theta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \theta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \theta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \theta_4 * FAS + \theta_5 \frac{\Delta EPS_{i,q}}{P_{i,q}} * FAS + \theta_6 \frac{\Delta DSPS_{i,q}}{P_{i,q}} * FAS + \theta_7 \frac{\Delta FSPS_{i,q}}{P_{i,q}} * FAS + \epsilon_{it}$$

θ_0	θ_1	θ_2	θ_3	θ_4	θ_5	θ_6	θ_7	Adj R ²	N
0.006 (1.91)*	0.053 (0.54)	0.006 (0.44)	0.085 (3.07)***	0.001 (0.27)	0.224 (1.27)	0.161 (2.54)**	0.220 (2.76)***	0.048	594

***, **, and * indicate one-tailed statistical significance at 1%, 5% and 10% levels.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

FAS = 1 during the post-adoption period of SFAS 131, 0 otherwise.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 12

Test of hypothesis 6: Regression of short-window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for POST firms in the initial year of adoption of SFAS 131

Results of regression of quarterly abnormal returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

β_0	β_1	β_2	β_3	Adj R ²	N
0.007 (1.86) *	0.000 (0.09)	-0.003 (-0.62)	-0.011 (-0.11)	0.020	138

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Note: POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period t=-1,t=0 and t=1, where t=0 is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q.

Table 13

Test of hypothesis 7: Regression of short-window (-1,1) average cumulative abnormal returns surrounding quarterly earnings announcements against changes in domestic and foreign sales per share for POST firms in the second year of adoption of SFAS 131

Results of regression of quarterly abnormal returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

β_0	β_1	β_2	β_3	Adj R ²	N	F-statistic ($\beta_2 = \beta_3$)
0.003 (0.92)	0.073 (1.40)	0.022 (1.57)	0.131 ^a (2.86) **	0.053	172	9.19***

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period t=-1,t=0 and t=1, where t=0 is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q.

^a The t-test comparing the coefficient on foreign sales per share change in Table 13 with that in Table 10, provides a t-value of 1.704. This is greater than the critical t-value at 95% level of significance of 1.645.

Table 14**Test of how positive and negative foreign and domestic sales changes affect stock returns****Results of association regressions of quarterly excess returns with positive and negative changes in foreign and domestic sales**

$$CAR(-1,1) = \gamma_0 + \gamma_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \gamma_2 \frac{\Delta DSPS_{i,q}^+}{P_{i,q}} + \gamma_3 \frac{\Delta DSPS_{i,q}^-}{P_{i,q}} + \gamma_4 \frac{\Delta FSPS_{i,q}^+}{P_{i,q}} + \gamma_5 \frac{\Delta FSPS_{i,q}^-}{P_{i,q}} + \varepsilon_{it}$$

Sample	γ_0	γ_1	γ_2	γ_3	γ_4	γ_5	Adj R ²	N
PRE/pre ^a	0.008 (2.59)**	0.038 (0.43)	0.009 (0.51)	0.031 (0.83)	0.052 (1.14)	0.107 (2.38)**	0.030	395
PRE/post ^b	0.006 (1.02)	0.286 (1.58)	0.192 (1.68)	0.135 (1.01)	0.330 (1.97)*	0.302 (2.28)**	0.055	199
POST/pre ^c	0.001 (0.22)	0.072 (1.36)	0.018 (1.04)	-0.000 (-0.00)	0.240 (2.09)**	0.108 (1.85)*	0.050	172

^a Multivariate regression for PRE firms in the pre-adoption period.

^b Multivariate regression for POST firms in the post-adoption period.

^c Multiple regression for POST firms in the pre-adoption period.

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under market model) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}^+$ = Change in domestic sales per share of firm i which reports a positive change in quarter q compared to quarter $q-1$, which is the same quarter in the previous year and zero otherwise.

Table 14 (continued)

$\Delta DSPS_{i,q}$ = Change in foreign sales per share of firm *i* which reports a negative change in quarter *q* compared to quarter *q-1*, which is the same quarter in the previous year and zero otherwise.

$\Delta FSPS_{i,q}^+$ = Change in foreign sales per share of firm *i* which reports a positive change in quarter *q* compared to quarter *q-1*, which is the same quarter in the previous year and zero otherwise.

$\Delta FSPS_{i,q}^-$ = Change in foreign sales per share of firm *i* which reports a negative change in quarter *q* compared to quarter *q-1*, which is the same quarter in the previous year and zero otherwise.

$P_{i,q}$ = Price of one share of firm *i* at the beginning of quarter *q*.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Table 15

Multivariate regression analysis after removing outliers

Panel A: Results of pooled time-series cross-sectional association regressions of quarterly excess returns and changes in foreign sales per share

$$CAR(-1,1) = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \alpha_2 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

Year	α_0	α_1	α_2	Adj R ²	N
PRE/pre ^a	0.006 (2.15)**	0.067 (0.77)	0.112 (4.17)***	0.039	382
PRE/post ^b	0.009 (1.90)*	0.353 (1.83)*	0.240 (2.76)***	0.047	184

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

^a Multivariate regression for PRE firms in the pre-adoption period.

^b Multivariate regression for POST firms in the post-adoption period.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 15 (continued)

Panel B: Results of pooled time-series cross-sectional association regressions of quarterly excess returns and changes in earnings domestic and foreign sales for PRE firms

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \epsilon_{i,q}$$

Sample	β_0	β_1	β_2	β_3	Adj R ²	N	F-statistic ($\beta_2 = \beta_3$)
PRE/pre ^a	0.006 (2.13)**	0.066 (0.76)	0.010 (0.50)	0.104 (3.34)***	0.045	382	4.20**
PRE/post ^b	0.008 (1.75)*	0.334 (1.60)	0.171 (1.91)*	0.264 (3.03)***	0.061	184	3.02*

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

^a Multivariate regression for PRE firms in the pre-adoption period.

^b Multivariate regression for POST firms in the post-adoption period.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 15 (continued)

Panel C: Testing how mandating SFAS 131 affects investors' valuation of foreign sales data

$$\text{CAR}(-1,1) = \theta_0 + \theta_1 \frac{\Delta\text{TEPS}_{i,q}}{P_{i,q}} + \theta_2 \frac{\Delta\text{DSPS}_{i,q}}{P_{i,q}} + \theta_3 \frac{\Delta\text{FSPS}_{i,q}}{P_{i,q}} + \theta_4 * \text{FAS} + \theta_5 \frac{\Delta\text{EPS}_{i,q}}{P_{i,q}} * \text{FAS} + \theta_6 \frac{\Delta\text{DSPS}_{i,q}}{P_{i,q}} * \text{FAS} + \theta_7 \frac{\Delta\text{FSPS}_{i,q}}{P_{i,q}} * \text{FAS} + \varepsilon_{it}$$

θ_0	θ_1	θ_2	θ_3	θ_4	θ_5	θ_6	θ_7	Adj R ²	N
0.006 (2.05)**	0.066 (0.72)	0.009 (0.42)	0.105 (3.15)***	0.002 (0.44)	0.270 (1.38)	0.161 (1.94)*	0.159 (1.87)**	0.046	566

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period $t=-1, t=0$ and $t=1$, where $t=0$ is the quarterly earnings announcement date.

$\Delta\text{TEPS}_{i,q}$ = Change in total earnings per share in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta\text{FSPS}_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

$\Delta\text{DSPS}_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter $q-1$, which is the same quarter in the previous year.

FAS = 1 during the post-adoption period of SFAS 131, 0 otherwise.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q .

Table 15 (continued)

Panel D: Regression of short-window (-1,1) average cumulative abnormal returns surrounding earnings announcement against changes in foreign and domestic sales per share for the POST firms in the initial year of adoption of SFAS 131

Results of regression of quarterly abnormal returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

β_0	β_1	β_2	β_3	Adj R ²	N
0.007 (2.06)**	-0.010 (-0.45)	-0.024 (-1.936)*	0.018 (1.10)	0.051	130

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period t=-1,t=0 and t=1, where t=0 is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q.

Table 15 (continued)

Panel E: Regression of short-window (-1,1) average cumulative abnormal returns surrounding earnings announcement and against changes in foreign and domestic sales per share for the POST firms in the second year of adoption of SFAS 131

Results of regression of quarterly abnormal returns and changes in earnings and foreign sales

$$CAR(-1,1) = \beta_0 + \beta_1 \frac{\Delta TEPS_{i,q}}{P_{i,q}} + \beta_2 \frac{\Delta DSPS_{i,q}}{P_{i,q}} + \beta_3 \frac{\Delta FSPS_{i,q}}{P_{i,q}} + \varepsilon_{i,q}$$

β_0	β_1	β_2	β_3	Adj R ²	N	F-statistic ($\beta_2 = \beta_3$)
0.004 (1.04)	0.036 (0.71)	0.025 (1.26)	0.155 (2.94) ***	0.042	164	10.48***

***, **, and * indicate two-tailed statistical significance at 1%, 5% and 10% levels.

Notes: PRE firms consist of a sample of firms that disclose quarterly data on foreign operations both before and after the adoption of SFAS 131. POST firms consist of a sample of firms that disclose quarterly data on foreign operations only in the post-adoption period of SFAS 131 and not in the pre-adoption period.

Variable definitions:

CAR(-1,1) = Cumulative abnormal return (calculated under mean adjusted method) for the period t=-1,t=0 and t=1, where t=0 is the quarterly earnings announcement date.

$\Delta TEPS_{i,q}$ = Change in total earnings per share in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta FSPS_{i,q}$ = Change in foreign sales per share of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$\Delta DSPS_{i,q}$ = Change in domestic sales of firm i in quarter q compared to quarter q-1, which is the same quarter in the previous year.

$P_{i,q}$ = Price of one share of firm i at the beginning of quarter q.

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