Tax Avoidance and Geographic Earnings Disclosure

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Abstract

This study tests the relation between corporate tax avoidance and disclosure of geographic earnings for U.S. multinational companies. We find that after the adoption of Statement of Financial Accounting Standards No. 131 in 1998, firms opting to discontinue disclosure of geographic earnings in their financial reports experience a decrease in their worldwide effective tax rates through reduced foreign tax rates. These results are consistent with non-disclosure of geographic earnings making it easier (i.e., less transparent) for firms to shift income to lower-tax foreign operations without detection by financial statement users and tax authorities. However, the relation between tax avoidance and non-disclosure exists only until implementation of Schedule M-3 in the annual corporate tax filing beginning in 2004. Schedule M-3 requires a detailed reconciliation of book income to tax income. Part of that reconciliation includes reporting the profitability of each foreign entity that is part of the consolidated financial group but whose net income is excluded from consolidated taxable income. Thus, Schedule M-3 aims to make firms' tax avoidance activities associated with shifting profits to lower-tax foreign jurisdictions more apparent to the IRS, and our results confirm that it has this effect. This study contributes to our understanding of the interaction between financial reporting behavior and tax reporting behavior.

Key words: Tax Avoidance, Geographic Earnings Disclosure, SFAS 131, Schedule M-3

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1. Introduction

Multinational firms can avoid taxes through structured transactions among different jurisdictions (e.g., Rego 2003), such as reallocating taxable income from high-tax jurisdictions to low-tax ones (Collins et al. 1998). This type of income shifting significantly reduces tax revenues of governments in high-tax jurisdictions and potentially hinders domestic economic growth and other social benefits (e.g., GAO 2008; U.S. Senate 2006). Policy makers around the world, including the United States, European Union, and Canada, have either enacted or are considering regulations related to multinational firms' cross-jurisdictional income shifting and tax avoidance behavior.[1] However, relatively little is known about multinational corporate tax avoidance behavior (Hanlon and Heitzman 2010), though such knowledge provides a basis for making and enforcing related rules.[2] This study investigates how geographic earnings disclosure in firms' financial reports relates to multinational firms' tax avoidance behavior.

We predict that non-disclosure of geographic earnings relates positively to firms' tax avoidance behavior. Tax avoidance activities (even if legal) are generally not viewed positively by tax authorities, policy makers, and society in general. Disclosing abnormally high geographic earnings in low-tax jurisdictions potentially increases the likelihood of an IRS audit (Sullivan 2004; Christian and Schultz 2005), imposes reputational damage on the firm (e.g., Chen et al. 2010; Rego and Wilson 2012), attracts criticism from policy makers (e.g., Houlder 2010; World Bank 2010), angers citizen groups (e.g., Publish What You Pay 2010; Tax Justice Network 2003;

[1] Some examples are the tax holidays provided by American Jobs Creation Act of 2004 (AJCA) and the foundation of a profit consolidation system for multinational firms in the European Union.

[2] We use the term "tax avoidance" in this paper as it is the most widely used term in recent research. Alternative terms with varying definitions could be "tax management" or "tax planning" or "tax minimization." To date, the definition of tax avoidance is still an unsettled issue. In this study, the implied means of tax avoidance is firms' (legal or illegal) shifting of income from higher-tax (domestic or foreign) segments to lower-tax foreign segments.

Shaheen 2011), and could also generate scrutiny from foreign tax authorities (e.g., Drucker 2010). While U.S. tax authorities may have access to additional disclosures related to firms' foreign operations (e.g., Form 5471), these tax disclosures may not fully reveal firms' tax avoidance behavior, and perhaps more importantly, they are not available to other financial statement users or foreign tax authorities. In fact, it is quite possible that IRS audits are initiated by discoveries and complaints by financial statement users.[3] To the extent managers believe that non-disclosure of geographic earnings reduces the firm's probability of being audited by domestic tax authorities, prevents additional sanctions or penalties by foreign tax authorities, or deflects public criticism from citizen groups, policy makers, and consumers, they will be more likely to engage in tax avoidance activities.[4]

Two recent U.S. regulations provide natural experiments for testing our prediction. First, we examine U.S. firms' decisions of whether to disclose geographic earnings in their financial reports following adoption of Statement of Financial Accounting Standards No. 131 (SFAS 131). SFAS 131 regulates multinational companies' geographic segment reporting. Prior to SFAS 131, all multinational firms were required to disclose sales, total assets, and earnings for each geographic segment. After implementation of SFAS 131, disclosure of geographic sales, identifiable long-lived assets, and earnings is still required if the firm defines primary operating segments by geographic area. However, for most firms that define primary segments by any

[3] As one example, consider the IRS' willingness to garner direction from the general public through its Whistleblower program, formally enacted by the Tax Relief and Health Care Act of 2006. Monetary incentives are provided to those who reveal tax underpayments. In addition, the IRS is certainly aware of high-profile business articles which criticize specific companies' tax practices, as well as lists generated by groups such as the Citizens for Tax Justice and Institute of Taxation and Economic Policy that identify "corporate tax dodgers" (http://www.ctj.org/corporatetaxdodgers/CorporateTaxDodgersReport.pdf). These parties do not have direct access to tax reports so they must rely on financial disclosures in firms' published financial statements to assess firms' tax avoidance activities.

[4] Studies have shown that in some instances the firm's own shareholders may view tax avoidance activities negatively (e.g., Desai and Dharmapala 2004, 2006; Scholes, Wolfson, Erickson, Maydew, and Shevlin 2005; Desai, Dyck, and Zingales 2007; Hanlon and Slemrod 2009; Kim, Li, and Zhang 2011). This would provide managers an additional incentive for not disclosing geographic earnings in public financial reports, although the relation between tax avoidance and shareholder value is debated in the literature (e.g., Blaylock 2011).

other means (e.g., industry), only disclosure of geographic sales and identifiable long-lived assets is required; disclosure of geographic earnings is voluntary. Given that the vast majority of firms report operating segments by industry classification, disclosure of geographic earnings is voluntary for most firms, and most firms choose to no longer disclose (Herrmann and Thomas 2000). We expect that managers perceive reduced transparency associated with non-disclosure of geographic segment earnings as a means to engage in greater tax avoidance behavior.

The other natural experiment is implementation of Schedule M-3 in 2004 in the annual corporate tax report. Aimed at curtailing tax avoidance behavior, Schedule M-3 requires significant additional tax reporting requirements, including information related to the profitability of foreign entities that are included in financial net income but excluded from taxable net income. Donohoe and McGill (2011, 36) describe Schedule M-3 as "one of the most important new sources of information for the U.S. Treasury and IRS in the last 40 years." The information provided in the Schedule M-3 is filed with the firm's corporate tax return and plays an important role in determining which firms will be audited (Boynton, DeFilippes, and Legel 2008). Thus, beginning in 2004, firms' ability to hide profits in low-tax geographic regions should be substantially reduced by the additional reporting requirements of Schedule M-3. Accordingly, we expect that the relation between tax avoidance and non-disclosure of geographic earnings in the financial report will exist only prior to implementation of Schedule M-3. See Appendix I for an illustration of the three reporting regimes examined in this study.

Using a sample of 13,831 firm-year observations for the 16 years surrounding the adoption of SFAS 131 and Schedule M-3 (1993-2008), we compare effective tax rates in the pre-SFAS 131 period (January 1993 to November 1998), post-SFAS 131 period (December 1998 to November 2004), and post-M-3 period (December 2004 to December 2008) to test our

predictions.[5] We find that firms no longer disclosing geographic earnings in the post-SFAS 131 period have effective tax rates (cash effective tax rates) that are 4.1 (5.2) percentage points lower than do firms that continue to disclose geographic earnings, controlling for many firm-level factors and fixed effects for year and industry. However, prior to implementation of SFAS 131 (when all firms were required to disclose geographic earnings in financial reports), eventual non-disclosers' effective tax rates were not significantly different from those that will continue to disclose geographic earnings. Overall, the results are consistent with managers perceiving non-disclosure of geographic earnings as making their firms' tax avoidance behavior less transparent.

We further find that, after implementation of Schedule M-3 (when all firms were required to detail the profitability of foreign entities not included in the consolidated tax group), non-disclosers' effective tax rates were not significantly different from those of disclosers. This finding is consistent with increases in tax reporting requirements mitigating deficiencies in financial reporting (i.e., non-disclosure of geographic earnings in the financial report). These conclusions are robust to controlling for a number of firm characteristics, employing matched-sample designs, using a constant sample of firms between the different reporting regimes, validating the impact of non-disclosure using predicted values of effective tax rates, assessing long-term effective tax rates as alternative measures of tax avoidance, and controlling for differences in foreign and domestic pretax profit margins. We also find that the relation between non-disclosure of geographic earnings and tax avoidance is less pronounced for firms with a higher probability of an IRS audit.

[5] To be clear, SFAS 131 remains in effect so the post-SFAS 131 period technically includes any period after December 1998 to the present. However, for simplicity in labeling reporting regimes, we refer to the post-SFAS 131 period as beginning in December 1998 and ending in November 2004. The post-M-3 period begins in December 2004 and extends to the end of our sample period.

We provide further supportive evidence by using foreign and domestic effective tax rates as a *within-firm control*. To the extent that a firm operates in multiple foreign jurisdictions, shifting income either (1) from domestic operations to a lower-tax foreign segment or (2) from a higher-tax foreign jurisdiction to a lower-tax one has no effect on the domestic tax rate but lowers the foreign effective tax rate. Testing for relations between tax avoidance and domestic effective tax rates across reporting regimes allows for a within-firm control for changes in business operations which could naturally affect firms' effective tax rates. Thus, the ability to split the worldwide effective tax rate into its domestic and foreign components allows for more reliable conclusions regarding firms' tax avoidance behavior. Supporting these arguments, we find that non-disclosure of geographic earnings is *not* associated with differences in domestic effective tax rates but is associated with lower foreign effective tax rates. In the post-SFAS 131 period, non-disclosers' *foreign* effective tax rate is 4.0 percentage points lower than disclosers', but the difference in *domestic* effective tax rates is not significant. These findings further validate the effect of geographic earnings disclosure on corporate tax avoidance behavior.

This study makes several contributions. First, it responds to calls for research on the interaction between financial reporting behavior and tax reporting behavior by Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010). Our results suggest that firms take advantage of non-disclosure of geographic earnings in financial reports under SFAS 131 to avoid taxes. However, increases in tax reporting requirements under Schedule M-3 mitigate these financial reporting deficiencies.

Second, the literature includes a large number of studies in a variety of contexts to explain firms' disclosure quality (see Beyer, Cohen, Lys, and Walther 2010 for a comprehensive review). We add to this research. For example, studies show that disclosure quality increases

when firms seek external financing (Land and Lundholm 1993, 2000; Healy, Palepu, and Sweeney 1999), the CEO's wealth is tied more closely to stock-based compensation (Nagar, Nanda, and Wysocki 2003), and the firm operates in a less litigious environment (Baginski, Hassell, and Kimbrough 2002). Specifically related to segment reporting, disclosure quality varies inversely with proprietary costs (Bens, Berger, and Monahan 2011), agency problems (Berger and Hann 2007), and propensity to empire build (Hope and Thomas 2008). We show that firms' disclosure/non-disclosure can also be used as a tool by managers in their attempts to conceal their firms' tax avoidance behavior. In our study, we measure disclosure quality using firms' decision on whether to disclose geographic earnings in their financial reports.

Third, this research has potential implications for policy makers around the world. Our findings suggest that geographic earnings disclosure can potentially be used to regulate multinationals' tax reporting behavior, and the effect on multinationals' tax reporting behavior should be considered in future regulatory proposals related to geographic earnings disclosure by tax authorities. In the U.S., there is a debate over the benefits of requiring Schedule M-3 versus the costs associated with the extensive preparation effort (e.g., AICPA 2011). Our findings imply that Schedule M-3 reduces the impact of financial disclosure quality (i.e., non-disclosure of geographic earnings) on firms' income-shifting behavior. Tax authorities may want to carefully consider any future proposals to ease filing requirements of Schedule M-3.

The next section reviews the relevant literature and develops the hypotheses. Section 3 presents the research design and sample selection. Section 4 discusses the main empirical findings and corroborative findings. Section 5 shows additional findings. Finally, Section 6 concludes the paper.

2. Prior Literature and Hypotheses Development

2.1 Multinational Corporate Tax Avoidance and U.S. Tax Law

Tax avoidance is the downward management of taxes through tax planning activities (Hanlon and Heitzman 2010), and tax avoidance by multinational firms has been discussed extensively in the academic literature and business press (e.g., Collins and Shackelford 1999; Rego 2003). Multinational firms' tax avoidance most notably occurs by reallocating taxable income from high-tax to low-tax segments. This reallocation occurs through structuring transactions between segments, such as royalty payments, dividend repatriations, and intrafirm debt (Dyreng and Lindsey 2009; Dharmapala and Hines 2009), or through transfer pricing, which refers to strategically adjusting prices charged by one segment of the firm for products and services provided to another segment of the firm. In transactions between high-tax segments and low-tax segments, multinational firms gain tax benefits by reducing (increasing) prices of products or services provided by (to) the high-tax segments. For example, in the pharmaceutical industry, it may be common for U.S. companies to send "low" cost chemicals overseas to low-tax jurisdictions, and then for the subsidiary to send the drug back to the U.S. in pill form at a "high" price (Faulkender and Petersen 2011). Though most governments require firms to use transfer prices that would be used in similar transactions with unrelated parties, it is difficult to enforce this requirement, particularly when the transactions relate to products or services without active markets, such as patent rights (Dharmapala and Hines 2009).

To minimize the tax impact of income shifting, the U.S. government collects taxes on U.S. multinationals' worldwide earnings. Specifically, U.S. multinationals are required to pay tax for earnings of their foreign subsidiaries when foreign earnings are repatriated. For example, U.S. multinationals operating in a jurisdiction with a foreign tax rate of 25% will pay taxes of

25% to the foreign government and, if those earnings are repatriated to the U.S., an additional 10% to the IRS (assuming a 35% U.S. tax rate). Thus, the firm obtains no tax benefit through income shifting. If, however, those foreign earnings are not repatriated, then the 10% U.S. tax payment is deferred. In this case, U.S. multinationals gain tax benefits by shifting income from the U.S. to foreign segments through structured transactions, transfer pricing, and other methods (e.g., Harris et al. 1993; Hines and Rice 1994; Dharmapala and Riedel 2011).[6,7]

2.2 SFAS 131

Beginning in 1977, SFAS 14 required disclosure of sales, assets, and earnings for each industry and geographic segment of the firm. Then, the FASB issued SFAS 131 (effective for fiscal years beginning December 15, 1997), which created a two-tiered segment reporting structure. SFAS 131 maintains the disclosure of sales, assets, and earnings for each *primary* segment, but for *secondary* segments, disclosure of only sales and identifiable long-lived assets is mandatory; disclosure of earnings for secondary segments is voluntary. Herrmann and Thomas (2000) show that nearly all firms that operate in multiple industries and geographic areas choose industry segments as their primary segments. Thus, disclosure of earnings for geographic (secondary) segments has become voluntary for most firms, and most firms choose to no longer disclose this information.[8]

[6] When the foreign tax rate is greater than the U.S. tax rate, the company does not receive an immediate domestic tax deduction or benefit for the difference unless those earnings are repatriated.

[7] Graham, Hanlon, and Shevlin (2010) attempt to understand the important economic consequences of non-repatriation of foreign earnings by surveying tax executives' response to the one-time dividends received deduction in the American Jobs Creation Act of 2004. They found that most of the repatriated funds during this period came from overseas cash holdings, suggesting that many firms are willing to hold large cash balances overseas to avoid taxes. In addition, companies were willing to incur significant costs to avoid repatriation prior to the Act. These costs include issuing debt in the U.S. (rather than using those foreign sources of cash) and investing in foreign assets with rates of return lower than those in the U.S.

[8] Herrmann and Thomas (2000) also provide an analysis of the number and scope of geographic segment reporting under SFAS 14 and SFAS 131. They report wide variation across companies. Some firms changed their regional-

Prior studies suggest that disclosure of segment earnings has both benefits and costs to firms. On one hand, geographic earnings disclosure under SFAS 131 can benefit firms by helping investors monitor managerial behavior. When not monitored well, managers may pursue their own objectives at the expense of shareholders. Berger and Hann (2007) argue that managers may hide segment information to avoid revealing underlying agency problems associated with suboptimal cross-segment transfer of resources. Hope and Thomas (2008) find that managers conceal geographic earnings information to grow foreign operations in order to expand the total size of the "empires" they manage. On the other hand, disclosure of segment information can result in significant proprietary costs of providing sensitive information to competitors (Hayes and Lundholm 1996; Harris 1998; Botosan and Stanford 2005; Bens, Berger, and Monahan 2011).

Multinational firms' tax avoidance and income shifting behavior are partially revealed through reported geographic earnings.[9] As multinational firms shift taxable income across different segments, the reported earnings for each segment changes. Thus, the distribution of earnings across geographic areas (at least partially) informs financial statement users about firms' cross-segment income shifting (Collins et al. 1998; Berger and Hann 2007). For example, in response to a request from the U.S. Senate Committee on Finance, the Government

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level disclosures under SFAS 14 to country-level disclosures under SFAS 131 (e.g., Dupont, RJR Nabisco Holdings, Texaco, and Exxon). For example, Dupont provided a Europe segment and an Other segment under SFAS 14 and then disclosed 12 individual countries and four Other regions under SFAS 131. Others firms had no change in geographic segment definitions, choosing to keep regional disclosures (e.g., Bristol Myers Squibb, Kimberly-Clark, and Arrow Electronics). Some firms indicate that because certain individual countries are immaterial, even regional disclosures can be further aggregated under the requirements of SFAS 131, resulting in even coarser geographic disclosures (e.g., Goodyear and PepsiCo). For example, PepsiCo went from disclosing sales, assets, and operating profit for Europe, Canada, Mexico, the United Kingdom, and Other to reporting sales and identifiable long-lived assets for a single "International" segment only. All of the companies identified above disclosed earnings under SFAS 14 but none of them disclosed geographic earnings under SFAS 131. Future research may want to further investigate how geographic segment definitions potentially relate to tax avoidance behavior.

[9] Several studies support the usefulness of geographic segment earnings data in a variety of contexts (e.g., Boatsman, Behn, and Patz 1993; Thomas 2000; Behn, Nichols, and Street 2002; Hope, Kang, Thomas, and Vasvari 2009; Hope, Thomas, and Winterbotham 2009).

Accountability Office (2008, 2) states, "Reporting of the geographic sources of income is susceptible to manipulation for tax planning purposes and appears to be influenced by differences in tax rates across countries. Most of the countries studied with relatively low effective tax rates have income shares significantly larger than their shares of the business measures least likely to be affected by income shifting practices." This statement suggests that firms' worldwide earnings are susceptible to manipulation for the purpose of avoiding taxes, and that this type of manipulation manifests itself in "high" pretax income being reported in low-tax jurisdictions. Therefore, non-disclosure of geographic earnings under SFAS 131 potentially lowers the visibility of multinational firms' tax avoidance behavior.

Similar views have been raised outside the U.S. For example, the World Bank and the OECD, as well as several public interest groups, have lobbied for more disaggregated geographic segment disclosures (including geographic earnings) to help make international tax avoidance more transparent (see, e.g., Association for Accountancy and Business Affairs Limited 2003; Tax Justice Network 2003; Publish What You Pay 2010; World Bank 2010; Werdigier 2011). Focusing on reporting practices by extractive companies, the European Parliament has urged the International Accounting Standards Board to move beyond voluntary guidelines and require country-by-country earnings reporting (e.g., Financial Task Force 2011).

While U.S. tax authorities potentially have access to other sources of information on firms' foreign operations (i.e., Form 5471), information about the profitability of foreign entities did not appear on the firm's corporate tax return prior to Schedule M-3, potentially making it more difficult for IRS agents to identify tax avoidance behavior through income shifting.[10] In

[10] Several commentaries are offered on the general reporting deficiencies with the Schedule M-1 (predecessor to Schedule M-3) and the difficulty for the IRS in determining whether book-tax differences were naturally occurring or the result of questionable tax behavior (e.g., Boynton, DeFilippes, Lisowsky, and Mills 2004; Boynton and Mills 2004). Boynton and Wilson (2006, 2) write, "In the case of large corporations, this aggregation by taxpayers [on

addition, U.S. tax-related information is not available to policy makers, foreign tax authorities, and the general public. Numerous business articles and formal reports by citizen groups (e.g., Citizens for Tax Justice and the Institute on Taxation and Economic Policy 2011) actively identify firms suspected of aggressive tax avoidance and petition policy makers and the IRS to curtail such practices. Given the limited resources of the IRS to police all firms, complaints by these groups could be especially useful to the IRS in helping to decide which firms should be audited, and these groups typically have access only to disclosures in firms' public financial reports. To the extent managers believe that non-disclosure of geographic earnings in financial reports reduces the firm's probability of being audited by domestic tax authorities, prevents additional sanctions or penalties by foreign tax authorities, and deflects public criticism from citizen groups and policy makers, they will be more likely to engage in tax avoidance activities.

2.3 Schedule M-3

Motivated in part by recommendations of Mills and Plesko (2003), the IRS put forth Schedule M-3. Most publicly traded and privately held firms with assets of at least $10 million are required to adopt Schedule M-3 for tax years ending on or after December 2004. Schedule M-3 is an attachment to Form 1120. "The goal of the Schedule M-3 is greater transparency and uniform organization in book-tax data at the time of return filing so that the data may be used to determine what returns will and will not be audited and to determine what issues will and will not be examined on the returns selected for audit" (Boynton et al. 2008, 944). Donohoe and McGill (2011) provide extensive discussion of the changes mandated by Schedule M-3. The benefits include a standardized and detailed reconciliation of book income to taxable income

Schedule M-1] and the lack of specific detail required by the instructions to Schedule M-1 rendered the schedule nearly useless as an analytical tool for purposes of determining audit risk. Most of the detail was contained in schedules to the summary Schedule M-1 that would be seen only if and when a return was chosen for examination."

directly on the corporate federal tax return for more than 90 line items. Each of these items is categorized as a permanent or temporary book-tax difference.

Directly related to this study, Schedule M-3 requires firms to provide information about specific foreign entities that are included in consolidated net income but excluded from taxable income. This information includes items such as the entity's name, net income, total assets, and total liabilities. Schedule M-3 also requires specific details on intercompany transactions between entities included in taxable income and those excluded from taxable income, such as the name of the excluded entity and the nature and amount of the intercompany transaction. Thus, after implementation of Schedule M-3, the IRS has considerably more information about multinational firms' geographic performance.

2.4 Hypotheses

We argue that managers of firms that discontinue disclosing geographic earnings following SFAS 131 *perceive* reduced costs associated with engaging in tax avoidance activities. If disclosed, abnormally high geographic earnings in low-tax jurisdictions potentially increase the probability of an IRS inspection, attract the attention of foreign tax authorities, garner negative publicity by policy makers and citizens, and possibly damage the firm's reputation. This expectation is based on the argument that geographic earnings information helps both U.S. tax authorities and other financial information users detect tax-motivated income shifting behavior. For example, using a sample from the pre-SFAS 131 period, Collins et al. (1998) find that investors recognize firms' tax-motivated income shifting behavior by analyzing geographic earnings information. Further, in a study to assist the IRS in its effort to quantify the compliance problem caused by the income shifting activities of U.S. multinational corporations, Christian

and Schultz (2005) view abnormally high geographic earnings in low-tax jurisdictions as indicators to identify potential income shifters. Sullivan (2004) also employs geographic earnings to estimate the amount of earnings that U.S. firms shifted to low-tax jurisdictions.

Based on the discussion above, we formally state the first hypothesis as:

H1: After adoption of SFAS 131 and before implementation of Schedule M-3, firms that no longer provide geographic earnings disclosure engage in greater tax avoidance behavior than do firms that provide such disclosure.

After the adoption of Schedule M-3, the IRS has considerably more information related to foreign entities excluded from taxable income and the permanent versus transitory nature of book-tax differences. Therefore, the prediction of a positive relation between non-disclosure of geographic earnings under SFAS 131 and tax avoidance will be reduced after the adoption of Schedule M-3. The second hypothesis is formally stated as:

H2: After implementation of Schedule M-3, the relation between tax avoidance and non-disclosure of geographic earnings under SFAS 131 diminishes.

3. Research Design and Sample

3.1 Model Specification

To test the hypotheses, we use the following empirical model (see Appendix II for variable definitions).

$$
\begin{aligned}
ETR_{i,t} = {} & \alpha_0 + \alpha_1 NoDisc_{i,t} + \alpha_2 LnMV_{i,t} + \alpha_3 Lev_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 NOL_{i,t} \\
& + \alpha_6 \Delta NOL_{i,t} + \alpha_7 NI_{i,t} + \alpha_8 FI_{i,t} + \alpha_9 PPE_{i,t} + \alpha_{10} RD_{i,t} + \alpha_{11} EqInc_{i,t} \\
& + \alpha_{12} Intang_{i,t} + YearFixedEffects + IndustryFixedEffects + \varepsilon_{i,t}
\end{aligned} \tag{1}
$$

Following prior literature (e.g., Dyreng and Lindsey 2009), our first measure of tax avoidance is firms' effective tax rate (*ETR*), defined as current tax expense divided by pretax income. This measure is meant to capture the firm's tax burden and provide an inverse indicator of tax avoidance. While exclusion of deferred taxes in our measure of *ETR* is commonly employed in the literature, doing so has an additional benefit in our study. Any income that is shifted to foreign jurisdictions that is not repatriated (but also not classified as permanently reinvested) will be included in the firm's deferred tax amount (Graham, Hanlon, and Shevlin 2011). Including deferred taxes in our measure of *ETR* would reduce our ability to measure multinational firms' tax avoidance behavior.

Our second measure of tax avoidance is firms' cash effective tax rate (*ETR_Cash*). *ETR_Cash* is measured as the taxes paid divided by pretax income (Dyreng, Hanlon, and Maydew 2008).

$$
\begin{aligned}
ETR\_Cash_{i,t} = {} & \alpha_0 + \alpha_1 NoDisc_{i,t} + \alpha_2 LnMV_{i,t} + \alpha_3 Lev_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 NOL_{i,t} \\
& + \alpha_6 \Delta NOL_{i,t} + \alpha_7 NI_{i,t} + \alpha_8 FI_{i,t} + \alpha_9 PPE_{i,t} + \alpha_{10} RD_{i,t} + \alpha_{11} EqInc_{i,t} \\
& + \alpha_{12} Intang_{i,t} + YearFixedEffects + IndustryFixedEffects + \varepsilon_{i,t}
\end{aligned} \tag{2}
$$

Following Hope and Thomas (2008), we classify a firm as a non-discloser (*NoDisc*) if the firm does not report earnings for at least two foreign segments in the first two years after

adopting SFAS 131.[11] If firms that no longer disclose geographic earnings engage in more tax avoidance behavior than do firms that continue to provide geographic earnings disclosure, the coefficient on *NoDisc* should be negative ($\alpha_1 < 0$). If the adoption of Schedule M-3 mitigates the relation between non-disclosure of geographic segment earnings and tax avoidance, the coefficient on *NoDisc* should be significantly attenuated in the post M-3 period.

We include a number of control variables that according to the literature may affect the level of *ETR* (e.g., Manzon and Plesko 2002; Mills 1998; Rego 2003; Frank, Lynch, and Rego 2009; Dyreng et al. 2008). The first set of control variables (*LnMV*, *Lev*, *MB, NOL*, *ΔNOL*, *NI*, and *FI*) capture tax planning incentives and opportunities. Larger firms face greater political costs in the form of higher tax payments (e.g., Zimmerman 1983; Omer, Molloy, and Ziebart 1993), and consequently we control for firm size (*LnMV*). We include leverage (*Lev*) as more leveraged firms may not need to engage in tax planning activities due to the tax shield benefit of debt financing. We also control for growth by including the market-to-book ratio (*MB*). We use the presence of net operating loss carryforward (*NOL*) and the direction of the change in the *NOL* balance (*ΔNOL*) to capture whether firms can use (have used) the tax benefits associated with loss carry forwards. We include net income scaled by lagged total assets (*NI)* to capture profitability, as profitable firms might have more incentives for tax planning (Chen et al. 2010). Lastly, we include foreign net income scaled by lagged total assets (*FI*) as firms with larger foreign operations may naturally operate in jurisdictions with different statutory tax rates.

The second set of control variables (*PPE*, *RD*, *EqInc,* and *Intang*) capture differences in book and tax reporting that can affect our tax avoidance measures. Capital intensive firms are more affected by the different treatments of depreciation expense for tax and financial reporting

[11] In our sample, firms that report earnings for at least two foreign segments in the first two years after adopting SFAS 131 disclose at least two foreign segments in each and every year in the post-SFAS 131 period. This validates this classification method.

purposes, so we include *PPE*. We include research and development expense (*RD*), equity in earnings (*EqInc*), and intangible assets (*Intang*) in the regressions to control for the differential book and tax treatments of intangible assets and consolidated earnings accounted for using the equity method. Finally, year and industry fixed effects are included to control for macro-economic conditions and changes in tax laws that differ across years and across industries.

3.2 Sample Selection

All data are from *Compustat*. We focus on the 16 years surrounding the adoption of SFAS 131 and Schedule M-3 (1993-2008). To ensure that firms in our sample have sufficient foreign operations, we require availability of domestic and foreign performance measures in the current and previous year.[12] We also require that each sample firm have the necessary data to estimate our model. Then, we delete firms with total assets less than $10 million, negative pretax income, or negative effective tax rates. Following prior studies (e.g., Dyreng et al. 2010), we further winsorize effective tax rates greater than one to equal one. All the other continuous variables are winsorized at the 1st and 99th percentiles.[13] The final sample includes 13,831 firm-year observations. In the pre-SFAS 131 period, there are a total 4,121 firm-year observations. All of these observations disclose geographic earnings in the pre-SFAS 131 period, but 3,572 of them will *eventually* choose not to disclose geographic earnings after implementation of SFAS 131. The post-SFAS 131 period consists of 4,545 observations, of which 3,755 represent firms that do not disclose geographic earnings. In the post-M-3 period, 4,547 of 5,165 observations come from firms that do not disclose geographic earnings in the post-SFAS 131 period.

[12] SEC Regulation §210.4-08(h) requires firms to report total foreign and domestic earnings.
[13] Results are not sensitive to truncating the sample at the 1st and 99th percentiles for the continuous variables.

3.3 Descriptive statistics

Table 1 presents univariate statistics separately for disclosers and non-disclosers in the three reporting regimes. To be clear, all firms were required to disclose geographic earnings in the pre-SFAS 131 period (Herrmann and Thomas 2000). Thus, firms classified as "non-disclosers" in the pre-SFAS 131 period did disclose geographic earnings at that time but they chose not to disclose in the post-SFAS 131 period. To better identify firm characteristics of eventual non-disclosers versus continued disclosers, we report univariate statistics separately for the two groups in the pre-SFAS 131 period (Panel A). Eventual non-disclosers have an *ETR* of 0.32. This is similar to the ETR of those that will continue to disclose under SFAS 131 (0.33). However, in the post-SFAS 131 period (Panel B), we find noticeable differences; non-disclosers' *ETR* (0.30) is lower than disclosers' *ETR* (0.35). In Panel C, which uses the subsample of the post-M-3 period, the *ETRs* of the two groups begin to once again converge (0.29 versus 0.32) but remain lower for non-disclosers. Similar differences are observed for *ETR_Cash*. In addition, non-disclosers tend to have lower market value of equity (*LnMV*), lower market-to-book ratio (*MB*), fewer net operating losses (*NOL)*, and lower profitability (*NI)*. The distributions for the other variables are generally similar for the two subsamples.

Table 2 presents correlations between the variables. The top half of the table shows the Pearson correlations; the bottom half shows the Spearman correlations. *ETR* is significantly negatively correlated with non-disclosure of geographic earnings (*NoDisc*). In untabulated analyses, the Pearson correlation between *ETR* and *NoDisc* in the pre-SFAS 131 (post-SFAS 131) [post-M-3] period is −0.005 (−0.081) [−0.037]. The Pearson correlation between *ETR_Cash* and *NoDisc* in the pre-SFAS 131 (post-SFAS 131) [post-M-3] period is 0.015 (−0.088) [−0.021]. Non-disclosure of geographic earnings is most significantly related to lower effective tax rates in

the post-SFAS 131 period (and is attenuated in the post-M-3 period).[14] The simple descriptive statistics reported in Tables 1 and 2 do not control for a number of firm-specific variables expected to relate to *ETR* and *ETR_Cash* so we base our conclusions on the multiple regression tests reported below.

4. Primary Empirical Results

4.1 Regression Analyses

Panel A of Table 3 shows the estimation results for model (1) using *ETR*.[15] We provide results separately for each period: pre-SFAS 131 period (January 1993 to November 1998), post-SFAS 131 period (December 1998 to November 2004), and post-M-3 period (December 2004 to December 2008). For each period, we test whether *ETR* differs between disclosers and non-disclosers by testing whether the coefficient on *NoDisc* is significantly different from zero. For the pre-SFAS 131 period and the post-M-3 period, we also test whether the coefficient on *NoDisc* differs from that in the post-SFAS 131 period. This provides our "difference-in-differences" research design which we use to test our hypotheses. The first column uses observations from the pre-SFAS 131 period; the second column uses observations from the post-SFAS 131 period; the third column uses observations from the post-M-3 period. For the control variables, *ETR* is significantly positively associated with *LnMV*, *NI*, *FI*, and *Intang*, but negatively related to *MB*, *NOL,* Δ*NOL*, *PPE*, *RD*, and *EqInc*. These findings are consistent with general expectations.

[14] We test the Variance Inflation Factors (VIF) for all regressions. The maximum VIF is 5, relieving concerns about multicollinearity.

[15] We use robust standard errors clustered by firm. No inferences are impacted if we instead cluster by year or by year and firm.

We first discuss the results for the post-SFAS 131 period (second column). The coefficient on *NoDisc* is negative and significant (−0.041; t-statistic = −3.49). This result can be interpreted to mean that, controlling for other firm characteristics and fixed effects for year and industry, non-disclosers' effective tax rates are 4.1 percentage points lower than those of disclosers in the post-SFAS 131 period. These results are consistent with H1. Firms that no longer provide geographic earnings disclosure engage in more tax avoidance behavior than do firms that provide such segment disclosure. In other words, firms utilize non-disclosure of geographic segment earnings to conceal their tax avoidance behavior. Importantly, in the pre-SFAS 131 period (first column), we do not observe the same relation between *NoDisc* and *ETR*. The coefficient on *NoDisc* is insignificant (0.005, t-statistic = 0.40). Furthermore, the coefficients on *NoDisc* in the pre-SFAS 131 period is significantly less negative (t-statistic = 3.80) than the coefficient on *NoDisc* in the post-SFAS 131 period (see "Test for *NoDisc*" near the bottom of Table 3). This difference-in-differences test provides evidence consistent with greater tax avoidance behavior in a reporting regime that allows non-disclosure of geographic earnings.

With respect to H2, for the post-M-3 period (third column) the coefficient on *NoDisc* is insignificant (−0.015, t-statistic = −1.24) and significantly less negative (t-statistic = 2.18) than the coefficient on *NoDisc* in the post-SFAS 131 period. These results support H2 and are consistent with the idea that IRS monitoring through greater access to firms' foreign operations reduces the ability of non-disclosure of geographic earnings in the financial reports to hide firms' tax avoidance behavior. This was one of the explicit purposes in mandating Schedule M-3.[16]

[16] We also consider the coefficient on *NoDisc* in annual regressions. When using *ETR* as the dependent variable, the coefficient on *NoDisc* averages −0.045 for 1999-2004 and is negative in each year. The coefficient averages 0.004 for the 1993-1998 period and is negative in three of the six years. The coefficient is negative each year for the 2005-2008 period but averages only −0.011.

In Panel B of Table 3, we provide the same tests using *ETR_Cash*. We find similar results. In the post-SFAS 131 period, the coefficient on *NoDisc* is negative and significant (−0.052; t-statistic = −4.13). Importantly, in the pre-SFAS 131 period and in the post-M-3 period, we do not observe the same relation between *NoDisc* and *ETR_Cash*. The coefficient on *NoDisc* is insignificant in the pre-SFAS 131 period (0.006, t-statistic = 0.52) and insignificant in the post-M-3 period (−0.013, t-statistic = −1.18). The coefficients on *NoDisc* in the pre-SFAS 131 period and the post-M-3 period are significantly less negative than the coefficient on *NoDisc* in the post-SFAS 131 period. The results support H1 and H2.[17,18]

4.2 Matched-Sample Analyses and Constant Sample Analyses

As noted, our conclusions hold when we include controls to account for cross-sectional differences in *ETR* (or *ETR_Cash*) between disclosers and non-disclosers (Table 3) and when we exclude controls (Tables 1 and 2). Nevertheless, to provide additional control for the effects of firm, industry, and time-period effects, we perform matched-firm analyses. We first do this using Propensity Score Matching (PSM). For PSM, the first stage involves a logit model to predict the propensity of non-disclosure. Then, based on year, industry (Fama-French 48 industry

[17] As one possible means to assess the economic importance of our findings, we consider the tax consequences associated with non-disclosers. The 3,755 non-disclosers in the post-SFAS 131 period had an average pretax income of $309 million. Finding a lower *ETR* of 4.1 percentage points implies that these firms' total tax savings were $47,572 million (= 3,755 × $309 million × 4.1%). In the post-M-3 period, the difference in *ETR* is only −1.5 percentage points, indicating a relative increase of 2.6 percentage points from the post-SFAS 131 period for non-disclosers. The 4,547 non-disclosers had an average pretax income of $537 million in the post-M-3 period, so these firms paid additional taxes of $63,485 million (= 4,547 × $537 million × 2.6%). Corresponding amounts for *ETR_Cash* are tax savings of $ 54,597 million (= $307 million × 5.2% × 3,420) in the post-SFAS 131 period and additional taxes of $ 87,277 million (= $535 million × 3.8% × 4,293) in the post-M-3 period.

[18] In untabulated analyses, we consider an alternative difference-in-differences test by comparing the change in *ETR* for non-disclosers (treatment group) to the change in *ETR* for disclosers (control group) from the pre-SFAS 131 period to the post-SFAS 131 period. We include in the model indicator variables for non-disclosers (*NoDisc*) and the post-SFAS 131 period (*Post131*), as well as their interaction (and control for the same firm characteristics and fixed effects). The interaction provides our difference-in-differences test for H1. For H2, a similar analysis is provided by comparing changes in *ETR* from the post-SFAS 131 period to the post-M-3 period for each group. We find that these alternative difference-in-differences tests offer the same conclusion as do our tabulated results, and point to differences being attributed to changes in *ETR* of the treatment group (i.e., non-disclosers).

classification), and the propensity score (predicted value from the first stage), we match each discloser with one or two non-disclosers. The matching criterion requires a difference in propensity scores of less than 0.025, which equals 20% of the standard deviation of the propensity score (Austin 2011). In the second stage, the matched sample is used to tests the relation between effective tax rates (*ETR* and *ETR_Cash*) and non-disclosure of geographic earnings (*NoDisc*).

As shown in Table 4 using the post-SFAS 131 period, results are similar to those reported in Table 3. For our matched samples, we continue to find evidence that the relation between *ETR* [*ETR_Cash*] and *NoDisc* is significantly negative (t-statistic = −2.45) [t-statistic= −2.16].[19] Untabulated results show a t-statistic of −2.91 [−3.07] when instead employing a one-to-two matching methodology.[20]

We next provide analysis of attribute matching based on year, industry, and size. Industry matching is based on Fama-French 48 industry classification, and firm size requires matched firms to have an absolute difference in *LnMV* less than one. For the post-SFAS 131 period, we find a match for 1,420 observations (i.e., 710 disclosers and 710 non-disclosers). In an untabulated regression of *ETR* on *NoDisc* and control variables, the coefficient on *NoDisc* is negative and significant (−0.035, t-statistic = −2.58). When instead using a one-to-two matching procedure we have a sample of 1,986 observations and the estimated coefficient on *NoDisc* is −0.038 (t-statistic = −2.94). For *ETR_Cash*, the coefficients on *NoDisc* are −0.050 and −0.054 and both are significant (t-statistics = −3.54 and −3.47).

[19] Untabulated tests show that in the pre-SFAS 131 period and in the post-M-3 period, neither *ETR* nor *ETR_Cash* relates to *NoDisc*.

[20] A one-to-two match is recommended over one-to-one matching by Cram, Karan, and Stuart (2009) as it may reduce noise in the matched sample.

As an additional (untabulated) test, we rerun the analyses using a constant sample when comparing the pre- versus post-SFAS 131 periods and when comparing the post-SFAS 131 versus post-M-3 periods. With this approach, any concerns over correlated omitted variables that are not addressed otherwise in our research design are further alleviated. The disadvantages of using a constant sample are that we impose survivorship bias and that we potentially lower the power of our tests due to the much smaller sample size.[21] Using the smaller constant samples, the inferences remain unchanged. The coefficient on *NoDisc* remains significantly negative in the post-SFAS 131 period and is not significantly different from zero in either the pre-SFAS 131 period or in the post-M-3 period. These results mitigate concerns that our conclusions are driven by correlated omitted variables.

4.3. Within-Firm Control Using Foreign versus Domestic Tax Rates

The results to this point are consistent with non-disclosers shifting more income from higher-tax jurisdictions (such as the U.S. or other foreign operations) to lower-tax foreign jurisdictions in the post-SFAS 131 period. To provide further evidence of this behavior, we consider differences in firms' domestic effective tax rates (*ETR_Dom*) and differences in foreign effective tax rates (*ETR_For*). Our first prediction is that when a firm shifts income from domestic operations to foreign operations, the firm's *ETR_Dom* should not change.[22] If, however, we observe a negative relation between *NoDisc* and *ETR_Dom*, then it is more likely the case that the lower worldwide *ETR* for non-disclosers in the post-SFAS 131 period is being

[21] Specifically, we do not require that all sample firms be present over the *entire* sample period (from the beginning of the pre-SFAS 131 period to the end of the post-M-3 period), as this would unduly reduce the sample size without offering any benefits. Instead, we require that firms to have data for at least (1) 11 years throughout the pre- and post-SFAS 131 periods or (2) 10 years throughout the post-131 and post-M-3 periods. For test (1) using *ETR* we have 1,622 firm-year observations and for test (2) we have 2,920 observations.

[22] Simplified, the U.S. tax code has a corporate income tax rate structure that produces a flat 34% tax rate on incomes from $335,000 to $10,000,000, gradually increasing to a flat rate of 35% on incomes above $18,333,333. In practice the tax rate is quite flat over a wide range of incomes applicable to our sample.

caused by factors not controlled for in the model. Thus, testing the relation between *NoDisc* and *ETR_Dom* provides a *within-firm control* for changes in effective tax rates that could occur for natural changes in business operations across reporting regimes.

Our second prediction relates to *ETR_For*. When a multinational firm operates in at least two foreign jurisdictions, with one having a higher tax rate than the other, shifting income either (1) from domestic operations to the lower-tax foreign jurisdiction or (2) from the higher-tax foreign jurisdiction to the lower-tax one causes *ETR_For* to decline.[23] Observing a reduction in the *ETR_For* for non-disclosers during the post-SFAS 131 period makes it more likely the case that firms utilize non-disclosure of geographic earnings to shift income to lower-tax foreign jurisdictions.

Stated formally, the predictions for the post-SFAS 131 period are (1) an insignificant coefficient on *NoDisc* when *ETR_Dom* is the dependent variable and (2) a negative coefficient on *NoDisc* when *ETR_For* is the dependent variable.[24]

$$\begin{aligned}\begin{Bmatrix} ETR\_Dom \\ ETR\_For \end{Bmatrix}_{i,t} &= \alpha_0 + \alpha_1 NoDisc_{i,t} + \alpha_2 LnMV_{i,t} + \alpha_3 Lev_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 NOL_{i,t} \\ &\quad + \alpha_6 \Delta NOL_{i,t} + \alpha_7 NI_{i,t} + \alpha_8 FI_{i,t} + \alpha_9 PPE_{i,t} + \alpha_{10} RD_{i,t} + \alpha_{11} EqInc_{i,t} \\ &\quad + \alpha_{12} Intang_{i,t} + YearFixedEffects + IndustryFixedEffects + \varepsilon_{i,t}\end{aligned} \tag{3}$$

where,

[23] When a firm shifts income from domestic operations to the higher-tax foreign jurisdiction, the firm's worldwide effective tax rate declines but the foreign effective tax rate increases. We expect that firms engaged in income shifting will typically select to shift to the lower-tax foreign jurisdictions, so our general prediction is that foreign effective tax rates will decline.

[24] We delete firms with missing values and observations with *ETR_Dom* or *ETR_For* less than zero. Firms with *ETR_Dom* or *ETR_For* greater than one are winsorized at one. Following Dyreng and Lindsey (2009), when foreign current tax expenses are missing, we use the difference between total current tax expense and domestic current tax expense. Similar techniques are employed when current domestic tax expense, foreign pretax income, or domestic pretax income are missing.

ETR_Dom = Domestic effective tax rate, measured as current domestic tax expense/domestic pretax income

ETR_For = Foreign effective tax rate, measured as current foreign tax expense/foreign pretax income

Table 5 shows the estimation results for model (3). The sample is from the post-SFAS 131 period (December 1998 to November 2004). The first column uses domestic effective tax rates (*ETR_Dom*) as the dependent variable, and the second column uses foreign effective tax rates (*ETR_For*) as the dependent variable. Consistent with expectations, we find an insignificant coefficient on *NoDisc* when *ETR_Dom* is the dependent variable (−0.005, t-statistic = −0.036) and a negative coefficient on *NoDisc* when *ETR_For* is the dependent variable (−0.052, t-statistic = −3.68). This finding suggests that after adoption of SFAS 131 differences in worldwide *ETR* documented in Table 3 are less likely to be caused by differences in underlying business operations (i.e., there is no association between *NoDisc* and *ETR_Dom*). However, firms that no longer provide geographic earnings disclosure engage in greater tax avoidance by shifting income to lower-tax foreign segments.[25]

5. Additional Tests (Untabulated)

5.1 Alternative Measures of Tax Avoidance

The main analyses use *ETR* and *ETR_Cash* in the current year as a measure of tax avoidance. Because current year measures are potentially volatile, this subsection considers long-run average corporate tax rates (*ETR_Long* and *ETR_Cash_Long*) as alternative measures of tax avoidance. *ETR_Long* and *ETR_Cash_Long* are motivated by Dyreng, Hanlon, and Maydew

[25] Untabulated tests show that the relation between *ETR_Dom* and *NoDisc* does not vary across reporting regime, but the relation between *ETR_For* and *NoDisc* remains significantly more negative in the post-SFAS 131 period. Unfortunately, data limitations prevent us from providing corresponding tests using domestic and foreign *ETR_Cash.*

(2008) and are measured as the firm's average *ETR* and *ETR_Cash*, respectively, during each reporting regime. For tests using *ETR_Long* and *ETR_Cash_Long* we also use the average values within the reporting regime for control variables. Results are similar to those reported in Table 3. Consistent with H1 and H2, the findings using long-run effective tax rates suggest that after adopting SFAS 131 and before adopting Schedule M-3, firms that no longer provide geographic earnings disclosure engage in more tax avoidance behavior than do firms that provide such segment disclosure. The coefficient on *NoDisc* is significantly negative for both *ETR_Long* (−0.058, t-statistic = −3.40) and *ETR_Cash_Long* (−0.033, t-statistic = −1.88).

5.2 Cross Validation Using Predicted ETR

We also validate the impact of *NoDisc* on our conclusions by estimating the predicted values of *ETR* for disclosers and non-disclosers in the post-SFAS 131 period. Specifically, we estimate equation (1) in the pre-SFAS 131 period after eliminating *NoDisc* from the model. Doing so allows us to estimate the normal relation between *ETR* effective tax rates and firm characteristics expected to relate to the level of *ETR*. Using the parameter estimates from the pre-SFAS 131 model, we then calculate the predicted values of *ETR* using firms' post-SFAS 131 data. Thus, this approach obtains predicted values of *ETR* without the effect of our hypothesized variable (*NoDisc*).

As expected, without the impact of *NoDisc*, we find that the difference in predicted values of disclosers' and non-disclosers' *ETR* in the post-SFAS 131 period is minor (0.5 percentage points) compared with the difference previously reported for actual *ETR* in Table 3 (4.1 percentage points). These results suggest that the difference in actual *ETR* between disclosers and non-disclosers in the post-SFAS 131 period could not have been predicted based

on changes in our control variables from the pre-SFAS 131 period. This test validates the impact that non-disclosure of geographic earnings (*NoDisc*) has on the difference in actual *ETR* in the post-SFAS 131 period. We repeat the procedure above using *ETR_Cash* and once again find little evidence that differences in *ETR_Cash* could have been predicted (0.4 percentage points).

5.3 Other Robustness Tests

5.3.1 Control for Alternative Disclosure of Geographic Earnings.

To ensure that our non-disclosing firms do not provide geographic earnings information elsewhere in the annual report, we select a random sample of 30 firms and examine their annual reports in detail. We find no instance in which our non-disclosing firms discussed geographic earnings, suggesting that non-disclosure in the segment notes means non-disclosure in the annual report. All of these firms report geographic sales and identifiable long-lived assets as required by SFAS 131 in the segment note.

5.3.2 Control for Possible Mandatory Disclosers

As discussed above, firms that define their primary segments along geographic lines are required to disclose geographic earnings. Note that whether geographic earnings are disclosed voluntarily (secondary segments) or by mandate (primary segments) is not crucial to our research design. Disclosure allows tax authorities and other external parties to monitor the activities of managers. Non-disclosure reduces this monitoring role. Thus, we are concerned only with the disclosure/non-disclosure distinction for all sample firms. Nevertheless, in untabulated analyses

we find that our results remain robust to excluding those firms that are required to disclose geographic earnings.[26]

5.3.3 Control for the American Jobs Creation Act (AJCA) of 2004

A significant tax event that occurs around the implementation of Schedule M-3 is the AJCA. This Act provided a number of tax rule changes. Most relevant to our study, the Act provided a one-time tax holiday to U.S. companies by allowing them to repatriate earnings from their foreign subsidiaries at a reduced tax rate (Albring, Dzuranin, and Mills 2005). Firms could elect to have this reduced rate in either 2004 or 2005. To be certain that the provisions of this Act do not affect our conclusions, we eliminate the years 2004 and 2005 from our post-SFAS 131 sample and post-M-3 sample. After excluding these years, we find results similar to those reported in Table 3. For *ETR*, the coefficient on *NoDisc* in the post-SFAS 131 period is negative and significant (−0.044; t-stat = −3.62), and the coefficient on *NoDisc* in the post-M-3 period is not significant (−0.010; t-stat = −0.66). For *ETR_Cash*, the coefficient on *NoDisc* in the post-SFAS 131 period is negative and significant (−0.059; t-stat = −4.37), and the coefficient on *NoDisc* in the post-M-3 period is not significant (−0.008; t-stat = −0.53).

5.3.4 Control for differences in foreign and domestic pretax profit margins

As discussed previously, firms that choose to no longer disclose geographic earnings after implementation of SFAS 131 must still disclose total foreign earnings (SEC Regulation §210.4-08(h)) and foreign sales (SFAS 131). Thus, it is possible that public disclosure of *total* pretax foreign profit margins and domestic pretax profit margins could reveal managers' tax avoidance strategies. H1 and H2 are based on the idea that it is firms' *geographic* earnings

[26] Specifically, we remove 137 observations from the post-SFAS 131 period.

disclosures that are especially revealing of managers' tax avoidance behavior. If this is the case, tax avoidance behavior should be associated with *NoDisc* beyond any measure of differences in foreign and domestic profit margins.

To test the incremental effect of *NoDisc* beyond differences in foreign and domestic profit margins, we create an indicator variable (*High_For*) equal to 1 when the firm's foreign pretax profit margin is greater than its domestic pretax profit market, and the domestic pretax profit margin is positive, 0 otherwise. We include this indicator variable to see whether *NoDisc* continues to have incremental explanatory power for *ETR*.[27] We find robust evidence that this is the case. After controlling for *High_For*, the coefficient on *NoDisc* in the post-SFAS 131 period is significantly negative (–0.042; t-statistic = –3.57). Furthermore, we find no significant relation between *High_For* and *ETR* (–0.013; t-statistic = –1.46). Similar results are obtained for *ETR_Cash*. The coefficient on *NoDisc* in the post-SFAS 131 period is significantly negative (−0.051; t-statistic = –4.06) while the coefficient on *High_For* is much lower (−0.015; t-statistic = −1.71).Thus, from our model's perspective, non-disclosure of geographic earnings provides a clearer indicator of firms' tax avoidance behavior than does the difference in foreign and domestic profit margins.

5.3.5 Control for probability of an IRS audit

Prior studies find that a higher threat of an IRS audit reduces tax avoidance behavior (Hoopes, Mescall, and Pittman 2011), increases financial reporting quality (Hanlon, Hoopes, and Shroff 2011), and lowers the cost of equity and debt financing (e.g., Guedhami and Pittman 2008; Ghoul, Guedhami, and Pittman 2011). We predict that better monitoring through higher

[27] Only firms with positive domestic pretax income would be willing to further shift domestic income overseas. We admit that this measure is preliminary and could be refined in other ways by future research.

probability of an IRS audit will reduce the association between tax avoidance behavior and non-disclosure of geographic earnings.

We separate firms into high versus low probability of receiving an IRS audit.[28] For the post-SFAS 131 period, the relation between *ETR* and *NoDisc* remains significantly negative for firms with a low probability of an IRS audit (−0.049; t-statistic = −2.59). This relation diminishes when there is a high probability of IRS audit (−0.025; t-statistic = −0.82). For *ETR_Cash* the coefficient on *NoDisc* is significantly negative (−0.044; t-statistic = −2.32) for firms with a low probability of an IRS audit but insignificant for firms with a high probability of IRS audit (−0.033; t-statistic = −0.97), although the difference in coefficients between the two groups is not significant. Overall, we conclude that the results support the expectations that firms more closely monitored by the IRS are less likely to have a relation between tax avoidance and non-disclosure of geographic segment earnings.

6. Concluding Remarks

Corporate tax avoidance has attracted considerable attention from financial scholars. However, the relation between tax avoidance behavior and a firm's financial reporting behavior is largely unexplored. We argue that firms reduce the quality of disclosures in an attempt to mask their tax avoidance behavior. Specifically, we consider that many multinational firms may wish to shift income to low-tax foreign jurisdictions to avoid taxes, and thus they would prefer to reduce their transparency related to foreign operations to make such tax avoidance behavior more difficult to detect by U.S. and foreign tax authorities, policymakers, and the general public.

[28] In these studies, firms are classified as having a high probability of receiving an IRS audit if they have total assets greater than $250 million and operate in any of the following industries: Natural Resources, Construction, Heavy Manufacturing, and Transportation (two digit SIC : 07-09, 12-17, 34, 37, 45 and 47). For further details, see data provided by Transactional Records Access Clearinghouse (2007a, 2007b).

We test our hypothesis using natural experiments provided by two recent U.S. regulations. First, after implementation of SFAS 131 in December 1998, most firms can voluntarily decide whether to disclose geographic earnings and most firms choose not to disclose. Second, after the adoption of Schedule M-3 in December 2004, multinational firms are required to provide a detailed reconciliation of book-tax differences, including detailed information on each foreign entity included in financial net income but excluded from taxable net income. Thus, after implementation of Schedule M-3, non-disclosure of geographic earnings in the financial reports has less of an impact in concealing the profitability of firms' foreign operations from the IRS.

Using a sample of 13,831 firm-year observations for the 16 years (1993-2008) surrounding the adoption of SFAS 131 and Schedule M-3, we compare effective tax rates in the pre-SFAS 131 period (January 1993 to November 1998), post-SFAS 131 period (December 1998 to November 2004), and post-M-3 period (December 2004 to December 2008) to test our predictions. We find that firms no longer disclosing geographic earnings in the post-SFAS 131 period have effective tax rates (cash effective tax rates) that are 4.1 (5.2) percentage points lower than those of firms that continue to disclose geographic earnings. However, prior to implementation of SFAS 131 (when all firms were required to disclose geographic earnings in segment reports), eventual non-disclosers' effective tax rates were not materially different from those of continual disclosers. After implementation of Schedule M-3 (when all firms were required to disclose detailed foreign profits to the IRS), disclosers' and non-disclosers' effective tax rates were again not significantly different. These results are robust to several firm-level control variables and several other tests. Collectively, our findings are consistent with mangers being more willing (and able) to engage in tax avoidance activities when they perceive the costs

of doing so to be lower because of reduced transparency associated with non-disclosure of geographic earnings.

We acknowledge that our study has limitations, and we emphasize the following facts. First, the validity of our inferences depends on the reliability of our measure for tax avoidance. In the main analyses, we use the annual effective tax rate and annual cash effective tax rate. These measures have been widely used as a proxy for tax avoidance in the literature. To provide additional comfort, we also use long-run effective tax rates as alternative measures of tax avoidance and find consistent results. Second, it is possible that other events around the adoptions of SFAS 131 and Schedule M-3 could explain the results (e.g., SOX and AJCA). However, we have no reason to expect these other events to differentially affect disclosers' and non-disclosers' effective tax rates, as hypothesized by SFAS 131 and Schedule M-3. Furthermore, in an attempt to control for these potentially unobservable variables, our study employs a difference-in-differences approach to compare disclosers' and non-disclosers' tax avoidance activity before and after adoptions of SFAS 131 and Schedule M-3. We also employ a matched-sample design, a constant-sample design, and cross validation using predicted values of effective tax rates to ensure the robustness of our conclusions. To further improve the power of our analyses, we decompose the effective tax rate into foreign tax rates and domestic tax rates, and this design makes the underlying relations between geographic earnings disclosure and tax avoidance more transparent.

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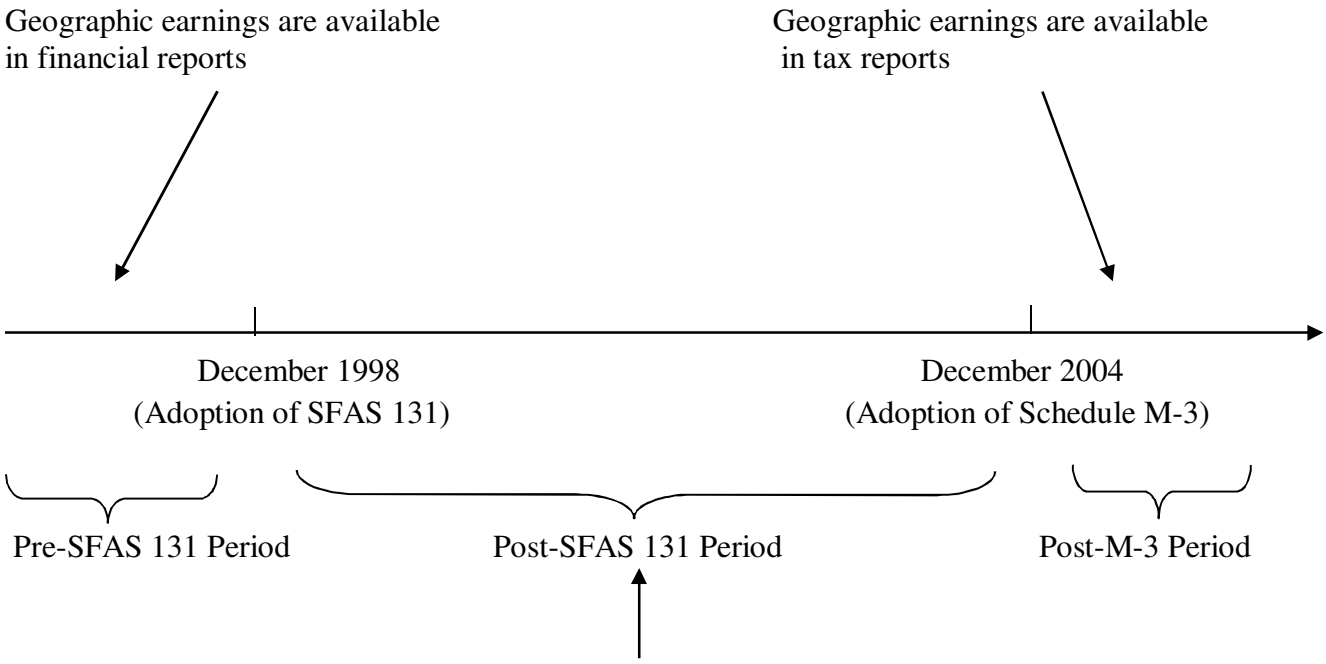
Appendix I. Time Line for Reporting Regimes

In December 1998, SFAS 131 went into effect. In December Schedule M-3 went into effect. In the pre-SFAS 131 period, firms were required to report geographic earnings information in their financial reports. In the post-SFAS 131 period, most firms could voluntarily decide whether to report geographic earnings information in their financial reports. In the post-M-3 period, firms were required to report geographic earnings information in corporate tax reports.



Appendix II. Variable Definitions

ETR	=	Current tax expense (TXT−TXDI) / pretax income (PI)
ETR_For	=	Current foreign tax expense (TXFO) / foreign pretax income (PIFO)
ETR_Dom	=	Current domestic tax expense (TXFED+TXS) / domestic pretax income (PIDOM)
ETR_Cash	=	Cash taxes paid (TXPD) / pretax income (PI)
NoDisc	=	Indicator equal to 1 for observations that do not disclose geographic earnings in the post-SFAS 131 period, 0 otherwise
LnMV	=	Natural log of the market value (PRCC × CSHO in millions)
Lev	=	Total debt (LT) / lagged total assets (AT)
MB	=	Ratio of market value (PRCC × CSHO) to book value (CEQ)
NOL	=	Indicator variable equal to 1 if loss carry forward (TLCF) is negative at the beginning of year t
Δ*NOL*	=	Indicator variable equal to 1 if loss carry forward (TLCF) is lower at the end of year t than the beginning of year t, 0 otherwise
NI	=	Net income (NI) / lagged total assets (AT)
FI	=	Foreign net income (PIFO) / lagged total assets (AT)
PPE	=	Plant, property and equipment (PPENT) / lagged total assets (AT)
RD	=	Research and development expense (XRD) / lagged total assets (AT)
EqInc	=	Equity Income (ESUB) / lagged total assets (AT)
Intang	=	Intangible assets (INTAN) / lagged total assets (AT)

Table 1. Descriptive Statistics

Panel A: Pre-SFAS 131 Period (N=4,121)

	Non-Disclosers			Disclosers		
Variable	N	Mean	Std.Dev.	N	Mean	Std.Dev.
ETR	3,572	0.32	0.21	549	0.33	0.19
ETR_Cash	3,284	0.30	0.22	522	0.29	0.20
NoDisc	3,572	0.00	0.00	549	1.00	0.00
LnMV	3,572	5.92	1.94	549	6.29	2.05
Lev	3,572	0.60	0.32	549	0.61	0.31
MB	3,572	2.89	3.00	549	3.66	4.06
NOL	3,572	0.30	0.46	549	0.34	0.48
ΔNOL	3,572	0.18	0.38	549	0.21	0.40
NI	3,572	0.07	0.12	549	0.09	0.11
FI	3,572	0.03	0.05	549	0.04	0.06
PPE	3,572	0.05	0.09	549	0.06	0.10
RD	3,572	0.00	0.01	549	0.00	0.00
EqInc	3,572	0.33	0.23	549	0.29	0.22
Intang	3,572	0.11	0.16	549	0.08	0.13

Panel B: Post-SFAS 131 Period (N=4,545)

	Non-Disclosers			Disclosers		
Variable	N	Mean	Std.Dev.	N	Mean	Std.Dev.
ETR	3,755	0.30	0.22	790	0.35	0.23
ETR_Cash	3,420	0.28	0.23	752	0.33	0.26
NoDisc	3,755	0.00	0.00	790	1.00	0.00
LnMV	3,755	6.33	2.15	790	6.75	2.21
Lev	3,755	0.58	0.32	790	0.57	0.30
MB	3,755	2.97	3.60	790	3.34	4.00
NOL	3,755	0.35	0.48	790	0.39	0.49
ΔNOL	3,755	0.19	0.40	790	0.18	0.38
NI	3,755	0.05	0.14	790	0.06	0.11
FI	3,755	0.03	0.06	790	0.05	0.06
PPE	3,755	0.05	0.08	790	0.04	0.07
RD	3,755	0.00	0.01	790	0.00	0.00
EqInc	3,755	0.28	0.22	790	0.26	0.21
Intang	3,755	0.17	0.20	790	0.13	0.17

(Table 1 continued on next page)

Table 1. Descriptive Statistics

Panel C: Post-M-3 Period (n=5,165)

	Non-Disclosers			Disclosers		
Variable	N	Mean	Std.Dev.	N	Mean	Std.Dev.
ETR	4,547	0.29	0.22	618	0.32	0.20
ETR_Cash	4,293	0.27	0.23	607	0.29	0.22
NoDisc	4,547	0.00	0.00	618	1.00	0.00
LnMV	4,547	6.85	2.00	618	7.52	2.01
Lev	4,547	0.55	0.32	618	0.54	0.28
MB	4,547	2.91	3.47	618	3.27	2.87
NOL	4,547	0.34	0.47	618	0.40	0.49
ΔNOL	4,547	0.29	0.45	618	0.29	0.45
NI	4,547	0.06	0.14	618	0.08	0.11
FI	4,547	0.03	0.06	618	0.06	0.06
PPE	4,547	0.05	0.08	618	0.04	0.06
RD	4,547	0.00	0.01	618	0.00	0.00
EqInc	4,547	0.24	0.24	618	0.24	0.21
Intang	4,547	0.22	0.23	618	0.19	0.21

This table shows the descriptive statistics. The sample period is January 1993 to December 2008. Panel A uses a subsample of observations from the pre-SFAS 131 period (January 1993 to November 1998); Panel B uses a subsample of observations from the post-SFAS 131 (December 1998 to November 2004); Panel C uses a subsample of observations from the pre-SFAS 131 period (December 2004 to December 2008). In all panels, the first column reports results for firms not disclosing geographic earnings in the post-SFAS 131 period; the second column uses a subsample of firms disclosing geographic earnings. All data are from *Compustat* database. Variable definitions are provided in Appendix II.

Table 2. Correlation Matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
1.ETR	1.00	0.70	–0.05	0.12	0.04	–0.01	–0.03	–0.06	0.10	0.07	–0.08	–0.01	–0.08	0.09
		<.01	**<.01**	**<.01**	**<.01**	**0.19**	**0.00**	**<.01**	**<.01**	**<.01**	**<.01**	**0.16**	**<.01**	**<.01**
2.ETR_Cash	0.67	1.00	–0.03	0.01	0.01	–0.09	–0.01	–0.09	–0.12	–0.07	–0.04	–0.12	–0.01	0.05
	<.01		<.01	0.79	0.12	<.01	0.26	<.01	<.01	<.01	<.01	<.01	0.25	<.01
3.NoDisc	–0.06	–0.04	1.00	0.08	0.00	0.05	0.04	0.00	0.04	0.12	–0.01	0.00	–0.03	–0.06
	<.01	<.01		**<.01**	**0.93**	**<.01**	**<.01**	**0.71**	**<.01**	**<.01**	**0.39**	**0.86**	**0.00**	**<.01**
4.LnMV	0.15	0.05	0.07	1.00	0.12	0.27	–0.06	0.02	0.25	0.25	–0.11	0.14	0.09	0.17
	<.01	<.01	**<.01**		**<.01**	**<.01**	**<.01**	**0.08**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**
5.Lev	0.06	0.03	0.01	0.19	1.00	0.06	–0.01	–0.02	–0.03	0.03	–0.12	0.08	0.21	0.26
	<.01	0.01	**0.32**	**<.01**		**<.01**	**0.12**	**0.01**	**<.01**	**0.00**	**<.01**	**<.01**	**<.01**	**<.01**
6.MB	0.04	–0.10	0.05	0.42	0.09	1.00	–0.01	0.01	0.16	0.13	0.19	–0.02	–0.05	–0.01
	<.01	<.01	**<.01**	**<.01**	**<.01**		**0.23**	**0.44**	**<.01**	**<.01**	**<.01**	**0.07**	**<.01**	**0.22**
7.NOL	–0.06	–0.04	0.04	–0.05	–0.02	–0.03	1.00	–0.39	–0.05	–0.02	0.03	–0.01	0.01	–0.02
	<.01	<.01	**<.01**	**<.01**	**0.01**	**0.00**		**<.01**	**<.01**	**0.03**	**0.00**	**0.36**	**0.08**	**0.04**
8.ΔNOL	–0.07	–0.12	0.00	0.01	–0.02	0.01	–0.39	1.00	0.05	0.03	0.03	–0.01	–0.05	0.03
	<.01	<.01	**0.71**	**0.09**	**0.08**	**0.17**	**<.01**		**<.01**	**<.01**	**0.00**	**0.54**	**<.01**	**<.01**
9.NI	0.02	–0.16	0.03	0.23	–0.10	0.42	–0.06	0.04	1.00	0.54	–0.15	0.05	0.03	0.00
	0.02	<.01	**0.00**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**		**<.01**	**<.01**	**<.01**	**0.00**	**0.85**
10.FI	0.10	–0.02	0.15	0.30	0.06	0.22	–0.02	0.04	0.40	1.00	–0.09	0.07	0.04	0.01
	<.01	0.01	**<.01**	**<.01**	**<.01**	**<.01**	**0.06**	**<.01**	**<.01**		**<.01**	**<.01**	**<.01**	**0.10**
11.PPE	–0.05	0.03	0.01	–0.04	–0.23	0.23	0.01	0.05	0.10	0.06	1.00	–0.11	–0.24	–0.09
	<.01	0.00	**0.08**	**<.01**	**<.01**	**<.01**	**0.22**	**<.01**	**<.01**	**<.01**		**<.01**	**<.01**	**<.01**
12.RD	0.02	–0.12	0.01	0.23	0.16	0.00	–0.01	0.00	0.00	0.11	–0.13	1.00	0.09	–0.02
	0.01	<.01	**0.10**	**<.01**	**<.01**	**0.85**	**0.41**	**0.74**	**0.79**	**<.01**	**<.01**		**<.01**	**0.00**
13.EqInc	–0.02	0.04	–0.02	0.11	0.19	–0.03	0.00	–0.06	0.07	0.06	–0.24	0.14	1.00	–0.20
	0.07	<.01	**0.01**	**<.01**	**<.01**	**<.01**	**0.85**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**		**<.01**
14.Intang	0.13	0.09	–0.06	0.24	0.20	0.05	–0.03	0.05	–0.02	0.10	–0.04	0.04	–0.19	1.00
	<.01	<.01	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	**<.01**	

This table shows the correlations between the variables. Pearson Correlations are reported on the top right; Spearman Correlations on the bottom left. Variable definitions are provided in Appendix II. The two-sided p-values are bold.

Table 3. Effective Tax Rates and Geographic Earnings Disclosure

Panel A: Effective Tax Rate (ETR)

	Dependent Variable = *ETR*		
Variables	Pre-SFAS 131Period	Post-SFAS 131 Period	Post-M-3 Period
NoDisc	0.005	–0.041***	–0.015
	(0.40)	(–3.49)	(–1.24)
LnMV	0.019***	0.017***	0.011***
	(7.78)	(7.20)	(4.45)
Lev	0.011	0.013	0.010
	(0.78)	(0.85)	(0.75)
MB	–0.002	–0.005***	–0.003***
	(–1.45)	(–4.51)	(–2.83)
NOL	–0.047***	–0.001	–0.002
	(–5.09)	(–0.06)	(–0.24)
Δ*NOL*	–0.039***	–0.023**	–0.039***
	(–4.23)	(–2.55)	(–5.01)
NI	0.145***	0.049	0.018
	(3.49)	(1.38)	(0.50)
FI	–0.064	0.237***	0.053
	(–0.73)	(3.10)	(0.70)
PPE	–0.055	–0.304***	–0.322***
	(–0.87)	(–4.21)	(–4.28)
RD	–2.137***	–0.628	–0.852
	(–2.98)	(–0.78)	(–1.17)
EqInc	–0.106***	–0.090***	–0.085***
	(–4.57)	(–3.65)	(–3.33)
Intang	0.080***	0.071***	0.058***
	(2.60)	(2.93)	(2.65)
Intercept	0.252***	0.261***	0.238***
	(7.86)	(5.76)	(5.13)
Test for *NoDisc*	3.80***		2.18***
Adj. R^2	0.099	0.098	0.085
N	4,121	4,545	5,165

(Table 3 continued on next page)

Table 3 (continued). Effective Tax Rates and Geographic Earnings Disclosure

Panel B: Cash Effective Tax Rate (ETR_Cash)

	Dependent Variable = *ETR_Cash*		
Variables	Pre-SFAS 131Period	Post-SFAS 131 Period	Post-M-3 Period
NoDisc	0.006	–0.052***	–0.013
	(0.52)	(–4.13)	(–1.18)
LnMV	0.014***	0.008***	0.003
	(5.37)	(3.09)	(1.31)
Lev	–0.001	–0.029*	0.007
	(–0.06)	(–1.85)	(0.48)
MB	–0.004***	–0.005***	–0.005***
	(–2.75)	(–4.07)	(–3.56)
NOL	–0.052***	0.001	–0.013
	(–5.26)	(0.06)	(–1.51)
Δ*NOL*	–0.054***	–0.024**	–0.055***
	(–5.41)	(–2.40)	(–6.81)
NI	–0.047	–0.270***	–0.129***
	(–0.81)	(–4.64)	(–2.69)
FI	–0.321***	0.103	–0.023
	(–3.46)	(1.07)	(–0.30)
PPE	–0.181***	–0.392***	–0.478***
	(–2.84)	(–4.45)	(–6.63)
RD	–1.794***	0.422	–0.665
	(–2.64)	(0.56)	(–0.87)
EqInc	–0.102***	–0.038	–0.094***
	(–4.17)	(–1.42)	(–3.68)
Intang	0.034	0.085***	0.008
	(1.16)	(3.42)	(0.43)
Intercept	0.303***	0.292***	0.325***
	(7.36)	(6.73)	(7.55)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Test for *NoDisc*	4.79***		3.31***
Adj. R^2	0.090	0.102	0.086
N	3,806	4,172	4,900

Panel A tests the relation between effective tax rate (*ETR*) and non-disclosure of geographic earnings in the financial reports (*NoDisc*). Panel B tests the relation between cash tax rates (*ETR_Cash*) and *NoDisc*. The first column uses observations from pre-SFAS 131 period (January 1993 to November 1998), the second column uses observations from post-SFAS 131 period (December 1998 to November 2004), and the third column uses observations from post-M-3 period (December 2004 to December 2008). Variable definitions are provided in Appendix II. Standard errors are clustered by firm. t-statistics are reported in parentheses. The "Test for

NoDisc" is a t-test of whether the coefficient on *NoDisc* differs from that in the post-SFAS 131 period. ***, ** and * refer to significance at the 0.01, 0.05 and 0.10 level (two-sided test), respectively.

Table 4. Propensity Score Matched Sample

		Dependent Variable =	
	Logit(NoDisc)	*ETR*	*ETR_Cash*
Variables	*Prediction Model*	*1 to 1 Matched Sample*	*1 to 1 Matched Sample*
NoDisc		–0.037**	–0.036**
		(–2.45)	(–2.16)
LnMV	–0.123***	0.014***	0.006
	(24.82)	(3.06)	(1.26)
Lev	0.183	0.041	–0.005
	(1.09)	(1.17)	(–0.14)
MB	0.017	–0.003	–0.006**
	(1.50)	(–1.28)	(–2.10)
NOL	–0.313***	0.024	0.008
	(10.03)	(1.40)	(0.41)
Δ*NOL*	0.037	–0.006	–0.020
	(0.08)	(–0.37)	(–1.07)
NI	1.952***	–0.328**	–0.419***
	(12.76)	(–2.56)	(–2.92)
FI	–7.354***	0.048	–0.138
	(66.66)	(0.27)	(–0.69)
PPE	3.556***	–0.301**	–0.544***
	(16.15)	(–2.00)	(–3.17)
RD	13.459	–3.169**	0.156
	(2.16)	(–2.13)	(0.09)
EqInc	0.568*	–0.065	–0.009
	(3.57)	(–1.18)	(–0.16)
Intang	2.227***	0.047	0.061
	(50.38)	(0.85)	(1.03)
Intercept	1.149***	0.324***	0.348***
	(10.48)	(3.56)	(3.65)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Log Likelihood	3,761.1		
Adj. R^2		0.041	0.074
N	3,960	1,058	1,058

This table use a sample matched based on the propensity of non-disclosure of geographic earnings. In the first stage, a logit model is employed to predict the propensity of non-disclosure. Then, based on year, industry, and the propensity score (the predicted value from the first stage), we match each discloser with one non-discloser. We require matched firms to have a difference

in propensity scores of less than 0.025. In the second stage, the matched sample is used to tests the relation between effective tax rates (*ETR*) and non-disclosure of geographic earnings (*NoDisc*), after controlling for the propensity score. The test uses observations from the post-SFAS 131 period (December 1998 to November 2004). Standard errors are clustered by firm. For the prediction model, chi-squares are reported in parentheses, and, for the other models, t-statistics are reported in parentheses. ***, ** and * refer to significance at the 0.01, 0.05 and 0.10 level (two-sided test), respectively.

Table 5. Foreign and Domestic Effective Tax Rates and Geographic Earnings Disclosure in the post-SFAS 131 period

	Dependent Variable =	
Variables	*ETR_Dom*	*ETR_For*
NoDisc	−0.005	−0.052***
	(−0.36)	(−3.68)
LnMV	0.020***	0.009***
	(7.66)	(2.91)
Lev	−0.018	0.041*
	(−1.18)	(1.85)
MB	−0.003**	−0.004**
	(−2.51)	(−2.14)
NOL	−0.019*	−0.005
	(−1.94)	(−0.41)
Δ*NOL*	−0.022**	0.002
	(−2.19)	(0.20)
NI	−0.160***	0.228***
	(−2.95)	(3.06)
FI	0.694***	−0.944***
	(5.95)	(−7.15)
PPE	−0.280***	0.020
	(−3.35)	(0.17)
RD	−0.097	−1.437
	(−0.11)	(−1.56)
EqInc	−0.055*	−0.132***
	(−1.96)	(−3.64)
Intang	0.059**	0.008
	(2.33)	(0.28)
Intercept	0.135***	0.333***
	(3.40)	(6.59)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Adj. R^2	0.099	0.086
N	3,254	3,256

This table tests the relation between effective tax rates and non-disclosure of geographic earnings (*NoDisc*) in the post-SFAS 131 period (December 1998 to November 2004). The first column uses domestic effective tax rate (*ETR_Dom*) as the dependent variable, and the second column uses foreign effective tax rate (*ETR_For*) as the dependent variable. Variable definitions are

provided in Appendix II. All models include both year and industry fixed effect, and standard errors are clustered by firm. t-statistics are reported in parentheses. ***, ** and * refer to significance at the 0.01, 0.05 and 0.10 level (two-sided test), respectively.