

THE PENNSYLVANIA STATE UNIVERSITY  
SCHREYER HONORS COLLEGE

SCHOOL OF BUSINESS ADMINISTRATION

LONG TERM EFFECTS OF STATEMENT OF FINANCIAL ACCOUNTING  
STANDARDS 131 (SFAS 131) ON GEOGRAPHIC DISCLOSURES OF U.S. FIRMS

ADAM CECK FRUTIGER  
Spring 2015

A thesis  
submitted in partial fulfillment  
of the requirements  
for baccalaureate degrees  
in Accounting and Finance  
with honors in Accounting

Reviewed and approved\* by the following:

Susan Havranek, Ph. D.  
Assistant Professor of Accounting  
Thesis Supervisor

Oranee Tawatnuntachai, Ph. D.  
Associate Professor of Finance  
Faculty Reader

Ronald Walker, Ph. D.  
Director, Honors Program  
Honors Advisor

\* Signatures are on file in the Schreyer Honors College

## ABSTRACT

Investors utilize various aspects of financial statements to value firms. Although certain items such as the balance sheet and income statement are very important, other items offer greater insight into future earnings and financial health. One such item is geographical segment information, disclosing geographic sources of revenues. In 1997, the Financial Accounting Standards Board (FASB) released the Statement of Financial Accounting Standards 131 (SFAS 131) to provide guidance for the geographical segment disclosure. This standard calls for a managerial approach, allowing a firm's management to set material levels for disclosures. In addition, SFAS 131 requires that material geographic segments be identified as the individual nation where revenue is generated. This thesis examines the long-term effects of SFAS 131 on geographic segment disclosures of Fortune 500 U.S. firms. Unlike prior studies that examine the effects using a very short sample period of 1997 to 1998, this study's sample period covers a 15-year period from 1998 to 2012. The longer sample period allows a comprehensive examination of the reporting behavior of firms to determine whether firms continue to use the managerial approach as intended by the FASB. The thesis investigates both levels of materiality set by firms and the fineness of the disclosures. The results show that firms report the majority of segments at or below a 10% threshold. Also, fineness tests show a strong relationship between the foreign sales and the segment type. As the percentage of foreign sales increases, the fineness of the disclosures increase. Consistent with the results of prior studies, these findings show the managerial approach continues to provide more material and specific information to investors and other stakeholders.

## TABLE OF CONTENTS

Chapter 1: Introduction .....	1
Chapter 2: Literature Review .....	3
2.1 United States Standards and Regulations .....	3
2.1.1 SFAS 14 .....	3
2.1.2 SFAS 131 .....	4
2.1.3 Sarbanes-Oxley Act of 2002 .....	5
2.2 International Standards .....	6
2.2.1 IAS 14 and 14R .....	6
2.2.2 IFRS 8 .....	7
2.3 Previous Research on Domestic Firms .....	8
2.3.1 SFAS 14 Compared to SFAS 131 .....	8
2.3.2 Materiality .....	10
2.3.3 Effects on Market .....	12
2.4 Previous Research on International Firms .....	14
2.4.1 European Nations Combined .....	14
2.4.2 Specific European Nations .....	15
2.4.3 Australia and New Zealand .....	16
Chapter 3: Data and Methodology .....	18
3.1 Sample .....	18
3.2 Variable Measurements .....	18
3.3 Descriptive Statistics of Variables .....	20
3.4 Methodology .....	21
Chapter 4: Results .....	25
4.1. Materiality: Smallest Segments Reported .....	25
4.2. Fineness of Segments: by Firms .....	26
4.3. Fineness of Segments by Year .....	28
4.3. Results of Sample Set II .....	29
Chapter 5: Summary and Conclusion .....	31
References .....	33
Appendix A .....	35

**LIST OF FIGURES**

Figure 1: Mean and Median Fineness of Sample Set I by Years .....	35
Figure 2: Percentage of Smallest Segment Categories of Sample Set I .....	36
Figure 3: Mean and Median Fineness of Sample Set I by Years .....	37
Figure 4: Percentage of Smallest Segment Categories of Sample Set II .....	38

**LIST OF TABLES**

Table 1: Comparison of SFAS 14 and SFAS 131 .....	39
Table 2: Comparison of IAS 14R, IFRS 8 and SFAS 131.....	40
Table 3: Descriptive Statistics of Sample Set I.....	41
Table 4: Descriptive Statistics of Sample Set I by Year.....	42
Table 5: Smallest Segments of Sample Set I by Year .....	44
Table 6: Correlation Matrix of Sample Set I .....	46
Table 7: Regression Results of Sample Set I.....	47
Table 8: Regression Results of Sample Set I by Year .....	49
Table 9: Descriptive Statistics of Sample Set II .....	51
Table 10: Descriptive Statistics of Sample Set II by Year.....	52
Table 11: Smallest Segments of Sample Set II by Year .....	55
Table 12: Correlation Matrix of Sample Set II.....	57
Table 13: Sample Set II Regression Model with all Companies Each Year .....	58
Table 14: Regression Results of Sample Set II by Year.....	60

## ACKNOWLEDGEMENTS

This research study is one of the most difficult projects I have completed, and so many people helped in many different ways. I would like to thank my first reader, Dr. Oranee Tawatnuntachai, for all that she has done throughout my college career and this project. Since my sophomore year Dr. Tawatnuntachai guided me through major courses and this project from the very beginning. Without her constant direction and availability, I would not have learned so much or finished this project. Thank you Dr. Susan Havranek, my thesis supervisor, for helping me develop my tests and completing the project. Her input and guidance throughout the process served as a valuable resource in many vital ways. Also, Dr. Ronald Walker and Dr. Martha Strickland help guide all students in the Honors Programs here on campus, and I thank them for their dedication. Finally, Stephanie Ponnett is always available to help any student, and I thank her for all that she has done for me through my entire time as a student.

I thank my Aunt and Uncle, Sue and Bob Stough, for all they have done through my entire school career and for acting as my Pennsylvania support system. Also, my sisters, Lauren Luby and Jordan Frutiger, continue to motivate me on a daily basis to do my best work. I would like to thank my grandparents, Donald and Johanna Frutiger and Bill and Mary Edmondson, for continually supporting me through my life. Finally, thank you to my parents, Don and Patricia Frutiger. As Certified Public Accountants, I believe they have trained me to contribute to the accounting community since my birth. Without their daily support and inspiration, I would have never accomplished this research project and would not be the man that I am today.

## Chapter 1: Introduction

Financial reports provide an abundance of information to stakeholders who may not have a working knowledge of every company they invest. Since many large corporations operate in many different countries, annual reports disclose these operations in these foreign markets. However, the Financial Accounting Standards Board, FASB, provides guidance for companies allowing more discretion in reporting their geographical segmentation. In 1997, FASB issued Statement of Financial Accounting Standards (SFAS 131), which updates the requirements for corporations to report different segments of their operations. This guidance references line of business, geographical, and single customers. A large discussion arises from companies reporting all operations in different geographical areas under certain circumstances. The resulting main criteria include the usefulness to decision-making decisions and cost to report this information. These factors allow for companies to establish their own levels of materiality for geographic segments. Also, SFAS 131 requires that companies report the geographic segments at the level of individual countries where the operations occur. Because general continents, such as a Europe or Asia, should no longer be disclosed together, the amount of segmentation should be greater and more specific. This additional attention offers greater insight into a company's financial performance. For instance, during the PIGS countries: Portugal, Ireland, Greece, and Spain, governmental debt crises, an investor may consider a firm's reliance on these markets. If the segment contains an aggregate of European countries, then revenues from Germany or Great Britain could offset the losses from these other countries. Geographic operation provides useful information for investors and the more specific the better.

Prior studies examine the effects of SFAS 131 in the immediate years following the enactment of the new standard. For instance, Herrmann and Thomas (2000) find the number of segments identifying as individual nations increases from 1997 to 1998. Douppnik and Seese (2001) find firms report more material and detailed segments in the year companies implement SFAS 131. The previous research includes only short sample periods and do not include periods directly before and after the initial implementation. Other studies find these disclosures are influential to stakeholders. Hope et al. (2009b) study stock trading volumes following the companies' disclosures and determine investors use these disclosures to price shares. These previous studies find the improvement in reporting during the initial year of implementation. However, the authors' sample includes only a short sample period and hence the standard remains untested in the decade following implementation. While expanding the data set to a larger time period of annual reports, this paper examines the long term effects that SFAS 131 has on large domestic firms who report geographic segments in annual reports.



## Chapter 2: Literature Review

### 2.1 United States Standards and Regulations

#### 2.1.1 SFAS 14

In 1976, The Financial Accounting Standards Board (FASB) addresses segmented reporting through Statement of Financial Accounting Standards (SFAS) 14. SFAS 14 requires public companies to disclose revenues, expenses, profitability, and assets for three different types of segments: products or services, geographic areas, and major customers. Companies must disclose all product or service areas representing more than 10% of total revenues. This 10% threshold applies to geographical segments and major customers. Also, the parent company should report foreign operations with consolidated subsidiaries. If a parent company transfers a substantial amount of product to a controlled subsidiary, for example Japan, then the transaction constitutes as an export and qualifies as a reportable segment. The firm must also report foreign sales made from the domestic operations to outside countries if the amount is above 10% of total sales or the foreign assets are greater than 10% of total assets on the balance sheet.

Geographical segments must meet certain criteria. The segment must be a “revenue-producing operation” located in a country other than the company’s domestic country (FASB, 1976). Certain departments support the corporation such as human resources and executive management and do not generate sales or revenue. Therefore, these divisions are not included in this criterion. Revenues should include transfers between different segments within the same company. The items requiring disclosure are revenues, expenses, profitability, and assets. The FASB recommends these items be organized in the manner of a simple income statement for side-by-side comparison.

When reporting the foreign operations, companies can group this information in country region groups. Under SFAS 14, many companies use general continent groups like Europe, South America, etc. in their financial statements.

### *2.1.2 SFAS 131*

In 1997, the FASB releases SFAS 131 to update segment disclosure reporting. SFAS 131 retains the 10% threshold for operating segments requiring reporting, but this level is not specifically applied to the industry or geographical figures. The operating segment mirrors the company's operations, which provides stakeholders a more realistic view of the company. The operating segment must generate revenue, and have a chief operating decision maker (CODM) who reviews its financial data. Because large corporations have many different divisions of operations, the FASB provides further direction for companies. A firm may have a manager of a product line or service, which is sold in many different countries, and a manager of a region. In these instances, the operating segment is defined in terms of the product line. Because product line or service segments are given priority and are more common form of organization, geographical segments normally fall into enterprise-wide disclosures.

Enterprise-wide disclosures require a new qualification for reporting, the managerial approach. The managerial approach intends to reduce the burden of collecting additional information that corporations may not consider material (FASB, 1997). Companies must report substantial geographical segments actively reviewed by a CODM. Also, the geographical segments should identify the individual country of operation. This requirement differs from SFAS 14, which allows for identification of

geographical regions. Although certain countries may not qualify as reportable, a company may offer aggregate grouping of countries if management chooses. With the changes enacted by SFAS 131, companies' operating segments change to a method designed to help both the firm and stakeholders. Table 1 in the appendix provides a side-by-side comparison of the two standards. SFAS does not require companies to collect irrelevant information that is not reviewed by management. Stakeholders can view the company's reports in the manner representative of the company's operation.

### *2.1.3 Sarbanes-Oxley Act of 2002*

In the years following the release of SFAS 131, many large scandals regarding financial reporting surface and create skeptical investors. Enron, WorldCom, HealthSouth are just a few examples of improper reporting and fraud that gained the attention of regulators in Washington D.C. The U.S. Congress passes the Sarbanes-Oxley Act of 2002 (SOX) to regain confidence and provide more insight into the assurance profession. New regulations and oversight include: signatures on quarterly reports by both the CEO and CFO of the corporation, an independent board of directors, standards for audit and compensation committees, and the disallowance of the performance of certain additional services by the audit firm (Hart, 2009). The rules address the need for companies to minimize the risk of future fraudulent actions. Coates (2007) states that the initial goals of Sarbanes-Oxley are to create "more reliable financial reporting, greater transparency, and accountability." Companies become responsible to stakeholders and must provide financial information properly. This includes absence of material misstatements and asset misallocation. In addition to new regulations over

individual companies, SOX creates the Public Company Accounting Oversight Board (PCAOB). The PCAOB acts as an independent body to oversee the assurance profession. This body is the first to monitor the auditing profession from the outside. Previously, accounting firms regulated one another, which allowed more risks for conflicts of interest. The new legislation changes many other aspects of the accounting profession and financial reporting.

Lobo and Zhou (2006) provide insight into public companies providing more conservative earnings during the years following Sarbanes-Oxley by studying over 1,600 U.S. firms. Their study finds that companies did provide a more conservative portrayal of earnings in companies' financial reports during the years following Sarbanes-Oxley; and the effect may be attributed to the certification by executives, among other potential factors (Lobo and Zhou, 2006). This study demonstrates the additional care and attention that companies now exert to provide stakeholders with proper information. Because an integral part of a financial report is the operating segments and foreign operations, the increased diligence due to Sarbanes-Oxley may connect to additional foreign earnings and other entity-wide disclosures. The significance of certain country's revenue may reach a company's threshold if the total net income is more conservative or lower.

## **2.2 International Standards**

### *2.2.1 IAS 14 and 14R*

Segment reporting faces changes internationally around the same time frame as in the United States. In 1982, the International Accounting Standards Board (IASB) releases International Accounting Standard (IAS) 14, which serves as the original standard on operating segments. IAS 14 equates to SFAS 14 of the United States but has

one major difference. The standard requires international corporations to provide information on both industry and geographical information where SFAS 14 only requires one (Prather-Kinsey and Meek, 2004).

In 1997, IAS 14 revised (IAS 14R) updates the international standards in response to the FASB updating its standards to SFAS 131. Prather-Kinsey and Meek (2004) describe the changes to the original version. The new revision changes the requirement for two different segments and allows for a primary and secondary segment classification. Companies choose product line or geographical segmentation as the primary method to report. The primary segment requires greater information to report than the secondary segment. In addition to the classification of segments, IAS 14R includes a modified management approach for choosing material segmentation. Nichols, Street, and Tarca (2013) describe this method as a “risk reward qualification.” The same idea that segment information gathered and used internally for management purposes should be reported if the data is cost effective to collect. The reporting requirements that are similar to the SFAS 14 and 131 are revenues, expenses, and assets. In addition, IAS 14R requires the reporting of financial results or profits and liabilities.

### 2.2.2 *IFRS 8*

Because International and United States accounting standards intend to convergence, the IASB releases their latest guidance in the area of operating segments reporting. International Financial Accounting Standard 8 (IFRS 8) differs slightly from SFAS 131. Both IFRS 8 and SFAS 131 use the same managerial approach and set the same thresholds for operating segments. However, international corporations must report

a more robust amount of information on these segments. IFRS 8 requires liabilities, interest revenue, and depreciation in addition to the items SFAS 131 notes (IFRS, 2006).

For enterprise disclosures, IFRS 8 is identical to SFAS 131. If decision-makers review the information and consider the amount substantial, the report should identify individual nations. International firms should disclose more detailed information if deemed material and used for internal purposes. Table 2 in the appendix demonstrates the relationship between the two standards. This similarity allows for a wider range of companies to observe the effects of the managerial approach on segment disclosures.

## **2.3 Previous Research on Domestic Firms**

### *2.3.1 SFAS 14 Compared to SFAS 131*

The adoption of SFAS 131 intends to provide more relevant and specific information on geographical operations of public companies in the United States. A few studies have examined the effect that SFAS 131 has on the amount of disclosures when compared to SFAS 14. Street, Nichols, and Gray (2009) research the relationship between operating segments and enterprise disclosures. The authors argue that one concern of SFAS 131 is that firms alter organizational structure to avoid reporting of segments. Operating segments display the way management views and organizes the company. Street, Nichols, and Gray (2009) mention that generally companies decide to organize through line of business or industry and not by geographical segments. Therefore, enterprise-wide disclosures normally provide companies the means to display this geographical information to investors. The authors test their hypothesis with a sample of 160 U.S. firms in the *Business Week Global 1000*. Of the 160 companies, 128 (78%) chose to reveal geographical data. The findings suggest that over two thirds of

corporations chose to provide foreign geographical information under enterprise-wide data classification.

Although U.S. corporations seem to increase their reporting geographical segments, SFAS 131 requires disclosure of specific countries. One study by Herrmann and Thomas (2000) study the new organization of segments under SFAS 131. Specifically, the study examines disclosures by companies of individual countries and areas. SFAS 131 requires companies to report material revenues by the specific nations, but firms may report by areas if the individual nations are not material. Herrmann and Thomas (2000) compare the 1997 and 1998 annual reports of the top 100 U.S. firms on the *Fortune 500* list. This study chooses these specific years because the FASB directs companies to apply SFAS 131 to previous years' reports. This requirement allows for a side-by-side comparison of the two standards. Overall, the number of national segmentation increases to 176 segments under SFAS 131 from 94 under SFAS 14. Also, the study finds that the frequency of aggregate geographical areas decrease. Since the frequency of areas decreases, this study suggests that more companies choose to provide a more detailed reporting of foreign earnings.

In addition to the frequency of individual country segments, other studies investigate into the detail of these disclosures. Doupnik and Seese (2001) study the number of disclosed areas within individual companies and assign a fineness score to understand if companies' geographical disclosures are more informative. The study's sample includes 1998 annual reports from 263 companies, derived from the 500 largest companies in the U.S. according to *Fortune* magazine in 1999. The research analyzes through a count of areas and measuring the degree of fineness through a fineness score.

A weight of 0 represents a segment as only international, and a weight of 3 identifies an individual nation. The study finds that the mean number of segments reported by companies only using individual country data increases by over one segment. The only category that did not result in an increase is companies in 1998 that only reported the total international sales. Overall, the number of companies that discloses single nation segments increase from 1997 to 1998. These findings imply that SFAS 131 provides more specific information in 1998 to stakeholders even though the FASB removes this specific threshold.

### *2.3.2 Materiality*

Because management determines the threshold for disclosing enterprise-wide segments, materiality is an important aspect of SFAS 131. Management may have different incentives and reasons for withholding geographical segment data from investors. For instance, a manager or company may claim that it is not cost effective to disclose a segment and still be in compliance with SFAS 131. Hope and Thomas (2008a) note that a company may not disclose segments due to low profit margins and increased foreign sales (Hope and Thomas, 2008a). This study investigates a sample of large US firms five years before and after SFAS 131 and correlates low profits and higher foreign sales with segment disclosure information. The study finds that the foreign sales growth is much higher for non-disclosure firms in the years after SFAS 131 adoption. Firms with greater growth into foreign markets should have more disclosure of their operations. However, the average growth rate in this time for companies without geographical data is 29.2%, compared to 13.9% for those disclosing the data (Hope and Thomas, 2008a). In



addition, the study finds that companies with higher foreign profit margins were more likely to disclose their segments in their reports. Managers are less likely to voluntarily display low profits to outside stakeholders. Hope and Thomas (2008a) continue to connect these two variables to a lack in reporting. A large factor may be senior management is withholding this information to shelter the failure of foreign operations. The larger sales numbers show an increase in operations overseas. Because the margin on the sales is relatively small, management perhaps may decide not to give this information directly.

Although companies may try to hide poor performance through the management approach, many companies set their own levels of significance. The basis for SFAS 131 is to report all material sales in a specific country. Under SFAS 14 a ten percent level dictated materiality; however, the firm now chooses the level of materiality. Stakeholders do not receive the direct communication from management explaining the determination of significance levels. By assigning the lowest national revenues that are reported by a company as the threshold for materiality, Douppnik and Seese (2001) compare geographical reporting under SFAS 14 and SFAS 131. The authors test a sample of domestic *Fortune 500* corporations for materiality levels through analyzing these lowest segments. The study defines three groups by the percentage of the lowest national segment's revenue to total revenues. The number of companies in lowest group, less than 5%, increases from 1997 (23) to 1998 (49) under SFAS 14 and SFAS 131 respectively. Also, the other two groups, 5-10% and greater than 10%, show increases in the number of companies. Although companies use their own discretion in determining material levels for reporting, companies set lower levels of significance than the 10%

precedent.

### *2.3.3 Effects on Market*

Investors incorporate financial disclosures when making decisions on whether or not to invest their money into a company. Important aspects to determine the success of a company are earnings and sales. Generally, more detailed information, for example providing sales by country as opposed to regions, results in the investor being able to better value a company. Hope et al. (2008b) analyze the relationship between earnings and stock performance using the foreign Earnings Response Coefficients (ERC), which the authors obtain through a regression between earnings and stock performance. This study also associates SFAS 131 to the mispricing of earnings. In a sample of US firm data from 1985 to 2004, a regression is applied between abnormal stock returns and foreign and domestic earnings data. The paper finds the market discounts foreign earnings during the SFAS 14 period relative to the foreign earnings reported under SFAS 131. This indicates the market places greater value on the information reported at the national level. The use of SFAS 131 causes less uncertainty in investors' ability to price companies using provided segment data.

Market analysis can also demonstrate if the information under SFAS 131 is more useful and informative. Behn et al. (2002) examine the predictability of overall income to foreign earnings reported through SFAS 14 and 131 using three different earnings forecast models. Each model predicts total consolidated income based on foreign sales numbers. The study applies the models to 174 US companies for the years of 1997 and 1998. The research subtracts the error figures from 1998 under SFAS 131 to those from

1997 under SFAS 14. A positive figure represents a lower pricing error using SFAS 131. The study finds that more specific the segment reporting better predicts overall income as indicated by a lower error figure under SFAS 131.

Also, the change in geographical segments and the inclusion of earnings data may affect the earnings response of a stock. Hope et al. (2009a) apply a difference in differences model to change in segments and earnings data by a regression between stock returns, which creates an ERC. The difference in the ERC determines the relationship between non-disclosers and disclosers of geographical segments. Given the assumption that more segments provide better information to investors, the findings agree that the ERC is positively correlated to the change in geographical segments disclosed.

Trading volume can also help understand the effect of disclosure data and SFAS 131. In order to set a price on a share of stock, the investor must gather data and create their opinion as to whether the current price is correct. When opposing parties disagree based on their information gathered, trading volume increases. Hope et al. (2009b) investigate the relationship between trading volume and geographical data in quarterly reports. The authors analyze the trading volume of stocks before and after SFAS 131 and group companies into two categories, non-disclosures and disclosures of geographical segments. Also, the study defines two different time periods that investors can obtain information, pre-announcement and event period. During the pre-announcement period, investors have plenty of time to gather specific data and judge their position on a certain company. The disclosure of geographical segments has no effect on this time period (Hope et al., 2009b). However, the few days surrounding a quarterly earnings announcement, defined as the event period, the enterprise-wide data is crucial for proper

pricing of stocks. The authors' findings mention that during the few days surrounding a report's release the market displays much more price uncertainty in companies who do not disclose geographical segments. During the event period, the investor must rely on the information a firm releases. The study finds that companies that did not disclose geographical segments showed a greater increase in trading volume. This disagreement causes a greater number of opinions of price among investors and increases trading volume. This study demonstrates the importance of geographic data disclosures in the pricing of stocks and firms.

## **2.4 Previous Research on International Firms**

### *2.4.1 European Nations Combined*

Since the convergence to the management approach to reporting operating segments, many questions arise regarding the effectiveness of IFRS 8 for foreign companies. Many studies investigate European nations for evidence of better reporting. Nichols, Street, and Cereola (2012) examine 335 European firms in 14 different indexes. The sample includes observations under both IAS 14R and IFRS 8. The findings state an increase in the average number of segments from 3.84 under SFAS 14R to 4.19 under IFRS 8, but the majority of the companies do not change their disclosures in transition to IFRS 8. The study finds a shift to specific country identification opposed to general regions, which provides stakeholders with better information. However, the disclosure of certain types of information decreases, for example, foreign country capital expenditure reporting falls for 34% of companies under IFRS 8.

In a comparable study, Leung and Verriest (2012) examine 836 companies across Europe who have over 50% of their sales in foreign nations. The average number of

segments increases; however, the items such as foreign segment profits display a large decrease under IFRS 8 from IAS 14R. This study mentions, “IFRS 8 does not uniformly lead to better geographical segment reporting” (Leung and Verriest, 2012). Although the number of segments increase on average, the specific details reported for each geographical segments do not perform in the manner IFRS 8 intends. When analyzing a large sample across Europe, the effects of IFRS 8 actually lead to a decrease in the richness of the information provided to stakeholders.

#### *2.4.2 Specific European Nations*

Because Europe consists of many countries and cultures, specific nations give additional examples of the effectiveness of IFRS 8. Kajuter and Neinhaus (2014) investigate the influence that IFRS 8 has on German companies. Germany is a unique country to test because German companies traditionally keep two sets of records, reporting and managerial (Kajuter and Neinhaus, 2014). The study observes 98 different firms’ reports from 2007 through 2010. Generally the changes from IAS 14R to IFRS 8 are minimal. The average number of segments only increase by .18, and 31.3% of the companies actually change their reporting.

Pisano and Landriani (2012) perform a similar study of segment disclosures in 124 Italian corporations. The mean number of segments only increases from 3.71 to 3.85. In addition to number of segments, the study applies the proprietary cost theory to determine how management decides on what information to include in reports. The proprietary cost theory involves the idea that companies may not choose to collect and disclose information because it may be too costly and could affect their competitive

advantage (Pisano and Landriani, 2012). By implementing two different industry concentration models to measure competition, the study finds firms in more competitive markets are more likely to report more segment data. In addition, more controlled industries disclose less information. The more competitive industries show a desire to set their operations apart from others, but firms do not feel the need to disclose information in industries with fewer competitors. This data is not cost effective to collect because these companies already control a large portion of the market.

Aleksanyan and Danbolt (2012) study 127 of the largest UK firms from 2002 to 2010. This study addresses whether IFRS 8 improves the level of geographical data in companies. The study finds British firms did increase not only the average amount of segments but also the number of single countries reported. One of the largest changes is the number of data points provided for geographical segment. Between IAS 14R and IFRS 8, the amounts of categories reported rose from 9.03 to 24.90 from 2008 and 2010. These findings parallel those studies using US firms under SFAS 131, but other European Union members demonstrate an indifferent result to the new standard.

#### *2.4.3 Australia and New Zealand*

Other nations around the world use IFRS 8 to disclose geographic segment data. Bradbury (2013) examines 36 companies trading in the New Zealand Exchange. The same trend as in Germany and Italy occur in New Zealand. The total segments increase; but the majority of companies, around 60%, continues to report the same amount. Additionally, Kang and Gray (2013) study the top 200 Australian firms from 2008 to 2010. The mean number of geographical segments slightly fell from 3.10 to 3.03, and

companies that chose geographical data as an entity-wide disclosure keep the same amount of geographic data (Kang and Gray, 2013). The new management approach actually provided no additional information to outsiders. The common theme among international companies is a slight minor change in behavior when transitioning to IFRS 8. Perhaps this shows a change in the mindset of companies since the early part of the millennium. The U.S. firms are the first to adopt this policy, and their international counterparts are able to assess the management approach before implementing it themselves. Thus, international corporations may not feel the need to disclose as much information because the increased effect in the U.S. may not be determined to actually be useful.

## **Chapter 3: Data and Methodology**

### **3.1 Sample**

The sample consists of the U.S. Fortune 500 companies listed as of January 2012. The study uses two sets of samples. The first sample includes all 500 companies and does not exclude any industry. Nichols, Street, and Tarca (2012) suggest financial and energy companies might provide different segment disclosure from non-financial and non-energy companies. Therefore, the second sample does not include companies in the financial and energy industries, i.e., two-digit NAICS codes of 21, 23, and 52. Prior studies do not include these industries because they are subject to aggregation, compliance with further regulations, possibly resulting in manipulate disclosures (Herrmann and Thomas, 2000). The second sample provides an easy comparison and trend analysis to the findings of prior studies.

For the first sample, of 500 firms, 451 have data available over the sample period. Because this study tests the amount of disclosure over time, 64 firms with fewer than five observations (data-years) for the period of 1998 to 2012 are removed from the sample. The final sample of the first set reduces to 387 companies. Similarly, after removing 72 firms in financial and energy industries, the final sample of the second set consists of 315 companies. The results of both sample sets (Sample Set I and II) are presented in this thesis.

### **3.2 Variable Measurements**

The geographic segment data is obtained from Compustat. The data covers from 1998 to 2012. The fineness score, which measures the level of disclosure, is calculated



two ways: non-scaled and scaled with the proportion of revenue. First, the non-scaled fineness score of firm  $j$  at year  $t$  is calculated as follow:

$$F_{j,t} = \frac{\sum_{i=1}^n weight_i}{n} \quad (1)$$

where

$weight_i$  = 0 for geographic areas described as “foreign” or “other”;  
 1 for geographic areas defined as multi-continent;  
 2 for geographic areas defined as continents; and  
 3 for geographic areas defined as countries.

Second, following Douppnik and Seese (2001), the scaled fineness score of firm  $j$  at year  $t$  is calculated as follows:

$$F_{j,t} = \sum_{i=1}^n \frac{AREAREV_{i,t}}{FORREV_{t,j}} \times weight_i \quad (2)$$

where

$AREAREV_{i,t}$  = Revenue from geographic area  $i$  for year  $t$ ;  
 $FORREV_t$  = Total foreign revenues for year  $t$ ;  
 $weight_i$  = 0 for geographic areas described as “foreign” or “other”;  
 1 for geographic areas defined as multi-continent;  
 2 for geographic areas defined as continents; and  
 3 for geographic areas defined as countries.

The higher score indicates that companies disclose detailed geographic segment information i.e., report individual nations. On the other hand, the lower score suggests that firms report only an aggregate area. The non-scaled fineness measurement treats each geographic segment equally while the scaled fineness measurement allows geographic segments with more foreign revenue to dominate. Because the results of the non-scaled fineness score are very similar to the results of the scaled fineness score, only the results of the non-scaled fineness score are presented in this thesis. Further, in one of

the hypothesis testing, dependent variables will include the proportion of foreign revenue to total revenue. The non-scaled fineness score provides a cleaner test and hence non-scaled fineness results are presented.

Other non-segment data such as total assets (ASSETS), market value of common equity (MKTVALUE), long-term debt (LTDEBT), and revenue (REVENUE) are also obtained from Compustat.

### **3.3 Descriptive Statistics of Variables**

Table 3 and Figure 1 show mean and median of the fineness score for the Sample Set I (i.e., all firms). The variables are averages for each firm over the sample period. The mean fineness for the sample is 1.38 and median is 1.50. These findings show that the average fineness for 387 companies over the sample period displays between the group of continents and continents. The average fineness is higher than the average fineness found by Douppnik and Seese (2001). Douppnik and Seese find a mean fineness of 1.13 in 1998. The difference in the fineness between this study and Douppnik and Seese might be due to the difference in sample periods. The mean fineness in Table 3 reflects the entire period of 1992 to 2012 and Douppnik and Seese (2001) use 1997 and 1998 for their data set.

Table 4 shows the fineness scores by years. The average fineness is 1.34 in 1998. It generally increases over the sample period and reaches the highest average of 1.47 in 2012. However, the median fineness is 1.50 for all years except in 1998. These findings suggest that the firms reporting at the lower end of the spectrum outweigh the opposing observations, which causes a lower mean than median. As mentioned previously, the fineness for Douppnik and Seese (2001) for firms in 1998 is 1.14. A difference in the

samples between the two studies may explain the difference in fineness scores. In this study, the sample is smaller in 1998 (248 firms) compared to 263 firms of Douppnik and Seese. The medians shift from 1.33 in 1998 to 1.50 the very next year and remain at 1.50 until 2012 with 2002 being the exception at 1.60. The constant median and increasing mean suggest that either firms on the upper half report better or a shift closer to the median by lower half firms. Whichever the cause, the detail of disclosures increase overall from 1998 to 2012.

For other variables, Table 3 shows an average percentage of foreign revenues at 40% with a median of 38%. The means for the remaining variables, assets (ASSETS), long-term debt (LTDEBT), revenue (REVENUE), and market value of equity (MKTVALUE), are: \$34,599; \$5,508; \$15,697; and \$23,768 million respectively. From year to year, in Table 4, the mean for total foreign revenues grows from \$3,764 million to \$10,299 million, and percentage of foreign revenues increases from 38% in 1998 to over 50% in 2012. The total foreign revenues and percentage of foreign revenues show the trend for U.S. companies expanding into international markets.

### **3.4 Methodology**

The FASB passes SFAS to provide stakeholders with more useful information through the managerial approach and classification requirements. The managerial approach gives a great deal of discretion to companies to set materiality levels. Since the adoption of SFAS 131, foreign revenues and percentage of foreign sales increase each year as seen in Table 4. With more activities overseas, SFAS 131 and the materiality become more applicable. The first hypothesis is as follow:

H1: Overtime, on average, the threshold of materiality for geographic

segments will increase.

As firms earn more revenues abroad, the foreign revenue figures become more important to stakeholders. Also, these foreign operations require more attention from management. With a greater amount of foreign revenue in relation to total revenue, it is likely that the revenue in any particular country will become more material and relevant. As the percentage of foreign sales increases, firms should report more individual country segments. The second hypothesis is as follow:

H2: As the percentage of international sales increases, the fineness score will increase.

To test the first hypothesis, this study applies the methods used by Douppnik and Seese (2001) to measure materiality of geographic segments. The smallest segment determines the level of materiality and establishes the percentage of total revenue as the internal threshold. For example, if the smallest geographic segment represents 7% of consolidated revenue, this study assumes that 7% is the lowest threshold. Management may internally establish a lower threshold. However, if no segments fall between the observed threshold and the internal threshold, this study cannot identify management's materiality level. The results for the first hypothesis are shown by year. The yearly results or trend show whether materiality levels improve or reduce.

The next method determines the quality of the segment disclosures and tests the second hypothesis. The study addresses the second hypothesis through the fineness score. The variable fineness from the data set represents the average fineness of

segments for each company each year and serves as the dependent variable in different regression models. To test the second hypothesis, the study uses the following regressions shown in Equation 3:

$$\begin{aligned}
 \text{FINENESS} = & \alpha + \beta_1 \text{PER\_FXREV} + \beta_2 \text{PER\_FXREVSQ} + \beta_3 \text{LTDEBT} \\
 & + \beta_4 \text{REVENUE} + \beta_5 \text{MKTVALUE} + \beta_6 \text{ASSETS} + \varepsilon
 \end{aligned}
 \tag{3}$$

where

<i>FINENESS</i>	=	Fineness score of firm <i>i</i> ;
<i>PER_FXREV</i>	=	Percentage of foreign revenue to total revenue;
<i>PER_FXREVSQ</i>	=	Percentage of foreign revenue squared;
<i>LTDEBT</i>	=	Long-term debt;
<i>REVENUE</i>	=	Total revenue;
<i>MKTVALUE</i>	=	Market value of common equity;
<i>ASSETS</i>	=	Book value of total assets.

The coefficients of  $\beta_1$  and  $\beta_2$  display the relationship between fineness and the percentage of foreign sales. This study expects that as the percentage of foreign sales to total revenue increases, the fineness score should increase. If the coefficients are positive, then the second hypothesis is true. The positive coefficients indicate that as percentage of foreign sales increases so does the fineness of disclosures. Alternatively, an insignificant or negative coefficient implies that companies with a large percentage of international sales do not report information in detail. Intuition suggests that the more foreign revenue a firm receives, the more material and important the information. Thus, the managerial approach calls for the disclosure of segments meeting this criteria. The squared percentage of foreign revenue (*PER\_FXREVSQ*) is included for the possibility that the relation between fineness and foreign revenue might not be linear.

Equation (3) is run across all firms and for each year. The yearly results show the

trend of the relationship between the disclosure levels and foreign revenue. For example, a larger coefficient in 2000 when compared to 2001 indicates, for a constant percentage of foreign sales, the average firm fineness is greater in 2000 than 2001. If materiality levels remain constant through the years, then the size of the coefficient should not vary. Furthermore, coefficient influences the second hypothesis through the coefficients' sign.

The other variables i.e., LTDEBT, REVENUE, MKTVALUE and ASSETS in Equation (3) are added as control variables for the model. MKTVALUE and ASSETS are expected to be highly correlated, and hence only one of the two variables is included in a model.

## Chapter 4: Results

### 4.1. Materiality: Smallest Segments Reported

To compare the level of materiality established by the sample firms, Table 5 displays the number and percentage of smallest segments reported by firms for each year. As mentioned in the methodology, the smallest segments disclosed by the sample companies are assigned into the three categories: less than or equal to 5% (the 5% category), between 5% and 10% (the 5-10% category), and greater than 10% (the 10% category). Recall that the old standard SFAS 14 requires firms to report segments that account for at least 10% of total revenue. Therefore, Table 5 reports the 10% category as well as the sum of the 5% category and the 5-10% category (in the third column). Because the number of firms varies from year to year, the analysis will focus on the percentage of firms reported for each category.

As shown in Table 5 and Figure 2, the percentage of firms reporting in the 10% category does not change significantly through the years. Similarly, the percentage of firms reporting in the 5% category does not show trend in either direction. The percentage of the 5% category remains constant at either 44% or 45% every year except in 1998 and 2011. In 1998 and 2011, the percentage of the 5% category was 36% and 39%, respectively. Comparing the 5% category with the 10% category, the percentage of the 5% category is larger than the percentage of the 10% category for all years except in 1998. Further, the percentage of firms reporting the smallest segments below 10% of total revenue remains above 60% for all years. Hypothesis 1 states that materiality levels increase over the time period, and these results reject this hypothesis. These results suggest that firms disclose foreign sales with the same distribution for the categories. In

addition, these results show that the majority of firms disclose segments that would not qualify under the older standards i.e., the 10% threshold. These findings are consistent with the results in Douppnik and Seese (2001) and suggest firm commitment to the managerial approach.

#### **4.2. Fineness of Segments: by Firms**

The next two sections provide an analysis of the results of the multivariate regression models testing the relationship between the foreign revenue and segment fineness. This section analyzes the regression results by firms. Table 6 shows correlation among variables. The correlation of the percent foreign revenue (PER\_FXREV) is highest (0.207) for the fineness. The remaining variables have little correlation to fineness, and some variables such as ASSETS and MKTVALUE even have negative relationships. The control variables all have strong relationships with each other; the correlations are above 0.4.

Table 7 displays the regression results over the entire time period. For all models, there is a positive relationship between the fineness and percentage of foreign revenue. In Model 1 without control variables, the coefficient of PER\_FXREV is 0.598, significant at less than 1% ( $p$ -value less than 0.01). In Model 3 and 4 when control variables are added, the coefficient of PER\_FXREV is still positive and significant. Hypothesis 2 states that the fineness score will increase as percentage of foreign sales increases. These findings suggest that there is relationship between the fineness and level of foreign revenue and support the second hypothesis. As the percentage of foreign revenues increases, the average fineness for the firms increases. In other words, firms disclose more geographic segment information when their foreign revenues increase.



The percentage of foreign revenue squared (PER\_FXREVSQ) is also positive and significant in Model 2; the coefficient is 0.285. However, the coefficient of PER\_FXREVSQ becomes negative but insignificant in Model 5 and 6 when PER\_FXREV and control variables are added. In Model 5 and 6, the coefficient of PER\_FXREV is still significantly positive. The coefficient of PER\_FXREV is 1.077 in Model 5 and 1.03 in Model 6. The positive coefficient of PER\_FXREV confirms the earlier conclusion that firms disclose more geographic segment information as their foreign revenues increase. The insignificant coefficient of PER\_FXREVSQ in Model 5 and 6 suggests that the relation between fineness and foreign revenue is linear.

For control variables, only MKTVALUE is statistically significant. It is significant at 10% level in both Model 3 and 5. The coefficient of MKTVALUE is negative, suggesting that larger firms disclose less geographic segment information after controlling for other factors such as foreign revenues. The coefficient of ASSETS is also negative but insignificant. The coefficients of LTDEBT and REVENUE are insignificant. These results suggest the importance of foreign sales when estimating the average fineness of a company's geographic segments.

Comparing the adjusted *r*-squared across models, the adjusted *r*-squared of Model 5 when both PER\_FXREV and PER\_FXREVSQ are used and control variables are added is highest (4.49%). The adjusted *r*-squared of Model 5 is slightly higher than the adjusted *r*-squared of Model 3 (4.1%) when only PER\_FXREV is used and with control variables, which is slightly higher than the adjusted *r*-squared of Model 1 (3.84%) when only PER\_FXREV is used and without control variables. These findings suggest both PER\_FXREVSQ and control variables can explain the fineness score although their

relationship with the fineness score is not statistically significant.

### 4.3. Fineness of Segments by Year

Table 8 displays the regression results of Model 5 for each year. Based on the results of all firms in Table 7, Model 5 provides the highest adjusted  $r$ -squared. Further, market value of common equity (MKTVALUE) and total assets (ASSETS) have similar correlation to “fineness”, one variable is utilized for the regression. For all years except in 1998 and 2012, the coefficient of foreign revenue (PER\_FXREV) is positive and significant. The coefficient generally increases from 0.849 in 1999 to the peak of 1.939 in 2005 and drops after that. The coefficient is 0.997 in 2011. The coefficient in 2012 is also positive (0.61) but not statistically significant. The coefficient in 1998 is negative (-0.17) but not significant. These results confirm the results of Table 7, suggesting the relation between fineness and foreign revenue.

The coefficient of foreign revenue squared (PER\_FXREVSQ) is insignificantly negative for all years except in 1998, 2005, 2006 and 2010. The coefficient is positive but insignificant in 1998. The coefficient is significantly negative for 2005, 2006 and 2010. These findings suggest that PER\_FXREVSQ still has impact on fineness score in certain years.

The adjusted  $r$ -squared of the model ranges from the lowest of 0.3% in 1998 and 2012 to the highest of 6.4% in 2005. Actually, the pattern of adjusted  $r$ -squared is similar to the pattern of the coefficient of PER\_FXREV. That is, the adjusted  $r$ -squared is very low in 1998 and 2012 when the coefficient of PER\_FXREV is not significant. The adjusted  $r$ -squared is higher for the remaining years when the coefficient of PER\_FXREV is significant. The adjusted  $r$ -squared increases from 3.5% in 1999 to the

highest of 6.4% in 2005 and drops after that. The adjusted  $r$ -squared is 2.9% in 2011. The similar pattern of adjusted  $r$ -squared to that of PER\_FXREV coefficient underscores the significance of the relation between fineness and foreign revenue.

### **4.3. Results of Sample Set II**

Table 9 through Table 14 and Figure 3 and 4 show the results of the second set sample (Sample Set II) i.e., excluding utility, financial and insurance firms. Overall, the results of the second set sample are consistent with the results of the first set sample (Sample Set I). In Table 9, the mean and median of the fineness are 1.4 and 1.5. As shown in Table 10 and Figure 3, the average fineness increases over the sample period while the median fineness is relatively constant after 2004. The average percentage of foreign revenue is 42% with the median of 40%, compared with 40% and 38% of the Sample Set I. Table 10 also shows the uptrend of foreign revenue in Sample Set II. The percentage of foreign revenue increases from 35% in 1998 to about 50% after 2010.

While the average assets and long-term debt of Sample Set II are almost half those of Sample Set I, the medians of Sample Set II are not much lower than the medians of Sample Set I. The average assets and long-term debt of Sample Set II are \$17,252 million and \$3,465 million, compared with \$34,599 million and \$5,508 million. The median assets and long-term debt of Sample Set II are \$7,385 million and \$1,315, compared with \$8,897 million and \$1,637 million of Sample Set I. The findings of larger averages but similar medians of assets and long-term debt suggest that Sample Set I consists of some large firms using high debt. These findings also suggest that non-financial and non-energy firms are similar in size and use similar debt level to financial and energy firms.

The materiality test results are also consistent. As shown in Table 11 and Figure 4, the percentage of firms reporting at or below the 10% threshold is greater than 50% every year throughout the sample period. This suggests SFAS 131 allowing managerial approach has a positive impact in geographic segment disclosure.

Finally, the regression tests show the same trend as the first sample set. In Table 13, the coefficient of foreign revenue (PER\_FXREV) is significantly positive in all models. In Table 14, the coefficient is also significantly positive for all years. The results of Sample Set II suggest that the exclusion of the financial, insurance and energy firms does not influence the outcome of the tests. Therefore, the results of prior studies would not have been affected by including these firms.

## Chapter 5: Summary and Conclusion

After the implementation of SFAS 131 in 1998, the previous research shows that U.S. companies respond positively to the new direction from the FASB. This study shows the progress after 1998. Many different events occur during the period between 1998 and 2012. The Sarbanes-Oxley Act was passed in 2002, which requires greater scrutiny in financial reporting, and the financial crisis of 2008 hurts many corporations and citizens worldwide. This study extends the prior studies to test whether materiality levels continue to report segments below a 10% threshold and whether increases in percentage of foreign revenue results in finer disclosures.

The results for materiality levels display a continuation of the companies reporting geographical segments below the 10 % threshold of SFAS 14. Since the implementation of the managerial approach for enterprise-wide segments, these companies continue to report segments that may not have been disclosed before SFAS 131. The companies in the sample disclose more detailed segment information to their shareholders and the public.

The regression results show that the variable percentage of foreign revenues is a significant factor to predict fineness. The varying values for the coefficients in the second regression analysis show that the degree of detail changes over the years. There are many reasons for the decrease in observed fineness from 2007 and 2008. Perhaps the credit crisis in 2008 has influenced the drop, or companies begin to feel this information is not important enough to report. The previous research shows an initial increase in the number of reported segments and more detailed disclosures. This study reinforces the previous findings and finds U.S. firms continue to disclose more specific and detailed

geographic segments.

## References

- Aleksanyan, M., and Danbolt, J. (2012). Segment Reporting in the UK. *Working Paper*.
- Behn, B. K., Nichols, N. B., and Street, D. L. (2002). The Predictive Ability of Geographic Segment Disclosures by U.S. Companies: SFAS No. 131 vs. SFAS No. 14. *Journal of International Accounting Research*, 131.
- Bradbury, M. (2013). Segment reporting. *Chartered Accountants Journal*, 92(7), 28-29.
- Coates, J. (2007). The Goals and Promise of the Sarbanes-Oxley Act. *Journal of Economic Perspectives*, 21(1), 91-116.
- Doupnik, T. S., and Seese, L. P. (2001). Geographic area disclosures under SFAS 131: materiality and fineness. *Journal of International Accounting, Auditing & Taxation*, 10(2), 117.
- Financial Accounting Standards Board (1976). Statement of Financial Accounting Standards No. 14 (SFAS 14), Financial Reporting for Segments of a Business Enterprise (Norwalk: FASB).
- Financial Accounting Standards Board (1997). Statement of Financial Accounting Standards No. 131 (SFAS 131), Disclosures about Segments of an Enterprise and Related Information (Norwalk: FASB).
- Hart, O. (2009). Regulation and Sarbanes-Oxley. *Journal of Accounting Research*, 47(2), 437-445.
- Herrmann, D. and Thomas, W. B. (2000). An Analysis of Segment Disclosures under SFAS No. 131 and SFAS No. 14. *Accounting Horizons*, 14(3), 287-302.
- Hope, O., and Thomas, W. B. (2008a). Managerial Empire Building and Firm Disclosure. *Journal of Accounting Research*, 46(3), 591-626.
- Hope, O., Kang, T., Thomas, W. B., and Vasvari, F. (2008b). Pricing and Mispricing Effects of SFAS 131. *Journal of Business Finance & Accounting*, 35(3/4), 281-306.
- Hope, O., Kang, T., Thomas, W. B., and Vasvari, F. (2009a). The effects of SFAS 131 geographic segment disclosures by US multinational companies on the valuation of foreign earnings. *Journal of International Business Studies*, 40(3), 421-443.
- Hope, O., Thomas, W. B., and Winterbotham, G. (2009b). Geographic earnings disclosure and trading volume. *Journal of Accounting & Public Policy*, 28(3), 167-188.

- IASB, International Financial Reporting Standard 8 (2006), Segment Reporting (London: IASB).
- Kajüter, P. and Nienhaus, M., (2014). The Impact of IFRS 8 Adoption on the Value Relevance of Segment Reports. *Working Paper*.
- Kang, H., and Gray, S. J. (2013). Segment Reporting Practices in Australia: Has IFRS 8 Made a Difference?. *Australian Accounting Review*, 23(3), 232- 243.
- Leung, E., and Verriest, A. (2012). The Impact of IFRS 8 on Geographical Segment Information. *Working Paper*.
- Lobo, G. J., and Zhou, J. (2006). Did Conservatism in Financial Reporting Increase after the Sarbanes-Oxley Act? Initial Evidence. *Accounting Horizons*, 20(1), 57-73.
- Nichols, N. B., Street, D. L., and Cereola, S. J. (2012). An analysis of the impact of adopting IFRS 8 on the segment disclosures of European blue chip companies. *Journal of International Accounting, Auditing & Taxation*, 21(2), 79-105.
- Nichols, N. B., Street, D. L., and Tarca, A. (2013). The Impact of Segment Reporting Under the IFRS 8 and SFAS 131 Management Approach: A Research Review. *Journal of International Financial Management & Accounting*, 24(3), 261-312.
- Pisano, S., and Landriani, L. (2012). The determinants of segment disclosure: an empirical analysis on Italian listed companies. *Financial Reporting*, 113-132.
- Prather-Kinsey, J., and Meek, G. K. (2004). The effect of revised IAS 14 on segment reporting by IAS companies. *European Accounting Review*, 13(2), 213-234.
- Street D.L, Nancy B. Nichols N.B., and Gray S. J. (2000). Segment Disclosures under SFAS No. 131: Has Business Segment Reporting Improved?. *Accounting Horizons*, 14(3), 259-285.



## Appendix A

Figure 1: Mean and Median Fineness of Sample Set I by Years

This figure displays mean and median of (non-scaled) FINENESS of the first set sample (Sample Set I; all firms) by year. The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. All variables are obtained from Compustat.

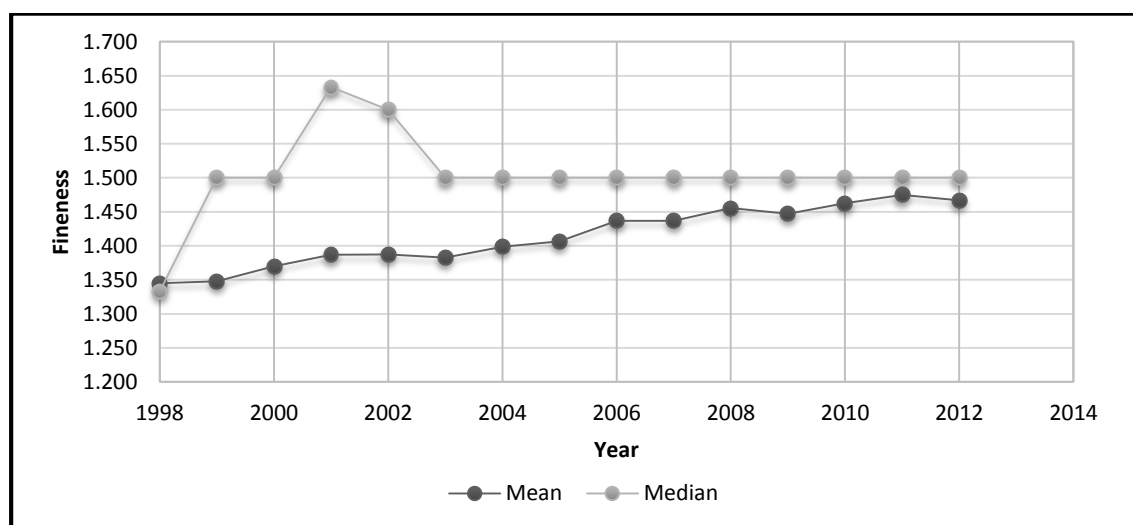


Figure 2: Percentage of Smallest Segment Categories of Sample Set I

The figure displays the materiality test of the first set sample (Sample Set I; all firms). The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. The materiality test shows the percentage of firms reporting their smallest foreign segment as the percentage of total revenues for each year. The category of  $\leq 5\%$  includes firms reporting the smallest segment revenue as a percentage of total revenue less or equal to five percent. The category of 5%-10% includes firms reporting the smallest segment revenue as a percentage of total revenue between 5% and 10%. The category of  $> 10\%$  includes firms reporting the smallest segment as a percentage of total revenue greater than 10%. All variables are obtained from Compustat.

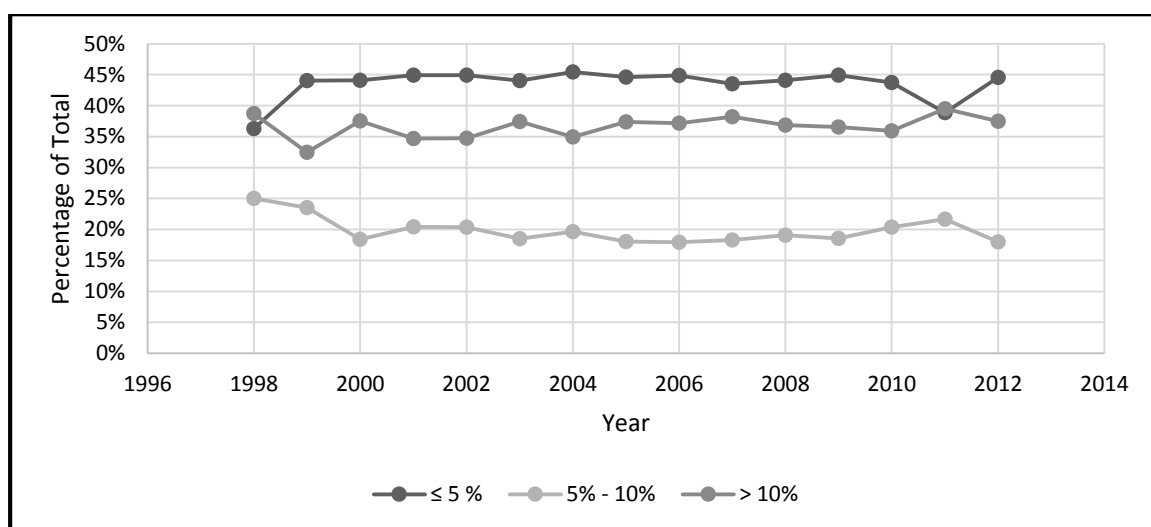


Figure 3: Mean and Median Fineness of Sample Set I by Years

This figure displays mean and median of (non-scaled) FINENESS of the second set sample (Sample Set II; excluding energy, financial and insurance firms) by year. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012 and two-digit NASICS codes not 21, 23 and 52. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. All variables are obtained from Compustat.

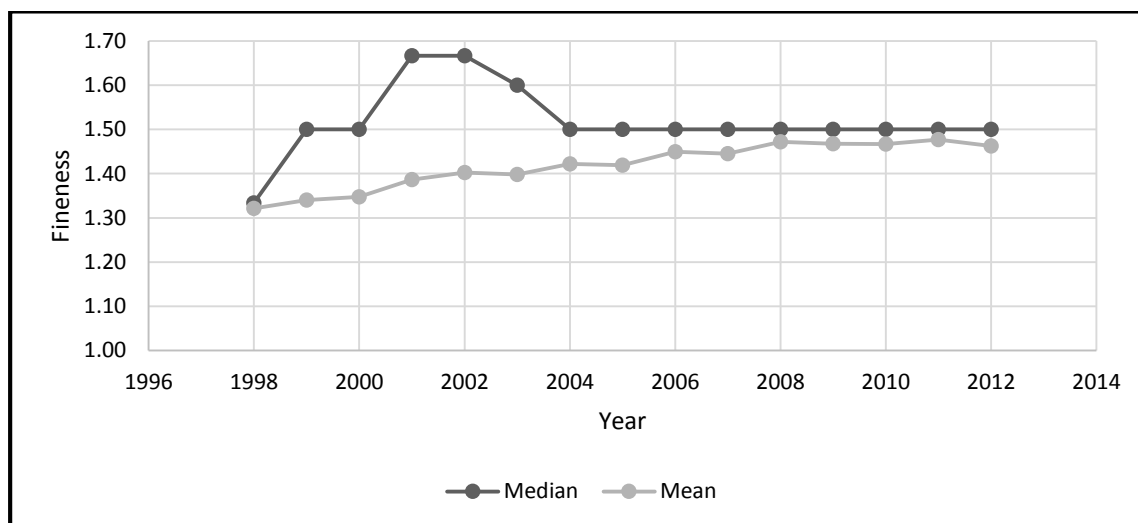


Figure 4: Percentage of Smallest Segment Categories of Sample Set II

The figure displays the materiality test of the first set sample (Sample Set II; excluding energy, financial and insurance firms). The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012 and two-digit NASICS codes not 21, 23 and 52. The materiality test shows the percentage of firms reporting their smallest foreign segment as the percentage of total revenues for each year. The category of  $\leq 5\%$  includes firms reporting the smallest segment revenue as a percentage of total revenue less or equal to five percent. The category of 5%-10% includes firms reporting the smallest segment revenue as a percentage of total revenue between 5% and 10%. The category of  $> 10\%$  includes firms reporting the smallest segment as a percentage of total revenue greater than 10%. All variables are obtained from Compustat.

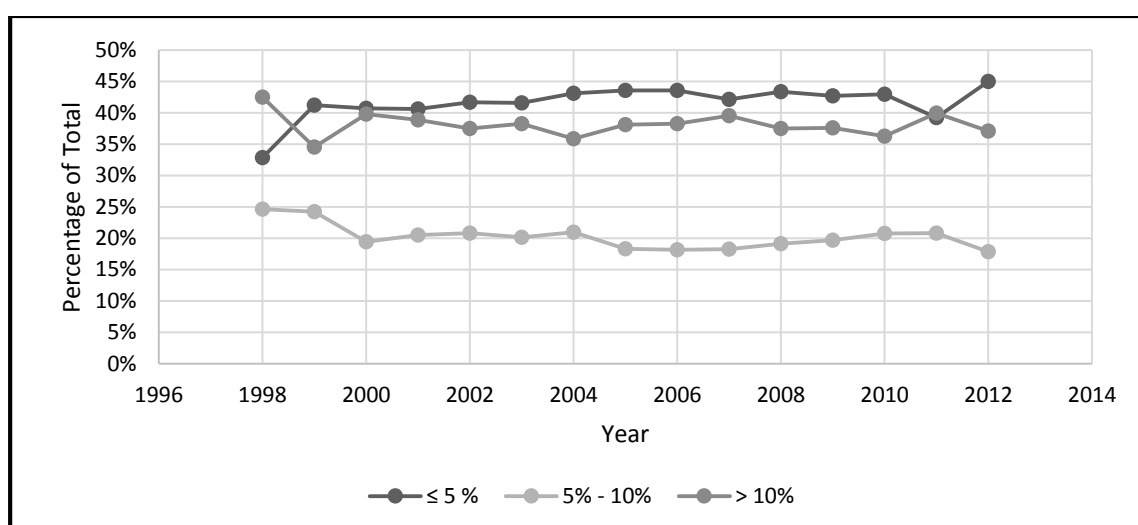


Table 1: Comparison of SFAS 14 and SFAS 131

This table provides a comparison of requirements of SFAS 14 and SFAS 131.

	<b>SFAS 14</b>	<b>SFAS 131</b>
10% of total revenue	All segments (LOB* and GEO**)	Only operating (LOB* or GEO**)
Entity-wide operations	None	Managerial Approach
Disclosures		
Profitability	Yes	Yes
Revenues	Yes	Yes
Expenses	Yes	Yes
Assets	Yes	Yes
Geographical Disclosure	Areas	Material Country Specific

\*LOB refers to Line of Business

\*\* GEO refers to Geographical Segments

Table 2: Comparison of IAS 14R, IFRS 8 and SFAS 131

This table provides a comparison of requirements of IAS 14R, IFRS 8 and SFAS 131.

	<b>IAS 14R</b>	<b>IFRS 8</b>	<b>SFAS 131</b>
10% of total revenue	Primary (LOB or GEO)	Operating (LOB or GEO)	Operating (LOB* or GEO**)
Entity-wide operations	Secondary	Managerial Approach	Managerial Approach
Disclosures			
Profitability	Yes	Yes	Yes
Revenues	Yes	Yes	Yes
Expenses	Yes	Yes	Yes
Assets	Yes	Yes	Yes
Liabilities	Yes	Yes***	No
Interest Revenue	No	Yes***	No
Depreciation	No	Yes***	No
Geographical Disclosure		Material Country Specific	Material Country Specific

\*LOB refers to Line of Business

\*\* GEO refers to Geographical Segments

\*\*\* If determined material by management and used for internal decision-making



Table 4: Descriptive Statistics of Sample Set I by Year

This table presents descriptive statistics of variables of the first set sample (Sample Set I; all firms) by years. The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continent; and the weight of 3 indicates an individual country segment. FXREV (\$ million) is the total foreign revenue. PER\_FXREV is foreign revenue divided by total revenue. ASSETS (\$ million) is book value of total assets. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. All variables are obtained from Compustat.

		FINENESS	FXREV	PER_FXREV	ASSETS	LTDEBT	REVENUE	MKTVALUE
1998	Mean	1.34	3764.46	0.34	18029.96	2953.73	10471.80	21611.69
N = 248	Median	1.33	929.45	0.29	5008.19	958.40	4711.65	6524.49
1999	Mean	1.35	4850.61	0.42	22995.62	3240.91	11404.64	27648.90
N = 268	Median	1.50	1219.64	0.32	5312.92	939.40	4614.50	7644.39
2000	Mean	1.37	3999.08	0.37	19907.00	3506.85	11771.84	27018.02
N = 261	Median	1.50	1084.80	0.33	6358.76	991.51	5292.00	7072.44
2002	Mean	1.39	4270.11	0.39	24865.54	4654.39	11704.55	17790.64
N = 285	Median	1.60	1240.40	0.33	6029.15	1088.88	4667.00	6147.67
2003	Mean	1.38	4808.10	0.41	26701.13	4710.61	12384.52	21764.36
N = 286	Median	1.50	1448.90	0.36	6380.72	1133.00	4933.43	7737.85



Table 4 continued:

2004	Mean	1.40	5778.99	0.41	30658.09	5214.47	14327.13	23300.83
N = 295	Median	1.50	1684.10	0.37	7760.00	992.40	5488.11	9677.52
2005	Mean	1.41	6465.08	0.42	36064.72	5686.95	15750.67	23573.79
N = 305	Median	1.50	1893.74	0.38	8006.40	999.22	6003.64	11034.37
2006	Mean	1.44	7216.12	0.43	39773.19	6191.64	16843.54	25515.56
N = 313	Median	1.50	2155.90	0.40	9163.60	1380.94	6463.80	11466.97
2007	Mean	1.44	7541.43	0.44	42595.35	7144.12	17721.36	28122.84
N = 317	Median	1.50	2454.00	0.41	10103.38	1535.00	7037.50	13697.55
2008	Mean	1.46	8005.03	0.47	37127.44	7039.44	17744.32	18546.31
N = 320	Median	1.50	2779.90	0.44	9638.00	1860.00	7127.05	7459.06
2009	Mean	1.45	7328.02	0.48	39400.45	7524.37	16076.53	22265.20
N = 323	Median	1.50	2640.76	0.45	9574.24	1910.45	6460.32	9534.55
2010	Mean	1.46	8001.97	0.47	37116.83	6464.92	17858.09	25487.55
N = 334	Median	1.50	2688.67	0.43	10435.76	1959.60	7201.44	11921.23
2011	Mean	1.47	9535.74	0.48	38758.70	6571.78	21486.10	25919.87
N = 337	Median	1.50	3126.90	0.45	11598.14	2020.54	7950.14	11823.00
2012	Mean	1.47	10299.59	0.51	43323.38	7397.78	20911.36	30722.53
N = 339	Median	1.50	3409.90	0.48	13061.50	2848.50	8655.50	13216.12

Table 5: Smallest Segments of Sample Set I by Year

The table presents the results of the materiality test of the first set sample (Sample Set I; all firms). The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. The materiality test shows the number of firms (in the first row) reporting their smallest foreign segment as the percentage of total revenues and the percentage of these firms (in the second row) for each year. The category of  $\leq 5\%$  includes firms reporting the smallest segment revenue as a percentage of total revenue less or equal to five percent. The category of 5% - 10% includes firms reporting the smallest segment revenue as a percentage of total revenue between 5% and 10%. The total  $\leq 10\%$  category is the sum of the first two categories. The category of  $> 10\%$  includes firms reporting the smallest segment as a percentage of total revenue greater than 10%. All variables are obtained from Compustat.

Table 5 – continued:

	$\leq 5\%$	5% - 10%	< 10%	> 10%	Total
1998	90 36%	62 25%	152 61%	96 39%	248
1999	118 44%	63 24%	181 68%	87 32%	268
2000	115 44%	48 18%	163 62%	98 38%	261
2001	123 45%	56 20%	179 65%	95 35%	274
2002	128 45%	58 20%	186 65%	99 35%	285
2003	126 44%	53 19%	179 63%	107 37%	286
2004	134 45%	58 20%	192 65%	103 35%	295
2005	136 45%	55 18%	191 63%	114 37%	305
2006	140 45%	56 18%	196 63%	116 37%	312
2007	138 44%	58 18%	196 62%	121 38%	317
2008	141 44%	61 19%	202 63%	118 37%	320
2009	145 45%	60 19%	205 63%	118 37%	323
2010	146 44%	68 20%	214 64%	120 36%	334
2011	131 39%	73 22%	204 61%	133 39%	337
2012	151 45%	61 18%	212 63%	127 37%	339

Table 6: Correlation Matrix of Sample Set I

This table presents the correlation between the variables of the first set sample (Sample Set I; all firms). The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. FXREV (\$ million) is the total foreign revenue. PER\_FXREV is foreign revenue divided by total revenue. ASSETS (\$ million) is book value of total assets. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. The variables are averages for each firm. All variables are obtained from Compustat.

	<b>FINENESS</b>	<b>FXREV</b>	<b>ASSETS</b>	<b>LTDEBT</b>	<b>REVENUE</b>	<b>MKTVALUE</b>	<b>PER_FXREV</b>
FINENESS	1.000						
FXREV	0.039	1.000					
ASSETS	-0.024	0.426	1.000				
LTDEBT	0.002	0.434	0.868	1.000			
REVENUE	-0.009	0.866	0.449	0.478	1.000		
MKTVALUE	-0.050	0.715	0.459	0.464	0.674	1.000	
PER_FXREV	0.207	0.272	0.017	0.012	-0.010	0.135	1.000

Table 7: Regression Results of Sample Set I

This table presents regression results of the first set sample (Sample Set I; all firms). The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. The regression model is:

$$FINENESS = \alpha + \beta_1 PER\_FXREV + \beta_2 PER\_FXREVSQ + \beta_3 LTDEBT + \beta_4 REVENUE + \beta_5 MKTVALUE + \beta_6 ASSETS + \varepsilon$$

(Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continent; and the weight of 3 indicates an individual country segment. PER\_FXREV is the ratio of foreign revenue to total revenue. PER\_FXREVSQ is the squared PER\_FXREV. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. ASSETS (\$ million) is book value of total assets. The regression is run across firms using average variables. All variables are obtained from Compustat. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* indicate significant levels of 1, 5 and 10%.

Table 7 – continued:

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
PER_FXREV	0.598 <sup>***</sup> (3.992)		0.655 <sup>***</sup> (4.298)	0.606 <sup>***</sup> (4.034)	1.077 <sup>***</sup> (3.566)	1.030 <sup>***</sup> (3.411)
PER_FXREVSQ		0.285 <sup>***</sup> (-2.615)			-0.350 (-1.617)	-0.352 (-1.618)
LTDEBT			1.212 x 10 <sup>-06</sup> (0.442)	6.005 x 10 <sup>-06</sup> (1.147)	1.228 x 10 <sup>-06</sup> (0.448)	5.825 x 10 <sup>-06</sup> (1.114)
REVENUE			2.032 x 10 <sup>-06</sup> (0.998)	-1.884 x 10 <sup>-07</sup> (-0.114)	1.991 x 10 <sup>-06</sup> (0.980)	-1.892 x 10 <sup>-07</sup> (-0.115)
MKTVALUE			-2.834 x 10 <sup>-06</sup> * (-1.966)		-2.781 x 10 <sup>-06</sup> * (-1.933)	
ASSETS				-1.143 x 10 <sup>-06</sup> (-1.325)		-1.102 x 10 <sup>-06</sup> (-1.279)
N	375	375	375	375	375	375
Adj R <sup>2</sup>	0.0384	0.0154	0.041	0.0353	0.0449	0.0395

Table 8: Regression Results of Sample Set I by Year

This table presents regression results of the first set sample (Sample Set I; all firms). The sample consists of 387 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012. The regression model is:

$$FINENESS = \alpha + \beta_1 PER\_FXREV + \beta_2 PER\_FXREVSQ + \beta_3 LTDEBT + \beta_4 REVENUE + \beta_5 MKTVALUE + \beta_6 ASSETS + \varepsilon$$

(Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. PER\_FXREV is the ratio of foreign revenue to total revenue. PER\_FXREVSQ is the squared PER\_FXREV. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. ASSETS (\$ million) is book value of total assets. The regression is run across firms for each year. All variables are obtained from Compustat. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* indicate significant levels of 1, 5 and 10%.

Year	PER_FXREV	PER_FXREVSQ	LTDEBT	REVENUE	MKTVALUE	Adj R <sup>2</sup>
1998 N = 238	-0.170 (-0.318)	0.395 (-0.822)	-1.837 x 10 <sup>-05</sup> (-1.513)	3.483 x 10 <sup>-06</sup> (0.712)	1.117 x 10 <sup>-06</sup> (0.711)	0.003
1999 N = 249	0.849** (2.093)	-0.171 (-0.667)	1.680 x 10 <sup>-06</sup> (0.165)	4.267 x 10 <sup>-07</sup> (0.105)	-9.117 x 10 <sup>-07</sup> (-0.799)	0.035
2000 N = 245	1.394** (2.028)	-0.492 (-0.771)	-8.995 x 10 <sup>-06</sup> (-0.991)	6.656 x 10 <sup>-06</sup> (1.628)	-1.060 x 10 <sup>-06</sup> (-0.980)	0.057
2001 N = 261	1.328** (2.07)	-0.484 (-0.835)	-3.917 x 10 <sup>-08</sup> (-0.005)	1.794 x 10 <sup>-06</sup> (0.406)	-1.368 x 10 <sup>-06</sup> (-0.986)	0.049
2002 N = 269	1.671** (2.473)	-0.866 (-1.374)	-2.094 x 10 <sup>-07</sup> (-0.035)	1.945 x 10 <sup>-06</sup> (0.427)	-2.191 x 10 <sup>-06</sup> (-1.158)	0.049

Table 8 – continued:

2003 N = 261	1.680 ** (2.479)	-0.824 (-1.318)	$1.118 \times 10^{-06}$ (0.247)	$2.855 \times 10^{-06}$ (0.739)	$-2.021 \times 10^{-06}$ (-1.168)	0.056
2004 N = 273	1.656 ** (2.596)	-0.867 (-1.470)	$1.818 \times 10^{-06}$ (0.502)	$3.925 \times 10^{-06}$ (1.309)	$-3.557 \times 10^{-06}$ ** (-2.247)	0.060
2005 N = 285	1.939 *** (3.049)	-1.107 ** (-1.864)	$1.208 \times 10^{-06}$ (0.366)	$3.808 \times 10^{-06}$ (1.486)	$-3.190 \times 10^{-06}$ ** (-1.718)	0.064
2006 N = 286	1.725 *** (2.661)	-1.030 ** (-1.700)	$1.265 \times 10^{-06}$ (0.348)	$4.170 \times 10^{-06}$ ** (1.705)	$-3.378 \times 10^{-06}$ ** (-1.939)	0.044
2007 N = 290	1.707 *** (2.706)	-0.931 (-1.628)	$-4.929 \times 10^{-07}$ (-0.164)	$4.128 \times 10^{-06}$ ** (1.699)	$-2.313 \times 10^{-06}$ (-1.452)	0.046
2008 N = 293	1.079 *** (3.087)	-0.347 (-1.475)	$-1.267 \times 10^{-06}$ (-0.454)	$4.324 \times 10^{-06}$ ** (1.994)	$-3.513 \times 10^{-06}$ ** (-1.759)	0.043
2009 n = 295	0.983 *** (2.763)	-0.321 (-1.340)	$-4.872 \times 10^{-07}$ (-0.192)	$2.346 \times 10^{-06}$ (0.816)	$-2.856 \times 10^{-06}$ (-1.363)	0.028
2010 N = 303	1.107 *** (3.171)	-0.392 * (-1.658)	$2.739 \times 10^{-07}$ (0.093)	$2.754 \times 10^{-06}$ (1.089)	$-2.716 \times 10^{-06}$ (-1.371)	0.034
2011 N = 312	0.997 *** (2.814)	-0.356 (-1.465)	$3.340 \times 10^{-09}$ (0.001)	$-5.857 \times 10^{-08}$ (-0.035)	$-1.628 \times 10^{-06}$ (-0.975)	0.029
2012 N = 275	0.610 (1.600)	-0.186 (-0.742)	$1.218 \times 10^{-06}$ (0.369)	$3.271 \times 10^{-07}$ (0.166)	$-1.412 \times 10^{-06}$ (-1.079)	0.003





Table 10: Descriptive Statistics of Sample Set II by Year

This table presents descriptive statistics of variables of the second set sample (Sample Set II; excluding energy, financial and insurance firms) by years. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012, and two-digit NASICS codes not 21, 23 and 52. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. FXREV (\$ million) is the total foreign revenue. PER\_FXREV is foreign revenue divided by total revenue. ASSETS (\$ million) is book value of total assets. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. All variables are obtained from Compustat.

		<b>FINENESS</b>	<b>FXREV</b>	<b>PER_FXREV</b>	<b>ASSETS</b>	<b>LTDEBT</b>	<b>REVENUE</b>	<b>MKTVALUE</b>
1998	Mean	1.32	3399.31	0.35	10521.86	2074.72	8921.41	21988.34
N = 207	Median	1.33	832.35	0.30	4065.46	715.86	3877.40	5181.88
1999	Mean	1.34	4269.72	0.44	11178.94	2076.81	9506.40	27960.85
N = 223	Median	1.50	1078.20	0.33	4098.36	724.76	3779.00	6872.73
2000	Mean	1.35	3617.35	0.39	13117.44	2510.12	10033.14	28111.51
N = 221	Median	1.50	989.50	0.34	4505.10	854.78	3925.50	6723.74
2001	Mean	1.39	3955.86	0.40	14076.36	2858.08	10145.22	22639.39
N = 229	Median	1.67	1176.67	0.34	4602.20	893.56	3956.99	6290.34
2002	Mean	1.40	3889.97	0.41	14399.52	3110.14	10085.93	17580.27
N = 240	Median	1.67	1226.20	0.35	4443.69	860.28	4090.66	5902.04

Table 10 – continued:

2003	Mean	1.40	4579.35	0.43	15972.57	3257.37	11362.71	22259.72
N = 243	Median	1.60	1461.80	0.39	5394.07	932.02	4527.94	7703.35
2004	Mean	1.42	5282.82	0.43	17076.22	3160.55	12760.17	24034.68
N = 248	Median	1.50	1692.13	0.39	5772.38	780.89	5101.92	9047.45
2005	Mean	1.42	5738.39	0.44	17062.62	3050.06	13757.82	23973.61
N = 257	Median	1.50	1802.60	0.40	6678.50	846.69	5305.80	10039.28
2006	Mean	1.45	6386.03	0.45	18710.19	3563.69	14744.00	25907.77
N = 264	Median	1.50	2127.95	0.41	7563.08	960.64	5782.10	11027.13
2007	Mean	1.44	6623.80	0.46	20116.10	3999.09	15562.36	28593.20
N = 268	Median	1.50	2430.00	0.43	8245.21	1266.40	6368.35	12671.88
2008	Mean	1.47	7360.29	0.48	18977.75	4174.94	16650.39	18790.17
N = 272	Median	1.50	2765.25	0.46	8006.50	1544.55	6714.30	7214.52
2009	Mean	1.47	6709.27	0.49	20729.21	4684.83	14884.13	22381.90
N = 274	Median	1.50	2630.06	0.46	8363.50	1587.62	5863.74	9094.04
2010	Mean	1.47	7564.10	0.48	21938.59	4552.06	16879.42	25825.40
N = 284	Median	1.50	2688.67	0.44	8725.25	1646.45	6418.68	11577.82

Table 10 – continued:

2011	Mean	1.48	9214.34	0.50	23856.27	4834.92	20815.50	26487.11
N = 288	Median	1.50	3111.45	0.46	9431.58	1751.00	7196.30	10929.63
2012	Mean	1.46	10078.21	0.52	26583.51	5598.68	19659.80	31545.57
N = 291	Median	1.50	3401.67	0.49	11764.81	2525.00	7726.69	12348.66

Table 11: Smallest Segments of Sample Set II by Year

The table presents the results of the materiality test of the second set sample (Sample Set II; excluding energy, financial and insurance firms) by years. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012, and two-digit NASICS codes not 21, 23 and 52. The materiality test shows the number of firms (in the first row) reporting their smallest foreign segment as the percentage of total revenues and the percentage of these firms (in the second row) for each year. The category of  $\leq 5\%$  includes firms reporting the smallest segment revenue as a percentage of total revenue less or equal to five percent. The category of 5% - 10% includes firms reporting the smallest segment revenue as a percentage of total revenue between 5% and 10%. The total  $\leq 10\%$  category is the sum of the first two categories. The category of  $> 10\%$  includes firms reporting the smallest segment as a percentage of total revenue greater than 10%. All variables are obtained from Compustat.

Table 11 – continued:

	≤ 5 %	5% - 10%	Total < 10%	> 10%	Total
1998	68 33%	51 25%	119 57%	88 43%	207
1999	92 41%	54 24%	146 65%	77 35%	223
2000	90 41%	43 19%	133 60%	88 40%	221
2001	93 41%	47 21%	140 61%	89 39%	229
2002	100 42%	50 21%	150 63%	90 38%	240
2003	101 42%	49 20%	150 62%	93 38%	243
2004	107 43%	52 21%	159 64%	89 36%	248
2005	112 44%	47 18%	159 62%	98 38%	257
2006	115 44%	48 18%	163 62%	101 38%	264
2007	113 42%	49 18%	162 60%	106 40%	268
2008	118 43%	52 19%	170 63%	102 38%	272
2009	117 43%	54 20%	171 62%	103 38%	274
2010	122 43%	59 21%	181 64%	103 36%	284
2011	113 39%	60 21%	173 60%	115 40%	288
2012	131 45%	52 18%	183 63%	108 37%	291

Table 12: Correlation Matrix of Sample Set II

This table presents the correlation between the variables of the first set sample (Sample Set II; excluding energy, financial and insurance firms) by years. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012, and two-digit NASICS codes not 21, 23 and 52. (Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. FXREV (\$ million) is the total foreign revenue. PER\_FXREV is foreign revenue divided by total revenue. ASSETS (\$ million) is book value of total assets. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. The variables are averages for each firm. All variables are obtained from Compustat.

	<b>FINENESS</b>	<b>FXREV</b>	<b>PER_FXREV</b>	<b>ASSETS</b>	<b>LTDEBT</b>	<b>REVENUE</b>	<b>MKTVALUE</b>
FINENESS	1.000						
FXREV	0.031	1.000					
PER_FXREV	0.206	0.258	1.000				
ASSETS	-0.025	0.619	0.014	1.000			
LTDEBT	-0.018	0.336	-0.012	0.922	1.000		
REVENUE	-0.023	0.851	-0.036	0.646	0.399	1.000	
MKTVALUE	-0.056	0.727	0.107	0.735	0.498	0.699	1.000

Table 13: Sample Set II Regression Model with all Companies Each Year

This table presents regression results of the first set sample (Sample Set II; excluding energy, financial and insurance firms) by years. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012, and two-digit NASICS codes not 21, 23 and 52. The regression model is:

$$FINENESS = \alpha + \beta_1 PER\_FXREV + \beta_2 PER\_FXREVSQ + \beta_3 LTDEBT + \beta_4 REVENUE + \beta_5 MKTVALUE + \beta_6 ASSETS + \varepsilon$$

(Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continent; and the weight of 3 indicates an individual country segment. PER\_FXREV is the ratio of foreign revenue to total revenue. PER\_FXREVSQ is the squared PER\_FXREV. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. ASSETS (\$ million) is book value of total assets. The regression is run across firms using average variables. All variables are obtained from Compustat. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* indicate significant levels of 1, 5 and 10%.



Table 13 – continued:

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
PER_FXREV	0.596 *** (3.667)		0.650 *** (3.917)	0.611 *** (3.706)	1.090 *** (3.295)	1.113 *** (3.286)
PER_FXREVSQ		0.271 ** (2.398)			-0.347 (-1.536)	-0.390 * (-1.694)
LTDEBT			1.771 x 10 <sup>-06</sup> (0.403)	8.399 x 10 <sup>-06</sup> (0.631)	1.771 x 10 <sup>-06</sup> (0.404)	1.223 x 10 <sup>-05</sup> (0.908)
REVENUE			2.109 x 10 <sup>-06</sup> (0.928)	1.252 X 10 <sup>-06</sup> (0.440)	2.149 x 10 <sup>-06</sup> (0.948)	1.986 x 10 <sup>-06</sup> (0.692)
MKTVALUE			-2.734 x 10 <sup>-06</sup> * (-1.705)		-2.722 x 10 <sup>-06</sup> * (-1.701)	
ASSETS				-3.421 x 10 <sup>-06</sup> (-0.724)		-4.845 x 10 <sup>-06</sup> (-1.013)
N	308	308	308	308	308	308
Adj R <sup>2</sup>	0.039	0.015	0.039	0.032	0.043	0.038

Table 14: Regression Results of Sample Set II by Year

This table presents regression results of the first set sample (Sample Set II; excluding energy, financial and insurance firms) by years. The sample consists of 315 Fortune 500 companies as of January 2012 with geographic segment data available for at least five years during the period of 1998 to 2012, and two-digit NASICS codes not 21, 23 and 52. The regression model is:

$$FINENESS = \alpha + \beta_1 PER\_FXREV + \beta_2 PER\_FXREVSQ + \beta_3 LTDEBT + \beta_4 REVENUE + \beta_5 MKTVALUE + \beta_6 ASSETS + \varepsilon$$

(Non-scaled) FINENESS is measured by the average of segment weight of each firm. A segment weight of 0 indicates an aggregated foreign segment; segment weight of 1 indicates multi-continent; segment weight of 2 indicates continents; and the weight of 3 indicates an individual country segment. PER\_FXREV is the ratio of foreign revenue to total revenue. PER\_FXREVSQ is the squared PER\_FXREV. LTDEBT (\$ million) is the book value of long-term debt. REVENUE (\$ million) is total foreign and domestic revenue. MKTVALUE (\$ million) is market value of common equity i.e., number of shares outstanding multiplied by closing stock price. ASSETS (\$ million) is book value of total assets. The regression is run across firms for each year. All variables are obtained from Compustat. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* indicate significant levels of 1, 5 and 10%.

Year	PER_FXREV	PER_FXREVSQ	LTDEBT	REVENUE	MKTVALUE	Adj R <sup>2</sup>
1998 N = 202	0.218 (0.368)	0.091 0.175	-2.449*10 <sup>-05</sup> (-1.537)	5.067 x 10 <sup>-06</sup> (0.857)	1.489 x 10 <sup>-06</sup> (0.761)	0.006
1999 N = 211	1.104 ** (2.519)	-0.293 -1.097	-9.226 x 10 <sup>-07</sup> (-0.063)	-3.146 x 10 <sup>-07</sup> (-0.071)	-2.940 x 10 <sup>-07</sup> (-0.220)	0.050
2000 N = 215	1.669 ** (2.233)	-0.680 -1.001	-1.378 x 10 <sup>-05</sup> (-1.198)	7.841 x 10 <sup>-06</sup> * (1.728)	-8.733 x 10 <sup>-07</sup> (-0.717)	0.071
2001 N = 225	1.488 ** (2.116)	-0.582 -0.940	-3.382 x 10 <sup>-06</sup> (-0.312)	2.494 x 10 <sup>-06</sup> (0.515)	-1.135 x 10 <sup>-06</sup> (-0.693)	0.057
2002 N = 235	1.935 *** (2.646)	-1.067 -1.594	-2.893 x 10 <sup>-06</sup> (-0.395)	4.335 x 10 <sup>-06</sup> (0.853)	-2.395 x 10 <sup>-06</sup> (-1.072)	0.058
2003 N = 233	2.025 *** (2.807)	-1.082 * -1.659	-3.113 x 10 <sup>-06</sup> (-0.525)	4.373 x 10 <sup>-06</sup> (1.077)	-1.727 x 10 <sup>-06</sup> (-0.903)	0.069

Table 14 – continued:

2004 N = 241	1.854 *** (2.669)	-0.994 -1.578	$5.132 \times 10^{-07}$ (0.105)	$5.574 \times 10^{-06}$ (1.602)	$-3.733 \times 10^{-06}$ * (-1.889)	0.063
2005 N = 250	2.048 *** (2.915)	-1.169 * -1.819	$7.688 \times 10^{-08}$ (0.015)	$4.100 \times 10^{-06}$ (1.288)	$-2.651 \times 10^{-06}$ (-1.034)	0.062
2006 N = 254	1.911 *** (2.682)	-1.143 * -1.744	$-1.151 \times 10^{-07}$ (-0.028)	$4.600 \times 10^{-06}$ (1.400)	$-3.038 \times 10^{-06}$ (-1.349)	0.045
2007 N = 260	1.910 *** (2.776)	-1.031 -1.695	$-1.447 \times 10^{-06}$ (-0.457)	$4.586 \times 10^{-06}$ (1.488)	$-1.950 \times 10^{-06}$ (-1.015)	0.053
2008 N = 264	1.159 *** (3.158)	-0.365 -1.523	$-1.977 \times 10^{-06}$ (-0.690)	$4.737 \times 10^{-06}$ * (1.939)	$-3.182 \times 10^{-06}$ (-1.461)	0.048
2009 N = 266	1.018 *** (2.720)	-0.329 -1.345	$-1.146 \times 10^{-06}$ (-0.442)	$2.033 \times 10^{-06}$ (0.627)	$-1.999 \times 10^{-06}$ (-0.890)	0.028
2010 N = 272	1.151 *** (3.138)	-0.404 * -1.674	$-5.244 \times 10^{-08}$ (-0.018)	$2.172 \times 10^{-06}$ (0.776)	$-2.308 \times 10^{-06}$ (-1.115)	0.035
2011 N = 249	1.006 *** (2.713)	-0.338 (-1.356)	$-8.389 \times 10^{-07}$ (-0.248)	$6.851 \times 10^{-07}$ (0.379)	$-1.989 \times 10^{-06}$ (-1.136)	0.030
2012 N = 249	0.639 (1.610)	-0.180 -0.707	$-4.343 \times 10^{-07}$ (-0.128)	$1.456 \times 10^{-06}$ (0.671)	$-1.786 \times 10^{-06}$ (-1.294)	0.005

## **Academic Vita**

### **Adam Ceck Frutiger**

#### **Education:**

Bachelor of Science Degree in Accounting, Penn State University, Spring 2015

Bachelor of Science Degree in Finance, Penn State University, Spring 2015  
Honors in Accounting

Thesis Title: Long Term Effects of Statement of Financial Accounting Standards  
131 (SFAS 131) on Geographic Disclosures of U.S. Firms

Thesis Supervisor: Susan Havranek, Ph. D.

Faculty Reader: Oranee Tawatnuntachai Ph. D.

#### **Experience:**

Assurance Internship with PricewaterhouseCoopers LLP. Summer 2014

Supervisor: Chris Wolfe

Honors Service Learning as Peer Tutor at Russell E. Horn Learning Center, Penn  
State Harrisburg

Supervisor: Janice Smith, Ph. D.

Volunteer at Children's Hospital, New Orleans, LA

Supervisor: Mrs. Mary Ann Joffrey

#### **Awards:**

Beta Gamma Sigma Chapter Extemporary Student Award, 2014

Salvatore Fazzolari Honors Business Award, 2013

Matthew Mallet School of Business Award

Dean's List

#### **Activities and Societies:**

Phi Kappa Phi

Beta Gamma Sigma

Alpha Sigma Lambda