# Strategic Corporate Tax Lobbying

## *Janet A. Meade and Shihong Li*

**ABSTRACT:** We investigate the motivation for and outcome of corporate participation in shaping tax policy via lobbying. We posit that generally tax-sophisticated firms lobby on tax issues and that their motives for doing so are either to obtain a tax benefit or to avoid losing one. We label these motives as strategic and defensive tax lobbying, respectively, and we empirically investigate whether strategic lobbying yields a measurable reduction in future tax rates. Using a proxy measure of strategic tax lobbying, we find a significant and negative relation between our measure and future cash ETRs. Alternative specifications of our primary model produce similar results.

**Keywords:** corporate lobbying; corporate political activity; tax minimization; tax sophistication.

### INTRODUCTION

While a considerable body of research has developed on corporate tax avoidance and the effect of taxes on corporate decisions (e.g., Hanlon and Heitzman 2010), only a few accounting studies have investigated the motivation for and outcome of corporate participation in shaping tax policy. In this paper, we examine one form of corporate political activity[1]—tax lobbying—to determine whether firms that lobby on tax issues are more sophisticated about taxes than those that lobby on other issues.[2] We also investigate whether the level of tax sophistication differentially affects future tax rates. We define tax sophistication for this purpose as a firm characteristic reflecting both an acute awareness of tax issues and a willingness to

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[1] Other forms of corporate political activity are campaign contributions (including PACs and soft money), membership in trade associations (including the Chamber of Commerce), in-kind gifts, contributions to certain Section 501(c) and 527 organizations, and employment-based impact.

[2] The Center for Responsible Politics (CRP, 2013) identifies 80 lobbying issues. For 2013, the top ten issues are the federal budget, taxes, health issues, transportation, defense, energy and nuclear power, environment and superfund, education, Medicare and Medicaid, and trade. The entire list can be found at: http://www.opensecrets.org/lobby/alphalist_issue.php.

invest in aggressive tax minimization actions where such actions are expected to provide a return superior to that of other investments.

Our study is premised on the notion that firms with higher effective tax rates (ETRs) are more likely to lobby strategically to obtain a tax benefit, whereas lower-ETR firms are likely to lobby defensively to avoid losing one. The results of our empirical tests suggest that firms lobbying on tax issues are more sophisticated in tax minimization than non-tax lobbying firms and that only the strategic tax lobbiers are rewarded with observable benefits in the form of lower future tax rates.

Our examination of tax lobbying extends two earlier studies in the political science literature that investigated the relation between (tax) lobbying and future tax rates. Drope and Hansen (2008; hereafter DH) determined that neither the act of tax lobbying nor the amount spent affected future ETRs. They provided free-riding as one possible explanation. In contrast, Richter, Samphantharak, and Timmons (2009; hereafter RST) reported that firms increasing their lobbying expenditures (irrespective of lobbying issue) had lower ETRs the next year, but that the act of lobbying itself did not affect future tax rates. They interpreted their first finding as evidence of opportunistic lobbying by firms seeking legislative benefits and their second finding as indicative of defensive lobbying by firms preserving benefits.

We revisit the question of tax lobbying and future ETRs from a different perspective. In our view, tax lobbying is an investment decision. The decision to lobby signals a firm's belief that such an undertaking will yield a superior return compared to alternatives of similar risk. Unlike many other investments, however, the return on tax lobbying is not necessarily realized in the form of positive cash flows (e.g., lower future taxes). A firm may engage in tax lobbying to avoid an increase in future taxes or to maintain political connections. While these defensive efforts may produce real benefits, they are often difficult to measure or quantify. We believe defensive lobbying may explain DH's insignificant results. We also believe, contrary to RST, that an increase in the amount spent on tax lobbying does not necessarily signal an attempt to obtain a new tax benefit.

To illustrate our point, consider the lobbying behavior of beneficiaries of the research credit.[3] Since the credit's original expiration date of December 31, 1985, it has expired eight times and been extended 15 times, often retroactively (Guenther 2014). Firms that benefit from the credit typically increase their tax lobbying expenditures in years when it is expiring. In our view, lobbying to retain the research credit is defensive because the lobbier's intent is to defend a tax benefit it currently enjoys. Further, the pattern of increasing and decreasing lobbying expenditures that corresponds with the credit's availability should not, in most years, affect the next-year ETR of the lobbier.

In this paper we address two questions. First, we investigate whether firms that lobby on tax issues are more sophisticated about tax than those that lobby on other issues. While the answer to this question may seem obvious, it has not been addressed empirically before. Second, premised upon our finding to the first question, we test whether the level of tax sophistication differentially affects future cash ETRs.

Our analysis differs from previous work in several respects. First, we use a more homogeneous sample that includes only lobbying firms, rather than all Compustat firms (as in RST) or randomly selected U.S. firms (as in DH). Since the attributes of lobbying and non-lobbying firms often differ, using a homogeneous sample helps mitigate unobservable factors that may relate to both a firm's decision to lobby and its tax attributes. Using a homogeneous sample also minimizes the confounding effect of free-riding because all of our sample firms have the resources and connections necessary to lobby. As such, they should have little incentive to free-ride on the tax lobbying of others.

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[3]  See, Internal Revenue Code Section 41, *Credit for Increasing Research Activities* (sometimes referred to as the R&E or R&D credit), available at: http://www.irs.gov/pub/irs-regs/research_credit_basic_sec41.pdf.

Second, we measure the consequence of tax lobbying with 3-year cash ETRs instead of the annual GAAP ETRs used by DH and RST. The advantage of 3-year cash ETRs over 1-year GAAP ETRs comes from two sources: a longer measurement period and cash basis tax payments. The three-year period minimizes the variability of year-to-year measures and the frequency of undefined values due to negative denominators. It also captures tax benefits that materialize one or two years after lobbying. Additionally, cash ETRs reflect deferral strategies that GAAP ETRs do not capture, and they are unaffected by changes in estimates impacting the valuation allowance or contingency reserve.

To test our first question, we examine the relation between our proxy for tax sophistication and observed tax lobbying among all firms that lobbied, irrespective of issue, between 1998 and 2010. Our results show that firms with historically low 3-year ETRs[4] are more likely to lobby on tax issues—a finding that suggests that the decision to lobby on tax issues is nonrandom among lobbying firms. To investigate the extent that low tax rates result simply from tax lobbying, we compare the lagged 3-year ETRs of firms lobbying for the first time on tax issues to those lobbying for the first time on other issues. Our finding—that first-time tax lobbiers have significantly lower 3-year ETRs than first-time non-tax lobbiers before either begins to lobby—indicates that the observed relation of our first test between low ETRs and tax lobbying is not driven solely by the act of lobbying. Both tests provide results consistent with our argument that tax lobbiers are more sophisticated in minimizing taxes than other lobbiers.

Second, we use our finding of tax sophistication among tax lobbiers to categorize their lobbying motive as either strategic or defensive. We posit that one reason tax lobbiers have low ETRs is because they are the beneficiaries of valuable tax preferences, which they defend via lobbying. We label this group of tax lobbiers as defensive. In contrast, we hypothesize that those lobbiers who do not benefit as much from tax preferences may have high ETRs relative to other tax lobbiers. If so, then this group's tax lobbying is likely to be strategic in that its motive is to obtain tax benefits. We label this group of tax lobbiers as strategic.[5]

We test our conjecture first by looking for an average effect between tax lobbying and future tax rates among all lobbiers, irrespective of motive. Our tests fail to detect a significant relation. We then add our proxy indicator of strategic tax lobbying and find a significant and negative relation between future tax rates and the tax lobbying of strategic lobbiers. This relation holds when tax lobbying is measured either with an indicator variable or continuously based on tax lobbying expenditures. In addition, similar results are observed for models that control for potential endogeneity by using either firm fixed effects or a lagged dependent variable. Robustness tests that modify the sample by adding financial firms, removing utility firms, or including only tax lobbying firms do not alter the inferences of our primary specifications.

The contributions of the paper are twofold. First, we extend the earlier work by DH and RST. DH presented evidence that free-riding by small firms could explain the absence of a predicted negative relation between tax lobbying and future ETRs. We believe that an alternative explanation might lie in the defensive lobbying of tax-sophisticated firms. Our sample minimizes the effect of free-riding by excluding non-lobbying firms; yet we still find that tax lobbying on average does not lead to lower ETRs.

RST found that lobbying when measured with an indicator variable is not related to future ETRs. They interpreted this result as evidence of defensive lobbying. We advance the defensive

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[4] Our proxy for tax sophistication is a lagged 3-year ETR measured as the ratio of the current portion of a firm's income tax expense to its pretax income exclusive of special items. We label this as *Current_ETR3*. Alternative proxies, such as 3-, 4-, and 5-year cash ETRs produce similar results.

[5] We refer to lobbying intended to obtain a tax benefit as strategic rather than opportunistic (as in RST) to avoid connotations of exploitation or selfishness.

lobbying argument with refined empirical tests. We posit that a key characteristic of firms—tax sophistication—induces tax lobbying and that variation in this characteristic differentiates strategic from defensive tax lobbying. We posit that tax-sophisticated firms have lower ETRs, and we show that firms with lower ETRs are more likely to lobby on tax issues. As such, we are the first to provide empirical evidence of a relation between a firm's tax lobbying behavior and its tax sophistication. In addition, our finding that only strategic tax lobbying leads to an observable reduction in future tax rates helps reconcile the conflicting results of these two earlier studies.

Second, we add to the tax literature on corporate political activities by highlighting the complex nature of lobbying, particularly tax lobbying. Our results, like those of Brown, Drake, and Wellman (2015) and Mills, Nutter, and Schwab (2013), demonstrate the importance of explicitly considering the motivation of participants when examining the relation between various forms of political participation and outcomes. As such, our paper contributes to the rich body of empirical tax accounting research on corporate tax strategies by investigating one mechanism—lobbying—through which firms influence the tax laws under which they operate.

The remainder of the paper consists of the following three sections. The second section provides a summary of related research and development of our hypotheses. The third section describes the sample, research design, and empirical findings. The fourth section closes with concluding remarks.

## RELATED RESEARCH AND HYPOTHESES

Corporate lobbying has been examined from many different perspectives by disciplines as diverse as strategic management, sociology, political science, economics, and finance (Hillman, Keim, and Schuler 2004). Much of the research in these disciplines is built upon an economic view of the political process as one of competition for government-driven wealth transfers (e.g., Stigler 1971; Peltzman 1976; Watts and Zimmerman 1986). Within this context, firms voluntarily incur political costs to either gain preferential treatment or preempt negative actions, and firms mobilize politically when they are visible and/or vulnerable to regulatory scrutiny. Those most likely to engage in political activities, therefore, are large firms operating in concentrated markets where they are bound together by common incentives (Olson 1965).

Numerous studies have reported evidence consistent with this economic view of the political process (e.g., Freed and Swenson 1995; Gupta and Swenson 2003; Roberts and Bobek 2004; Hill, Kubick, Lockhart, and Wan 2013b; Lee 2013; Mills et al. 2013; Baloria, Klassen, and Weidman 2014). Evidence regarding specific outcomes, however, is mixed. The weight of research in political science, for example, has found little or no link between corporate campaign contributions and legislative payoffs (e.g., Ansolabehere, de Figueiredo, and Snyder 2003; Roscoe and Jenkins 2005; Bergan 2010). Researchers in economics and finance, however, have detected an association between corporate political participation and outcomes such as equity returns, shareholder wealth, and state tax policy (Cooper, Gulen, and Ovtchinnikov 2010; Kim 2008; Chen, Parsley, and Yang 2010; Chirinko and Wilson 2010; Hill, Kelley, Lockhart, and Van Ness 2013a). Among tax accounting research,[6] Alexander, Scholz, and Mazza (2009) estimated that firms lobbying for the 2004 tax holiday on repatriated earnings received substantial tax savings for their efforts. Brown et al. (2015) find that the most politically active firms enjoy both increased levels of future tax benefits and more sustainable tax benefits over time. Barrick (2013) found that the returns on lobbying dollars are higher for firms pursuing collective political participation than individual action.

Research on corporate political participation has also attempted to identify the firm-specific characteristics of participants. Relevant for our purposes are the findings of a positive association

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[6] See Barrick and Alexander (2014) for a discussion of the tax lobbying process and related research.

between corporate lobbying and firm size, diversification, internationalization, investment opportunities, and employment, but a negative association with cash flow and sales growth rates (Sadrieh and Annavarjula 2005; Brasher and Lowery 2006; Bombardini 2008; Kim 2008; Chen et al. 2010; Mathur and Singh 2011; Hill et al. 2013a). In addition, profitability has been found to influence the intensity of lobbying activity, whereas foreign nationality has a negative impact (Sadrieh and Annavarjula 2005). Findings regarding the effect of industry concentration have been mixed. Hansen, Mitchell, and Drope (2005) found little empirical support of a relation between multiple measures of corporate political participation and concentration ratios. However, Kim (2008) found that lobbying firms are more likely to operate in concentrated or regulated industries with government contracts.

While our study is related to much of this earlier work, its motivation lies in two studies in the political science literature asking similar questions, but reaching different conclusions. The study by DH investigated the effect of tax lobbying on firm-level ETRs using a random sample of U.S. firms for the period 1998 to 2005. The study found no empirical support for the popular belief that lobbying, either generally or on tax issues specifically, provides a benefit to firms in the form of lower future ETRs. In contrast, the study by RST used data from the same time period, but reported that firms with marginally higher lobbying expenditures, irrespective of lobbying issue, have lower ETRs the following year. They also observed that lobbying, measured as a binary variable, did not affect future tax rates.

Comparing the studies of DH and RST requires an appreciation for the differences in their theoretical arguments and empirical methodologies. DH argued that it takes time to influence the political process, and that tax legislation tends to affect not only specific firms, but also entire industries. They therefore used a time-series regression clustered by industry to investigate the relation between a firm's lagged three-year cumulative lobbying expenditures and the annual change in its ETR. They then modified this baseline model with one containing a variable indicating whether a firm lobbied specifically on tax issues, and another model substituting an estimate of a firm's three-year cumulative tax lobbying expenditures for its three-year cumulative general lobbying expenditures. None of their specifications however, detected a significant relation between lobbying, tax lobbying, or tax lobbying expenditures and future tax rates.

RST argued that firms anticipating a payoff from their lobbying in the next period are likely to incur greater lobbying expenditures in the current period. They therefore examined the relation between a firm's one-year lobbying expenditures and its next-year ETR. Similar to DH, RST measured ETR as the ratio of total income taxes to pretax income, but they did not distinguish expenditures related to tax lobbying from those related to other lobbying issues. Nor did they consider that the legislative process might take years to produce a measurable payoff. Despite these limitations, RST reported a negative relation between a firm's lobbying expenditures and its next-year ETR. This relation was insignificant, however, when lobbying was measured with an indicator variable. RST interpreted their main result as supporting a view of lobbying as opportunistic behavior. They interpreted their secondary finding as consistent with defensive lobbying.

While we find the RST argument for defensive and opportunistic lobbying insightful, we question some of their methodological choices. For example, the RST sample includes loss firm-years for which one-year ETR measures are meaningless. Additionally, their finding of defensive lobbying derives from a test that employs a firm fixed effect model with an indicator variable as the variable of interest. Lack of variation in the predictor variable itself could have contributed to the observed null relation between a firm's lobbying behavior and its ETR.[7] Last, RST's finding

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[7] In RST's firm fixed effect model, the only variation used to estimate the relation was that of firms alternating between lobbying and non-lobbying behaviors during the sample years. Most of the RST sample firms did not exhibit this behavior. See Wooldridge (2010) for a more detailed discussion of why time-constant variables should not be included as explanatory variables of fixed effect models.

regarding opportunistic lobbying suggests that a firm engaging in such behavior can expect to reduce its ETR by 1.07 percent for every 1 percent increase in lobbying expenditures, an effect seemingly too large.[8]

Given the limitations of prior work, we revisit the question of tax lobbying and future ETRs from a different perspective. Our perspective views investments in tax lobbying as similar to other investment decisions. Firms engage in tax lobbying only when it is expected to provide a return superior to that of alternatives of similar risk, including investments in conventional tax minimization.

Tax lobbying differs from conventional tax minimization in two key ways: deductibility of the expense and variability of the expected outcome. Because of these differences, we assert that firms initially prefer investments in conventional tax minimization over tax lobbying. In particular, a preference for conventional tax minimization should dominate the tax reduction strategies of younger firms focused on growing their businesses. But as these businesses grow, they are likely to become more sophisticated about taxes and this sophistication may translate into more aggressive efforts at tax minimization. Tax lobbying is likely to be one of these more aggressive actions, but only when a political climate has emerged that either encourages or necessitates lobbying.

A political climate that encourages tax lobbying is one where policymakers are willing to forgo revenue by expanding the set of tax preferences. A climate that necessitates tax lobbying is one where policymakers seek to increase revenue by curtailing the set of tax preferences. These climates, which often co-exist, create opportunities for strategic tax lobbying by firms seeking new tax benefits, or compel firms to engage in defensive tax lobbying to preserve existing tax benefits. Tax benefits may take the form of direct tax savings from exclusions, deductions and credits, or indirect tax savings from strategies that exploit loopholes in the tax law.

As the preceding discussion indicates, firms that engage in conventional tax minimization activities should have lower ETRs than those that do not. Similarly, firms that are the beneficiaries of tax preferences should have lower ETRs than those without such preferences. Operationalized, these relations should manifest in a finding of lower ETRs among tax lobbying firms because these firms either engage in conventional tax minimization activities and/or are beneficiaries of tax preferences. In other words, we posit that tax lobbiers are more sophisticated tax minimizers than other lobbiers. Our first hypothesis restates this conjecture:

**H1:** Among firms that lobby, those that are tax sophisticated are more likely to lobby on tax issues.

Within the set of tax-sophisticated lobbiers, we posit that some lobby to preserve an existing tax benefit and others lobby to obtain a tax benefit. The first group—defensive tax lobbiers—are likely to be firms with the lowest ETRs because they arguably have benefitted from not only special exclusions, deductions, or credits in the tax law, but also from tax minimization activities that resulted in tax-efficient organizational structures and operations. Yet because they have such low ETRs, they are vulnerable to political and media scrutiny (e.g., Drucker 2010; Kocieniewski 2011; Bowley 2013; Hook and Yadron 2013). We expect that the tax lobbying efforts of these firms do not reduce their future ETRs.

Conversely, firms that have lowered their ETRs largely by means of conventional tax minimization strategies are likely to engage in strategic tax lobbying for purposes of obtaining a tax

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[8] In our sample, when a firm with average lobbying expenditures ($910,000) increases its spending by one standard deviation ($1,961,000), the rate of change is 115 percent. Applying the RST coefficient of $-1.07$ to our data, the decline in ETR associated with a one standard deviation increase in lobbying expenditures is $115 * 1.07 = 123.05$ percentage points.

benefit. We expect that the tax lobbying efforts of these firms do reduce their future ETRs. The different motivations for and outcomes of these firms' tax lobbying leads to our second hypothesis:

**H2:** Among firms that lobby, those that lobby strategically on tax issues benefit from lower future tax rates.

## RESEARCH DESIGN AND EMPIRICAL RESULTS

### Sample and Descriptive Statistics

Because we are interested in determining whether tax lobbiers differ in some identifiable way from non-tax lobbiers, our sample includes only lobbying firms. This differs from the samples of DH and RST, who asked whether lobbying firms enjoy lower future tax rates than non-lobbying firms do. It also differs from those of earlier studies examining why firms lobby (Sadrieh and Annavarjula 2005; Brasher and Lowery 2006; Bombardini 2008; Kim 2008; Chen et al. 2010; Mathur and Singh 2011; Hill et al. 2013a). The advantage of our sampling choice is that it alleviates the potential self-selection bias of tests that compare lobbying and non-lobbying firms. Focusing on lobbying firms also minimizes the effect of free-riding, which we do not investigate in this study.

Table 1 summarizes our sample selection criteria. As shown in Panel A, we started with 35,278 organizations named in lobbying disclosure reports filed with the Secretary of the Senate's Office of Public Records from 1998 to 2010. These organizations were identified in two data tables compiled by the Center for Responsive Politics (CRP 2013) and publicly available on its website.[9] One of these tables contained records on lobbying expenditures and a second identified lobbying issues. Using the unique ID assigned to each lobbying report, we merged the two data tables so as to distinguish each organization's tax lobbying from lobbying on other issues.

Financial information for our sample was drawn from Compustat by manually matching organization names in the merged CRP data table with firm names in the Compustat database. Because many organizations identified in lobbying reports are private or exempt entities, this matching process reduced our sample to 2,784 firms. The sample was further reduced for observations with unusual, extreme, or missing values, and those representing financial and foreign firms. After truncating the extreme values, the usable sample consisted of 1,529 firms with 11,625 firm-year observations.

Panel B of Table 1 reports the frequency with which firms lobbied on tax issues. Over the 13-year span of our sample, 2,714 observations of lobbying on tax issues were noted among 562 firms.[10] Over this same period, 26 different pieces of major tax legislation were enacted (Tax Policy Center 2013).

Table 2 provides information on the distribution of our sample. As shown in Panel A, the observations are distributed across fiscal years in approximately the same numbers. Observations of tax lobbying, however, increase perceptibly over the sample period. Industry representation, shown in Panel B, is classified using the Fama and French (1997) 30-industry methodology (modified and described on Kenneth French's website)[11] and it approximates the Compustat

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[9] Data from the Center for Responsive Politics are provided under a Creative Commons license and are available at http://www.opensecrets.org/.

[10] Among the tax lobbying observations, 4.86 percent of our sample is drawn from firms that lobbied only once on tax issues during our 13-year study period. While this small number of observations does represent slightly less than one-fourth (23.49 percent) of our tax lobbying firms, it highlights the premise of H1—that most firms only lobby when they expect it to be cost effective relative to other tax minimization activities. Dropping these firms does not qualitatively change our results.

[11] Fama and French industry definitions are available at: http://www.mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_30_ind_port.html

## TABLE 1

## Sample Selection

**Panel A: Sample Selection**

|  | Firms/Org. | Obs. |
|---|---|---|
| Organizations identified in lobbying disclosure reports filed with the Senate's Office of Public Records (SOPR) from 1998 to 2010[a] | 35,278 | |
| Firms with financial information in Compustat | 2,784 | |
| Firm years with non-missing values to compute 3-year *Cash_ETR* | 1,771 | 14,409 |
| Firm years after removing financial firms | 1,609 | 13,126 |
| Firm years after truncating 2 percent extreme values[b] | 1,529 | 11,625 |

**Panel B: Frequency of Lobbying on Tax Issues**

| Year-Count | Firms | Percent | Obs. | Percent |
|---|---|---|---|---|
| 1 | 132 | 23.49 | 132 | 4.86 |
| 2 | 96 | 17.08 | 192 | 7.07 |
| 3 | 64 | 11.39 | 192 | 7.07 |
| 4 | 48 | 8.54 | 192 | 7.07 |
| 5 | 29 | 5.16 | 145 | 5.34 |
| 6 | 29 | 5.16 | 174 | 6.41 |
| 7 | 19 | 3.38 | 133 | 4.90 |
| 8 | 19 | 3.38 | 152 | 5.60 |
| 9 | 20 | 3.56 | 180 | 6.63 |
| 10 | 30 | 5.34 | 300 | 11.05 |
| 11 | 21 | 3.73 | 231 | 8.51 |
| 12 | 24 | 4.27 | 288 | 10.61 |
| 13 | 31 | 5.52 | 403 | 14.85 |
| Total | 562 | 100.00 | 2,714 | 100.00 |

[a] Data are provided by the Center for Responsive Politics at: http://www.opensecrets.org/action.data.php.
[b] Truncation is performed at the top and bottom 1 percent for variables *Sales_Growth* and *ROA,* and at the top 2 percent for *Capital_Intensity, Inventory_Intensity, R&D_Intensity,* and *Leverage* because the minimum value of the latter group is limited to 0 by definition.
Panel B shows how frequently a firm appears in the data as a tax lobbying observation. For example, 132 firms lobby on tax issues in only one of the sample years, representing 23.49 percent of the 562 tax lobbying firms and 4.86 percent of the 2,714 tax lobbying observations. In contrast, 5.52 percent of the tax lobbying firms—31 by number—lobby on tax issues in each of the 13 sample years, constituting 14.85 percent of the tax lobbying observations.

population. There is, however, some over-representation of the utilities industry. Financial firms were removed from the sample because they face unique tax rules and their lobbying is often on behalf of their clients.[12]

Table 2, Panel C presents the distribution across our sample of the variables used in our analysis. As shown, tax lobbiers are larger, older, and operate in more highly concentrated

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[12] Including financial firms or excluding utility firms in the analysis does not qualitatively change our results.

## TABLE 2

## Sample Description

### Panel A: Distribution by Fiscal Year

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n | 871 | 881 | 898 | 912 | 892 | 877 | 896 | 943 | 963 | 921 | 904 | 844 | 823 |
| Percentage | 7.49 | 7.58 | 7.72 | 7.85 | 7.67 | 7.54 | 7.71 | 8.11 | 8.28 | 7.92 | 7.78 | 7.26 | 7.08 |
| n (*If_Lobby_Tax* = 1) | 162 | 174 | 178 | 174 | 183 | 199 | 201 | 214 | 221 | 237 | 247 | 262 | 263 |
| Percentage | 5.97 | 6.41 | 6.56 | 6.41 | 6.74 | 7.33 | 7.40 | 7.88 | 8.14 | 8.73 | 9.10 | 9.65 | 9.69 |

### Panel B: Distribution by Industry

| | Sample | | Compustat (2010) | |
|---|---|---|---|---|
| **Fama-French 30 Industry**[a] | **Obs.** | **Percent** | **Obs.** | **Percent** |
| Personal and Business Services | 1,426 | 12.27 | 15,683 | 11.44 |
| Business Equipment | 1,348 | 11.60 | 12,738 | 9.29 |
| Healthcare | 1,334 | 11.48 | 12,321 | 8.99 |
| Utilities | 1,191 | 10.25 | 3,995 | 2.91 |
| Banking, Insurance, Real Estate | 0 | 0.00 | 34,347 | 25.05 |
| Other | 560 | 4.82 | 4,163 | 3.04 |
| Chemicals | 495 | 4.26 | 2,031 | 1.48 |
| Retail | 488 | 4.20 | 4,730 | 3.45 |
| Fabricated Products | 435 | 3.74 | 3,338 | 2.43 |
| Transportation | 415 | 3.57 | 3,062 | 2.23 |
| Communications | 372 | 3.20 | 4,811 | 3.51 |
| Food | 359 | 3.09 | 2,296 | 1.67 |
| Business Supplies and Containers | 322 | 2.77 | 1,403 | 1.02 |
| Automobiles and Trucks | 309 | 2.66 | 1,432 | 1.04 |
| Wholesalers | 296 | 2.55 | 3,571 | 2.60 |
| Recreation | 281 | 2.42 | 2,697 | 1.97 |
| Construction | 246 | 2.12 | 2,811 | 2.05 |
| Oil and Gas | 243 | 2.09 | 6,425 | 4.69 |
| Steel Works | 218 | 1.88 | 1,454 | 1.06 |
| Electrical Equipment | 216 | 1.86 | 1,555 | 1.13 |
| Aircraft, Ships, and Railroads | 202 | 1.74 | 626 | 0.46 |
| Consumer Goods | 200 | 1.72 | 1,454 | 1.06 |
| Restaurants, Hotels, Motels | 174 | 1.50 | 1,848 | 1.35 |
| Printing and Publishing | 167 | 1.44 | 1,118 | 0.82 |
| Apparel | 160 | 1.38 | 1,145 | 0.84 |
| Textiles | 74 | 0.64 | 343 | 0.25 |
| Beer and Liquor | 62 | 0.53 | 406 | 0.30 |
| Tobacco Products | 32 | 0.28 | 136 | 0.10 |
| Precious Metals and Mining | 0 | 0.00 | 4,837 | 3.53 |
| Coal | 0 | 0.00 | 330 | 0.24 |
| Total | 11,625 | 100.00 | 137,106 | 100.00 |

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**TABLE 2 (continued)**

**Panel C: Distribution of Sample Variables**

| Variable | n | 1st Quartile | Median | 3rd Quartile | Mean | Std. Dev. |
|---|---|---|---|---|---|---|
| *If_Lobby_Tax = 1* | | | | | | |
| *If_Lobby_Tax3* | 2,715 | 1.00 | 1.00 | 1.00 | 0.81 | 0.39 |
| *$_Lobby_Tax3* | 2,715 | 8.27 | 10.75 | 12.21 | 8.85 | 4.85 |
| *Current_ETR3* | 2,709 | 0.10 | 0.24 | 0.33 | 0.23 | 0.18 |
| *High_ETR$_{t-4}$* | 2,204 | 0.00 | 0.50 | 1.00 | 0.50 | 0.50 |
| *Cash_ETR3* | 2,715 | 0.13 | 0.23 | 0.32 | 0.24 | 0.17 |
| *Concentration* | 2,715 | 16.10 | 31.50 | 42.90 | 33.24 | 19.21 |
| *Capital_Intensity* | 2,715 | 0.31 | 0.59 | 0.93 | 0.63 | 0.36 |
| *Inventory_Intensity* | 2,715 | 0.02 | 0.06 | 0.12 | 0.08 | 0.08 |
| *R&D_Intensity* | 2,715 | 0.00 | 0.00 | 0.04 | 0.03 | 0.04 |
| *Total_Assets* | 2,715 | 8.32 | 9.26 | 10.18 | 9.19 | 1.39 |
| *Sales_Growth* | 2,715 | −0.01 | 0.07 | 0.15 | 0.09 | 0.21 |
| *ROA* | 2,715 | 0.04 | 0.07 | 0.13 | 0.08 | 0.08 |
| *Leverage* | 2,715 | 0.51 | 0.63 | 0.72 | 0.61 | 0.17 |
| *Multinational* | 2,715 | 0.00 | 0.00 | 1.00 | 0.29 | 0.45 |
| *Age* | 2,715 | 17.00 | 44.00 | 58.00 | 40.47 | 23.80 |
| *Regulated* | 2,715 | 0.00 | 0.00 | 0.00 | 0.17 | 0.38 |
| *Environmental* | 2,715 | 0.00 | 0.00 | 0.00 | 0.10 | 0.30 |
| *If_Lobby_Tax = 0* | | | | | | |
| *If_Lobby_Tax3* | 8,910 | 0.00 | 0.00 | 0.00 | 0.07 | 0.26 |
| *$_Lobby_Tax3* | 8,910 | 0.00 | 0.00 | 0.00 | 0.66 | 2.50 |
| *Current_ETR3* | 8,895 | 0.05 | 0.24 | 0.35 | 0.24 | 0.20 |
| *High_ETR$_{t-4}$* | 6,534 | 0.00 | 1.00 | 1.00 | 0.48 | 0.50 |
| *Cash_ETR3* | 8,910 | 0.11 | 0.23 | 0.33 | 0.25 | 0.20 |
| *Concentration* | 8,910 | 16.10 | 25.80 | 38.30 | 28.07 | 16.00 |
| *Capital_Intensity* | 8,910 | 0.23 | 0.45 | 0.77 | 0.52 | 0.34 |
| *Inventory_Intensity* | 8,910 | 0.01 | 0.07 | 0.15 | 0.10 | 0.10 |
| *R&D_Intensity* | 8,910 | 0.00 | 0.00 | 0.03 | 0.02 | 0.04 |
| *Total_Assets* | 8,910 | 6.05 | 7.26 | 8.38 | 7.20 | 1.79 |
| *Sales_Growth* | 8,910 | 0.00 | 0.09 | 0.21 | 0.14 | 0.24 |
| *ROA* | 8,910 | 0.03 | 0.07 | 0.13 | 0.08 | 0.08 |
| *Leverage* | 8,910 | 0.37 | 0.55 | 0.68 | 0.53 | 0.21 |
| *Multinational* | 8,910 | 0.00 | 0.00 | 0.00 | 0.21 | 0.41 |
| *Age* | 8,910 | 10.00 | 17.00 | 37.00 | 24.41 | 18.68 |
| *Regulated* | 8,910 | 0.00 | 0.00 | 0.00 | 0.09 | 0.29 |
| *Environmental* | 8,910 | 0.00 | 0.00 | 0.00 | 0.05 | 0.22 |

*(continued on next page)*

industries than non-tax lobbiers. Panel D compares our sample with the Compustat population in terms of six key financial measures. Overall, our sample is larger than the Compustat population, which is consistent with research showing that large firms are more politically active (e.g., Hillman et al. 2004).[13] Explanation of our variables is provided in Appendix A and below.

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[13] While the literature on corporate political activities has shown larger firms to be more politically active, this finding as it applies to lobbying may be driven, in part, by the fact that smaller firms are less likely to exceed the disclosure threshold of $10,000 or more of lobbying expenditures in a six-month period.

**TABLE 2 (continued)**

**Panel D: Key Indicators in Comparison with Compustat Population**

| Variable | n | 1st Quartile | Median | 3rd Quartile | Mean | Std. Dev. |
|---|---|---|---|---|---|---|
| Sample | | | | | | |
| *Total liabilities* | 11,625 | 295.13 | 1,373.46 | 5,492.00 | 6,695.28 | 17,238.31 |
| *Total assets* | 11,625 | 679.61 | 2,440.49 | 8,891.39 | 10,758.00 | 26,404.14 |
| *Total revenue* | 11,625 | 596.33 | 1,958.70 | 6,893.00 | 8,824.33 | 23,957.88 |
| *Pretax income* | 11,625 | 19.22 | 125.72 | 520.26 | 775.37 | 2,961.59 |
| *Employees*[b] | 11,625 | 1.88 | 6.90 | 26.00 | 29.24 | 79.81 |
| *Market value* | 11,122 | 589.11 | 2,128.05 | 8,034.07 | 11,371.17 | 30,173.47 |
| Compustat (2010) | | | | | | |
| *Total liabilities* | 120,616 | 9.32 | 83.26 | 686.22 | 5,597.33 | 59,611.70 |
| *Total assets* | 120,841 | 27.42 | 188.64 | 1,082.10 | 6,698.46 | 63,161.70 |
| *Total revenue* | 120,126 | 13.67 | 95.70 | 626.73 | 1,991.97 | 9,952.93 |
| *Pretax income* | 120,112 | −4.31 | 2.10 | 39.52 | 165.99 | 1,491.91 |
| *Employees*[b] | 101,717 | 0.09 | 0.49 | 3.08 | 7.46 | 34.43 |
| *Market value* | 96,903 | 20.12 | 100.95 | 554.17 | 1,800.53 | 11,221.74 |

[a] Definition is available at: http://www.mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_30_ind_port.html.
[b] Number of employees (in thousands); the values of other variables are in \$mm.
See Appendix A for the definition of the variables.

**Tax Sophistication**

Our first hypothesis regarding tax sophistication (H1) is initially tested using a logit model that regresses an indicator variable representing a firm's tax lobbying in a given year on its lagged 3-year ETRs. To address possible endogeneity in the relation, we then compare the lagged 3-year ETRs of firms lobbying for the first time on tax issues to those lobbying for the first time on non-tax issues. Tests of (H2), regarding strategic tax lobbying, are described later.

The logit regression used to test H1 takes the form:

$$
\begin{aligned}
Ln[P/(1+P)] = {} & \alpha + \beta_1 * Current\_ETR3_{t-1} + \beta_2 * Concentration_{t-1} + \beta_3 * Capital\_Intensity_{t-1} \\
& + \beta_4 * Inventory\_Intensity_{t-1} + \beta_5 * R\&D\_Intensity_{t-1} + \beta_6 * Total\_Assets_{t-1} \\
& + \beta_7 * Sales\_Growth_{t-1} + \beta_8 * ROA_{t-1} + \beta_9 * Leverage_{t-1} \\
& + \beta_{10} * Multinational_{t-1} + \beta_{11} * Age_{t-1} + \beta_{12} * Regulated_{t-1} \\
& + \beta_{13} * Environmental_{t-1} + Industry\ dummies + Year\ dummies + \varepsilon
\end{aligned}
$$

where $P = Prob(If\_Lobby\_Tax_t = 1)$.

The dependent variable in the logit regression, *If_Lobby_Tax,* equals 1 when a firm lobbies on tax issues during the year. The independent variable of interest is *Current_ETR3,* a measure of a firm's ETR over the prior three years.[14] Because firms with lower ETRs are more likely to have structured their operations in a tax-efficient manner and/or operate in tax-favored sectors, this

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[14] Current ETR was chosen over cash ETR as the proxy for tax sophistication because we use cash ETR as our outcome measure in tests of H2. Both measures produce similar results when used as proxies for tax sophistication.

variable serves as our proxy for tax sophistication.[15] *Current_ETR* is measured as the ratio of the current portion of a firm's income tax expense to its pretax income exclusive of special items. The numerator follows that used by Porcano (1986) and others. The denominator follows that used by Dyreng, Hanlon, and Maydew (2008). A simpler measure with pretax income as the denominator, although a bit noisier, produces similar results. Qualitatively similar results are also obtained using 3-, 4-, and 5-year cash ETR measures.

Control variables are drawn from the literature on corporate political activities and tax avoidance. *Concentration* is measured using the industry concentration ratios of the U.S. Census Bureau's four-digit North American Industrial Classification System.[16] Although empirical evidence for the importance of industry concentration as an influence on corporate political activity is mixed (e.g., Hansen et al. 2005), the measure is generally included in empirical studies of political participation (e.g., Freed and Swenson 1995; Cooper et al. 2010; Mills et al. 2013; Brown et al. 2015).

*Capital_Intensity, Inventory_Intensity,* and *R&D_Intensity* are included because a large number of tax preferences target investments in physical capital, manufacturing, and research. Research on corporate tax strategies consequently has often found them to be significant in explaining corporate behavior and ETRs (e.g., Mills et al. 2013; Graham 2013).

Six additional control variables included in our analyses are *Total_Assets, Sales_Growth, ROA, Leverage, Multinational,* and *Regulated*. Prior research of corporate political activities has found these firm characteristics to be associated with lobbying (Sadrieh and Annavarjula 2005; Brasher and Lowery 2006; Kim 2008; Mathur and Singh 2011; Hill et al. 2013a). Of the remaining variables, *Age* measures a firm's maturity, while *Environmental* indicates whether a firm operates in an industry subject to environmental constraints. Both variables have been identified as relevant in understanding corporate political spending (Cho, Patten, and Roberts 2006). Our analyses also control for industry and year effects on tax lobbying. Appendix A provides a more complete explanation of our variables.

The independent and control variables are all lagged by one year because we are interested in identifying those firm characteristics that are related to future tax lobbying. Thus, our model relates a firm's 3-year current ETR over years $t-1$, $t-2$, and $t-3$ to the firm's tax lobbying in year $t$. Figure 1 provides a graphic illustration of the measurement periods of our variables.

Table 3 reports Pearson correlation coefficients among the variables used in our analyses. While *Current_ETR3* is correlated with some of the control variables, all of the coefficients are small. The negative association between *Current_ETR3* and the tax lobbying variables is consistent with expectations.

Table 4, which reports the results of our main test of H1, shows a negative and significant relation between a firm's current year tax lobbying (*If_Lobby_Tax$_t$*) and its prior 3-year ETR (*Current_ETR3$_{t-1}$*), indicating that among lobbying firms, those with a prior history of low ETRs have a higher probability of lobbying on tax issues than those with higher ETRs. More specifically, when *Current_ETR3* decreases by one standard deviation (20 percent in Panel C of Table 2), there is an expected increase in the odds of tax lobbying of about 22 percent.[17] If *Current_ETR3* is a reasonable proxy of a firm's tax sophistication, then these results are supportive of H1.
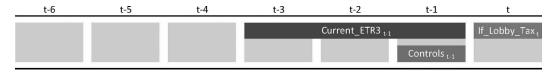
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[15] The CRP associates each lobbying report with one or more of its 80 lobbying categories. Although the CRP classification system is based on broad categories and its TAX category includes more than income tax lobbying, we believe an act of lobbying on any tax issue is indicative of some degree of sophistication about, or sensitivity to, taxes. We further believe that such tax sophistication should manifest across a variety of different taxes, including U.S. income tax. If so, then our *Current_ETR3* measure should proxy for tax sophistication.

[16] Research by Ali, Klasa, and Young (2009) indicates that U.S. Census industry concentration measures are superior to those computed using Compustat data.

[17] $Ln[P/(1 - P)] = \alpha + \beta(Current\_ETR3) + X \Rightarrow P/(1 - P) = exp(\alpha + \beta(Current\_ETR3) + X)$; when *Current_ETR3* decreases by one standard deviation, $\sigma$, the odds ratio changes by $exp(\beta\sigma) - 1$, or $exp[(-0.997) \times (-0.20)] - 1 = 0.2207$.
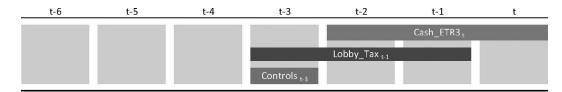
**FIGURE 1**
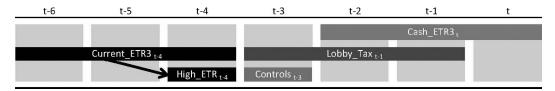**Timetable of Variable Measurement**

**Panel A: Table 4**



Dependent Variable = *If_Lobby_Tax$_t$*.

**Panel B: Table 6**



Dependent Variable = *Cash_ETR3$_t$*.

**Panel C: Table 7**



Dependent Variable = *Cash_ETR3$_t$*.
See Appendix A for the definition of the variables.

Consistent with several earlier studies (Sadrieh and Annavarjula 2005; Kim 2008; Mathur and Singh 2011; Hill et al. 2013a), *Concentration, Capital_Intensity, R&D_Intensity, Total_Assets, ROA, Multinational, Age,* and *Environmental* are all positively related to tax lobbying. Variables not found to be significant are *Inventory_Intensity, Sales_Growth, Leverage,* and *Regulated*.

Statistics regarding the fit of our logit model are reported at the bottom of Table 4. Overall, the model appears to fit the data reasonably well. The pseudo $R^2$ value is in the range expected for a model with a dichotomous dependent variable. Likewise, the predictive ability of the model is acceptable. Last, the Henriksson and Merton (1981) statistic is greater than unity indicating that the model contains information relevant for predicting tax lobbying.

## TABLE 3

### Pearson Correlation Coefficients

**Panel A: Correlation Variables *If_Lobby_Tax3* to *Inventory_Intensity***

| Variable | If_Lobby _Tax3 | $_Lobby _Tax3 | Current_ ETR3 | High_ $ETR_{t-4}$ | Cash_ ETR3 | Concen- tration | Capital_ Intensity | Inventory_ Intensity |
|---|---|---|---|---|---|---|---|---|
| *If_Lobby_Tax* | **0.72** | **0.73** | −0.04 | 0.02 | −0.03 | **0.13** | **0.13** | −0.07 |
| *If_Lobby_Tax3* | 1.00 | **0.96** | −0.04 | 0.02 | −0.04 | **0.13** | **0.12** | −0.07 |
| *$_Lobby_Tax3* | | 1.00 | −0.04 | 0.03 | −0.04 | **0.14** | **0.12** | −0.08 |
| *Current_ETR3* | | | 1.00 | **0.14** | **0.65** | −0.01 | **−0.10** | **0.06** |
| *High_ETR$_{t-4}$* | | | | 1.00 | **0.13** | 0.02 | **−0.08** | 0.00 |
| *Cash_ETR3* | | | | | 1.00 | **−0.06** | −0.01 | **0.08** |
| *Concentration* | | | | | | 1.00 | −0.01 | **0.10** |
| *Capital_Intensity* | | | | | | | 1.00 | **−0.08** |
| *Inventory_Intensity* | | | | | | | | 1.00 |

**Panel B: Correlation Variables *R&D_Intensity* to *Regulated***

| Variable | R&D_ Intensity | Total_ Assets | Sales_ Growth | ROA | Leverage | Multi- national | Age | Regu- lated | Environ- mental |
|---|---|---|---|---|---|---|---|---|---|
| *If_Lobby_Tax* | **0.03** | **0.44** | −0.08 | 0.01 | **0.17** | **0.08** | **0.32** | **0.11** | **0.09** |
| *If_Lobby_Tax3* | 0.01 | **0.44** | **−0.10** | −0.02 | **0.18** | **0.08** | **0.31** | **0.10** | **0.09** |
| *$_Lobby_Tax3* | **0.02** | **0.47** | **−0.10** | 0.00 | **0.18** | **0.08** | **0.34** | **0.12** | **0.09** |
| *Current_ETR3* | **0.07** | 0.00 | −0.01 | **0.07** | −0.05 | 0.05 | −0.01 | **−0.07** | 0.00 |
| *High_ETR$_{t-4}$* | 0.01 | **0.08** | −0.06 | 0.08 | −0.07 | 0.08 | 0.02 | −0.02 | −0.03 |
| *Cash_ETR3* | **−0.05** | −0.04 | **−0.10** | −0.08 | 0.04 | 0.04 | **0.11** | 0.01 | −0.02 |
| *Concentration* | **0.10** | **0.21** | −0.01 | 0.02 | 0.01 | 0.05 | 0.02 | **−0.06** | **0.06** |
| *Capital_Intensity* | **−0.31** | **0.23** | **−0.17** | **−0.10** | **0.31** | **−0.08** | **0.26** | **0.35** | **0.27** |
| *Inventory_Intensity* | **0.06** | **−0.15** | −0.06 | 0.05 | −0.06 | 0.06 | 0.08 | **−0.29** | **0.06** |
| *R&D_Intensity* | 1.00 | **−0.09** | 0.03 | **0.11** | **−0.34** | **0.25** | −0.09 | **−0.22** | −0.08 |
| *Total_Assets* | | 1.00 | **−0.12** | −0.08 | **0.42** | **0.12** | **0.42** | **0.26** | **0.14** |
| *Sales_Growth* | | | 1.00 | **0.20** | **−0.13** | −0.05 | **−0.20** | −0.02 | −0.04 |
| *ROA* | | | | 1.00 | **−0.34** | 0.02 | −0.04 | **−0.15** | −0.02 |
| *Leverage* | | | | | 1.00 | −0.04 | **0.30** | **0.25** | **0.09** |
| *Multinational* | | | | | | 1.00 | **0.10** | **−0.17** | **0.15** |
| *Age* | | | | | | | 1.00 | **0.19** | **0.08** |
| *Regulated* | | | | | | | | 1.00 | **−0.09** |

Cells in bold are significant at the 5 percent or higher level.
See Appendix A for the definition of the variables.

The results reported in Table 4 indicate that firms with historically low ETRs are more likely to lobby on tax issues. The results do not provide any insight, however, as to how these firms achieved their low ETRs—whether by tax lobbying, tax planning, or some combination. To address concerns that the low ETRs of our tax lobbiers are a result of previous tax lobbying, we now compare the lagged 3-year current ETRs of firms lobbying for the first time on tax issues to those lobbying for the first time on non-tax or any issues. If lower tax rates are largely the result of tax lobbying, then the tax rates of first-time tax lobbiers should not differ systematically from that of other first-time lobbiers. For this comparison, we remove from the sample all firms disclosing lobbying activity in

## TABLE 4
### Effect of 3-Year Current ETR on Tax Lobbying
### n = 11,604

| Parameter | Dependent Variable = *If_Lobby_Tax$_t$* | |
| --- | --- | --- |
| | **Estimate** | **Pr > Chi-squared** |
| Intercept | −7.881 | < 0.0001 |
| *Current_ETR3$_{t-1}$* | −0.997 | < 0.0001 |
| *Concentration$_{t-1}$* | 0.006 | 0.002 |
| *Capital_Intensity$_{t-1}$* | 0.200 | 0.055 |
| *Inventory_Intensity$_{t-1}$* | −0.302 | 0.536 |
| *R&D_Intensity$_{t-1}$* | 9.037 | < 0.0001 |
| *Total_Assets$_{t-1}$* | 0.671 | < 0.0001 |
| *Sales_Growth$_{t-1}$* | −0.055 | 0.678 |
| *ROA$_{t-1}$* | 0.990 | 0.013 |
| *Leverage$_{t-1}$* | −0.032 | 0.863 |
| *Multinational$_{t-1}$* | 0.157 | 0.020 |
| *Age$_{t-1}$* | 0.020 | < 0.0001 |
| *Regulated$_{t-1}$* | −0.130 | 0.475 |
| *Environmental$_{t-1}$* | 0.709 | 0.000 |
| Industry fixed effects | Yes | |
| Year fixed effects | Yes | |
| Pseudo R$^2$ | | 38.7% |
| Correctly predicted[a] | | |
| Events correctly predicted | | 77.6% |
| Non-events correctly predicted | | 75.1% |
| Henriksson and Merton (1981) test | | 1.53 |

[a] p = 23.4 percent of n have *If_Lobby_Tax* = 1.
p-values are reported for two-tailed tests.
This logit regression investigates whether the 3-year long-run ETR, as well as certain other firm characteristics measured at the beginning of the year, are related to tax lobbying. *Current_ETR3$_{t-1}$* is measured over *t*−3 to *t*−1. Similar results are obtained when *Cash_ETR3$_{t-1}$* is substituted for *Current_ETR3$_{t-1}$*. See Figure 1 for the timetable of measurement. See Appendix A for the definition of the variables.

1998, the first year of the CRP data, because their lobbying history cannot be verified. We then calculate the 3-year current ETRs of the remaining firms for the year prior to their first lobbying report. When a lobbying report identifies both tax and non-tax issues, we treat the firm as a dual lobbier.

Table 5 reports the results of our comparison. In Panel A, the frequency of first-time lobbiers by year is shown; Panels B and C compare the means of each group's 3-year current ETRs. The comparisons in Panel B include dual lobbiers as both first-time any-issue lobbiers and first-time tax lobbiers. Panel C drops these dual lobbiers from the analysis. The results reported in both Panels B and C indicate a significant difference in the ETRs. In Panel B, the mean 3-year current ETR of first-time tax lobbiers is 29.6 percent while that of first-time any-issue lobbiers is 32.3 percent. In Panel C, the mean 3-year current ETR is 29.2 percent for first-time tax lobbiers and 32.4 percent for first-time non-tax lobbiers. These results indicate that the lower ETRs of tax lobbiers are not completely driven by earlier tax lobbying, supporting H1 regarding tax sophistication among tax lobbiers.

## TABLE 5

### 3-Year Current ETRs of First-Time Lobbiers

**Panel A: Frequency of First-Time Lobbiers by Year**

| Year | First-Time Any-Issue Lobbiers[a] | | First-Time Tax Lobbiers | |
|------|-----------|---------|-----------|---------|
| | **Frequency** | **Percent** | **Frequency** | **Percent** |
| 1999 | 75 | 13.04 | 50 | 15.72 |
| 2000 | 32 | 5.56 | 29 | 9.12 |
| 2001 | 54 | 9.39 | 24 | 7.55 |
| 2002 | 44 | 7.65 | 30 | 9.43 |
| 2003 | 51 | 8.87 | 26 | 8.17 |
| 2004 | 38 | 6.61 | 15 | 4.72 |
| 2005 | 66 | 11.48 | 26 | 8.18 |
| 2006 | 60 | 10.43 | 20 | 6.29 |
| 2007 | 46 | 8.00 | 27 | 8.49 |
| 2008 | 32 | 5.57 | 25 | 7.86 |
| 2009 | 50 | 8.70 | 31 | 9.75 |
| 2010 | 27 | 4.70 | 15 | 4.72 |
| Total | 575 | 100.00 | 318 | 100.00 |

**Panel B: Long-Run Current ETRs of First-Time Any-Issue Lobbiers[a] and First-Time Tax Lobbiers**

| | First-Time Any-Issue Lobbiers[a] (1) | | First-Time Tax Lobbiers (2) | | Difference in Means | | |
|------|-----|--------|-----|--------|-----------|------|---------|
| | **n** | **Mean** | **n** | **Mean** | **(1) − (2)** | **t** | **p-value** |
| *Current_ETR3* | 575 | 0.323 | 318 | 0.296 | 0.028 | 1.84 | 0.066 |

**Panel C: Long-Run Current ETRs of First-Time Non-Tax Lobbiers and First-Time Tax Lobbiers**

| | First-Time Non-Tax Lobbiers (1) | | First-Time Tax Lobbiers (2) | | Difference in Means | | |
|------|-----|--------|-----|--------|-----------|------|---------|
| | **n** | **Mean** | **n** | **Mean** | **(1) − (2)** | **t** | **p-value** |
| *Current_ETR3* | 514 | 0.324 | 257 | 0.292 | 0.034 | 1.98 | 0.048 |

[a] First-time any-issue lobbiers include both firms lobbying only on non-tax issues and those lobbying on tax and non-tax issues.

This table addresses possible endogeneity in the relation between ETRs and tax lobbying by testing the difference between the means of *Current_ETR3* across firms that lobby on any (non-tax) issues for the first time and firms that lobby on tax issues for the first time. Similar results are obtained when *Cash_ETR3* is substituted for *Current_ETR3*. The CRP database of lobbying disclosures begins in 1998. All firms disclosing lobbying activity in 1998 are assumed to be long-run lobbiers and are not included in the above tests. If the year in which a firm first appears in the database is after 1998, then the firm-year is coded as a first-time lobbier. If a first-time lobbier lobbies on tax and non-tax issues, then the observation is treated as dual lobbying, i.e., both as a first-time lobbier and as a first-time tax lobbier. Dual lobbying observations are included in Panel B, but not in Panel C.

### The Effect of Tax Lobbying

Earlier research by DH and RST examined the question of whether lobbying is associated with lower future ETRs. DH found no discernible effect of lobbying, in general, or tax lobbying, specifically, on firm-level taxation. In contrast, RST inferred from a dataset not specific as to issue, that firms with higher lobbying expenditures have lower ETRs the next year. Drawing on our finding that tax-sophisticated firms are more likely to lobby on tax issues, we now investigate whether the level of tax sophistication helps explain the effect of tax lobbying on future tax rates.

First, however, we investigate whether lobbying on tax issues, irrespective of its strategic or defensive motivation, is related to future tax benefits, as measured with long-run cash ETRs. Cash ETR is selected as the outcome measure because it more accurately captures both timing differences and permanent tax benefits, and it is unaffected by estimation changes impacting the tax valuation allowance or contingency reserve.

For purposes of this investigation, we define tax lobbying using two different measures. First, we define it as the indicator variable, *If_Lobby_Tax3,* and we let this variable take a value of 1 if a firm lobbies on tax issues during the years *t*−1, *t*−2, or *t*−3. If a firm does not file a lobbying report in that three-year period, or the reports filed do not list tax as one of the lobbied issues, then *If_Lobby_Tax3* takes a value of 0. Note that because all of the firms in our sample filed at least one lobbying report between 1998 and 2010, our sample includes only firms with both the ability and willingness to lobby.[18]

Second, we measure tax lobbying as a continuous variable, *$_Lobby_Tax3,* which is based on a log-transformed estimate of a firm's average tax lobbying expenditures over the years *t*−1, *t*−2, and *t*−3. We weigh the lobbying expenditures in the older years more heavily by assigning weights of 50, 30, and 20 percent to the tax lobbying expenditures in years *t*−3, *t*−2, and *t*−1, respectively. Alternative weighting schemes, including one assigning equal weights to all years, produce qualitatively similar results. In estimating tax-lobbying expenditures, we follow the procedure of DH and prorate the dollar amount listed on a lobbying report equally to the number of issues identified on the same report.

We select a three-year period in which to measure our tax lobbying variables to recognize that lobbying often is a multi-year undertaking that does not produce immediate results (Baumgartner, Berry, Hojnacki, Kimball, and Leech 2009). This period allows us to capture longer-term lobbying that spans a two-year legislative session. Because failed proposals are sometimes reintroduced and enacted in the following session, our three-year period is long enough to include lobbying that needs time to build momentum. Our three-year period, however, is not so long as to become noisy from lobbying that has lost momentum. Term limits for members of congressional committees tend to reduce the political life of legislative proposals, as does the four-year presidential cycle (Nownes 2006).

To investigate the question of whether tax lobbying, irrespective of motivation, is related to future cash ETRs, we use three specifications of the following model:

$$Cash\_ETR3_t = \alpha + \beta_1*Lobby\_Tax_{t-1} + \beta_2*Concentration_{t-3} + \beta_3*Capital\_Intensity_{t-3}$$
$$+ \beta_4*Inventory\_Intensity_{t-3} + \beta_5*R\&D\_Intensity_{t-3} + \beta_6*Total\_Assets_{t-3}$$
$$+ \beta_7*Sales\_Growth_{t-3} + \beta_8*ROA_{t-3} + \beta_9*Leverage_{t-3}$$
$$+ \beta_{10}*Multinational_{t-3} + Industry\ dummies + Year\ dummies + \varepsilon$$

where *Lobby_Tax = If_Lobby_Tax3* or *$_Lobby_Tax3.*

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[18] Unlike earlier research, we do not compare the future ETRs of lobbying firms with those of non-lobbying firms because such a comparison provides a valid counterfactual only if all firms face the same political environment. Unfortunately, they do not. For a detailed discussion of this point, please contact the corresponding author.

Our first specification, Model (1), is an OLS regression without explicit control for endogeneity. Our second and third specifications (Models (2) and (3)) statistically control for endogeneity either by using firm fixed effects or by including a lagged dependent variable (Angrist and Pischke 2009). Three control variables included in our earlier logit model, but missing from these specifications, are *Age, Regulated,* and *Environmental*. These variables lack within-firm variability, making them uninformative for our purposes here.

Because we are interested in explaining a firm's average cash ETR over years $t-2$, $t-1$, and $t$, we measure our control variables in $t-3$, the year before the first of the three years used in the measurement of *Cash_ETR3$_t$*. Our predictor variables, *If_Lobby_Tax3$_{t-1}$* and *$_Lobby_Tax3$_{t-1}$*, capture lobbying activity or expenditures, respectively, over years $t-3$, $t-2$, and $t-1$. Our design, therefore, examines the effect of lagged 3-year measures of lobbying on 3-year cash ETR. A graphic illustration of the measurement periods of our variables is shown in Panel B of Figure 1.

Table 6 reports the results of our tests. As shown, the relation between tax lobbying and future cash ETR is not significant in any of the specifications. These findings are similar to those of DH, who also did not detect a measurable effect of tax lobbying on firm-level tax rates. But the tests ignore the lobbier's motivation, which may interact with the outcome. We investigate the question of motivation in our next analysis.

**Strategic Tax Lobbying**

Earlier we posited that firms with the lowest ETRs are likely to be those that have benefitted from both preferential taxation and tax-efficient operations. We further conjectured that if these firms lobbied on tax issues, then their motive, arguably, would be defensive. Strategic tax lobbying, in our view, was more likely to be undertaken by firms with higher ETRs because these firms were not yet the beneficiaries of special tax treatment. We suggested in H2 that any relation between tax lobbying and future tax rates was more likely to be observable for strategic tax lobbiers.

To test H2, we modify the specifications of Table 6 by adding an indicator variable, *High_ETR,* which dichotomously partitions our sample on the basis of 3-year current ETR. Because our tax lobbying variables (*If_Lobby_Tax3$_{t-1}$* and *$_Lobby_Tax3$_{t-1}$*) are measured over years $t-3$, $t-2$, and $t-1$, *High_ETR* is measured in year $t-4$ and it takes the value of 1 if the firm's *Current_ETR3* (measured over years $t-6$, $t-5$, and $t-4$) is above the median of all tax lobbiers of that year. The explanatory variable of interest is the interaction of *High_ETR* with the tax lobbying variables; the coefficients on these interaction terms will indicate the differential effect of defensive and strategic tax lobbying on future cash ETRs. Panel C of Figure 1 provides a graphic illustration of the measurement periods of our variables.

Table 7 reports the results of the modified specifications. Among firms with lower current ETRs, future cash ETRs are positively, although often not significantly, related to tax lobbying when measured either with a binary variable (*If_Lobby_Tax3*) or continuously (*$_Lobby_Tax3*). If firms with historically low ETRs are motivated to lobby in defense of existing tax preferences, then these results—which generally do not show a significant change in future cash ETRs—suggest their lobbying efforts may be effective.

In contrast, the larger and negative coefficients of the interaction terms indicate that the tax lobbying activities and expenditures of higher-ETR firms are related to lower future ETRs. Specifically, the results of Model (2) with *If_Lobby_Tax3* as the independent variable show a marginal effect on *Cash_ETR3* of $-0.007$ for a firm in the upper half of the *High_ETR* partition (sum of the coefficients on *If_Lobby_Tax3* of 0.011 and *If_Lobby_Tax3 * High_ETR* of $-0.018$). If, as we conjecture, these higher-ETR firms are lobbying strategically to gain preferential tax treatment, then our results suggest that they often are rewarded for their efforts.

## TABLE 6
### Effects of Tax Lobbying, Irrespective of Motivation On 3-Year Cash ETR
#### Dependent Variable = $Cash\_ETR3_t$

| | Lobby_Tax = If_Lobby_Tax3 | | | | | | Lobby_Tax = $_Lobby_Tax3 | | | | | |
| | Model (1) | | Model (2) | | Model (3) | | Model (1) | | Model (2) | | Model (3) | |
| Parameter | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $Lobby\_Tax_{t-1}$ | −0.007 | 0.148 | 0.002 | 0.800 | −0.001 | 0.812 | 0.000 | 0.271 | 0.000 | 0.980 | 0.000 | 0.866 |
| $Cash\_ETR3_{t-3}$ | | | | | 0.359 | < 0.0001 | | | | | 0.359 | < 0.0001 |
| $Concentration_{t-3}$ | 0.000 | 0.001 | 0.001 | 0.015 | 0.000 | 0.114 | 0.000 | 0.001 | 0.001 | 0.015 | 0.000 | 0.113 |
| $Capital\_Intensity_{t-3}$ | −0.018 | 0.012 | 0.048 | 0.002 | −0.020 | 0.003 | −0.018 | 0.012 | 0.048 | 0.002 | −0.020 | 0.003 |
| $Inventory\_Intensity_{t-3}$ | 0.143 | < 0.0001 | −0.012 | 0.828 | 0.087 | 0.001 | 0.143 | < 0.0001 | −0.012 | 0.828 | 0.087 | 0.001 |
| $R\&D\_Intensity_{t-3}$ | −0.362 | < 0.0001 | 0.167 | 0.037 | −0.292 | < 0.0001 | −0.362 | < 0.0001 | 0.167 | 0.037 | −0.292 | < 0.0001 |
| $Total\_Assets_{t-3}$ | −0.001 | 0.277 | 0.056 | < 0.0001 | −0.005 | 0.000 | −0.001 | 0.248 | 0.056 | < 0.0001 | −0.005 | 0.000 |
| $Sales\_Growth_{t-3}$ | 0.000 | 0.257 | 0.000 | 0.670 | 0.000 | 0.999 | 0.000 | 0.258 | 0.000 | 0.668 | 0.000 | 0.998 |
| $ROA_{t-3}$ | 0.120 | < 0.0001 | 0.151 | < 0.0001 | 0.180 | < 0.0001 | 0.120 | < 0.0001 | 0.151 | < 0.0001 | 0.180 | < 0.0001 |
| $Leverage_{t-3}$ | −0.017 | 0.095 | 0.009 | 0.526 | −0.002 | 0.851 | −0.017 | 0.094 | 0.009 | 0.530 | −0.002 | 0.850 |
| $Multinational_{t-3}$ | 0.029 | < 0.0001 | 0.009 | 0.199 | 0.018 | 0.000 | 0.029 | < 0.0001 | 0.009 | 0.197 | 0.018 | 0.000 |
| Endogeneity control | No | | Fixed Effects | | Lagged DV | | No | | Fixed Effects | | Lagged DV | |
| Firm fixed effects | No | | Yes | | No | | No | | Yes | | No | |
| Industry fixed effects | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| n | 9,299 | | 9,299 | | 8,508 | | 9,299 | | 9,299 | | 8,508 | |
| Adj. R² | 0.063 | | 0.568 | | 0.182 | | 0.063 | | 0.568 | | 0.182 | |

p-values are reported for two-tailed tests.
These regressions investigate whether tax lobbying, irrespective of motivation, is related to a lower future cash ETR. The dependent variable is *Cash_ETR3*. The predictor variable of interest, *Lobby_Tax*, measures tax lobbying as either an indicator or continuous variable. See Figure 1 for the timetable of measurement. Model (1) assumes that *Lobby_Tax* is an exogenous variable. Models (2) and (3) recognize that *Lobby_Tax* can be endogenous because tax sophistication can prompt tax lobbying and/or conventional tax planning, either or both of which can lead to lower future tax rates; these two models differ in their assumptions about the nature of the endogeneity effect. Model (2) assumes that tax sophistication's effect on ETR is constant and can be absorbed in firm fixed effects, whereas Model (3) assumes that tax sophistication's effect on ETR varies over time and can be reasonably captured in the lagged dependent variable, $Cash\_ETR_{t-3}$.
See Appendix A for the definition of the variables.

## TABLE 7
### Effects of Strategic Tax Lobbying on Long-Run Cash ETR
### All Lobbiers
#### Dependent Variable = Cash_ETR3_t

| Parameter | Lobby_Tax = If_Lobby_Tax3 | | | | | | Lobby_Tax = $_Lobby_Tax3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model (1) | | Model (2) | | Model (3) | | Model (1) | | Model (2) | | Model (3) | |
| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| |
| $Lobby\_Tax_{t-1}$ | 0.011 | 0.085 | 0.011 | 0.105 | 0.012 | 0.049 | 0.001 | 0.063 | 0.001 | 0.220 | 0.001 | 0.056 |
| $High\_ETR_{t-4}$ | 0.080 | < 0.0001 | −0.028 | < 0.0001 | 0.019 | 0.001 | 0.079 | < 0.0001 | −0.029 | < 0.0001 | 0.018 | 0.001 |
| $Lobby\_Tax * High\_ETR_{t-4}$ | −0.029 | 0.001 | −0.018 | 0.013 | −0.025 | 0.002 | −0.002 | 0.003 | −0.002 | 0.021 | −0.002 | 0.006 |
| $Cash\_ETR3_{t-3}$ | | | | | 0.355 | < 0.0001 | | | | | 0.355 | < 0.0001 |
| $Concentration_{t-3}$ | 0.000 | 0.001 | 0.001 | 0.006 | 0.000 | 0.093 | −0.001 | 0.001 | 0.001 | 0.006 | 0.000 | 0.087 |
| $Capital\_Intensity_{t-3}$ | −0.015 | 0.035 | 0.045 | 0.005 | −0.020 | 0.005 | −0.015 | 0.033 | 0.045 | 0.005 | −0.020 | 0.004 |
| $Inventory\_Intensity_{t-3}$ | 0.147 | < 0.0001 | −0.034 | 0.545 | 0.088 | 0.001 | 0.147 | < 0.0001 | −0.034 | 0.545 | 0.088 | 0.001 |
| $R\&D\_Intensity_{t-3}$ | −0.387 | < 0.0001 | 0.096 | 0.293 | −0.294 | < 0.0001 | −0.389 | < 0.0001 | 0.097 | 0.289 | −0.295 | < 0.0001 |
| $Total\_Assets_{t-3}$ | −0.003 | 0.020 | 0.064 | < 0.0001 | −0.005 | 0.000 | −0.003 | 0.013 | 0.064 | < 0.0001 | −0.005 | 0.000 |
| $Sales\_Growth_{t-3}$ | 0.000 | 0.752 | 0.000 | 0.540 | −0.001 | 0.822 | 0.000 | 0.754 | 0.000 | 0.540 | −0.001 | 0.824 |
| $ROA_{t-3}$ | 0.110 | < 0.0001 | 0.170 | < 0.0001 | 0.181 | < 0.0001 | 0.110 | < 0.0001 | 0.170 | < 0.0001 | 0.181 | < 0.0001 |
| $Leverage_{t-3}$ | −0.011 | 0.332 | 0.000 | 0.981 | −0.004 | 0.721 | −0.011 | 0.327 | −0.001 | 0.970 | −0.004 | 0.709 |
| $Multinational_{t-3}$ | 0.030 | < 0.0001 | 0.006 | 0.345 | 0.018 | 0.000 | 0.030 | < 0.0001 | 0.007 | 0.323 | 0.018 | 0.000 |
| Endogeneity control | No | | Fixed Effects | | Lagged DV | | No | | Fixed Effects | | Lagged DV | |
| Firm fixed effects | No | | Yes | | No | | No | | Yes | | No | |
| Industry fixed effects | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |

**TABLE 7 (continued)**

**Dependent Variable = $Cash\_ETR3_t$**

| Parameter | $Lobby\_Tax = If\_Lobby\_Tax3$ | | | | | | $Lobby\_Tax = \$\_Lobby\_Tax3$ | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model (1) | | Model (2) | | Model (3) | | Model (1) | | Model (2) | | Model (3) | |
| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| | Est. | Pr > \|t\| |
| n | 8,738 | | 8,738 | | 8,234 | | 8,738 | | 8,738 | | 8,234 | |
| Adj. R² | | 0.091 | | 0.578 | | 0.189 | | 0.090 | | 0.578 | | 0.189 |

p-values are reported for two-tailed tests.

These regressions investigate whether tax lobbying, conditional on a higher past current ETR, is related to a lower future cash ETR. The dependent variable is $Cash\_ETR3$. The predictor variable of interest is the interaction term $Lobby\_Tax * High\_ETR_{t-4}$, which indicates the difference in the effect of tax lobbying on $Cash\_ETR3$ across higher- and lower-ETR firms. A higher-ETR firm is one whose $Current\_ETR3$ measured in year $t$–4 was above the median of all tax lobbiers of that year. Of the 8,738 observations, 1,102 observations, or approximately 13 percent of the sample, have positive values for $Lobby\_Tax * High\_ETR_{t-4}$. Although $\$\_Lobby\_Tax3$ is measured as the weighted average of a firm's tax lobbying expenditures, the equal-weighted average produces similar results. See Figure 1 for the timetable of measurement. Model (1) assumes that $Lobby\_Tax$ is an exogenous variable. Models (2) and (3) recognize that $Lobby\_Tax$ can be endogenous because tax sensitivity can prompt tax lobbying and/or conventional tax planning, either or both of which can lead to lower future tax rates; these two models differ in their assumptions about the nature of the endogeneity effect. Model (2) assumes that tax sensitivity's effect on ETR is constant and can be absorbed in firm fixed effects, whereas Model (3) assumes that tax sensitivity's effect on ETR varies over time and can be reasonably captured in the lagged dependent variable, $Cash\_ETR_{t-3}$.

See Appendix A for the definition of the variables.

One concern with the results reported in Table 7 is that some unobservable heterogeneity in the sample might bias our estimates. To address this concern, we remove non-tax lobbiers from the sample and again examine the relation between tax lobbying expenditures and future ETRs. The results show a pattern similar to the earlier findings reported in Tables 6 and 7. The finding of Table 6 that tax lobbying expenditures alone do not predict future ETRs is again evidenced by consistently insignificant coefficients of *$_Lobby_Tax*3. The finding of Table 7 of a negative relation between the tax lobbying expenditures of higher-ETR firms and future cash ETRs is again observed in negative and significant coefficients of the interaction term *$_Lobby_Tax3 * High_ ETR*.

Together, the results reported in Tables 6 and 7, as well as those of our robustness tests, indicate that strategic tax lobbying is associated with future tax savings, as measured by long-run cash ETRs. In contrast, defensive tax lobbying does not correspond with lower future long-run tax rates. The contextual nature of our findings provides an explanation for the failure of DH's study to find a relation between tax lobbying expenditures and firm-level taxation. Our results also extend those of RST by identifying a common characteristic of tax lobbiers—tax sophistication—and then using two levels of this characteristic to develop a proxy partition between strategic and defensive tax lobbying. Last, our findings complement those of Brown et al. (2015), whose results also suggest a contextual relation between a firm's political tactics and its future cash ETR.

## CONCLUSION

This study extends the literature on corporate tax avoidance by providing evidence that the decision to lobby on tax issues is nonrandom among lobbying firms. Our results indicate that tax-sophisticated firms lobby on tax issues, and that those who do so for strategic reasons are more likely to obtain future tax savings. As such, our work extends the earlier studies by DH and RST by providing a more complete explanation of the relations between corporate tax lobbying and future tax rates. Our work also adds to the tax literature on corporate political activities by highlighting the complex nature of lobbying, particularly tax lobbying.

As with most empirical research, our study is subject to several limitations. First, our data include only firms that filed lobbying disclosure reports between 1998 and 2010. It does not include tax lobbying through trade associations or coalitions. The lack of information on these alternative forms of tax lobbying introduces noise to our measure. Additionally, because the firms in our sample all share a propensity to lobby, it is inappropriate to generalize our results to non-lobbying firms.

Second, our *High_ETR* partition is an indirect and noisy proxy for strategic tax lobbying and it might capture other alternative effects. Our results, while robust for both current ETR and cash ETR, should be interpreted in light of the exploratory nature of the research. We encourage research that either refines our measures or develops better proxies of strategic and defensive tax lobbying.

Third, our analysis of lobbying outcomes focuses exclusively on 3-year cash ETRs. Tax lobbying, however, may yield other benefits not captured by this measure, or the tax benefits may be realized over a much longer time horizon. We examine tax rates because it has been the subject of media reports (e.g., Kocieniewski 2011; Kim 2012; Bowley 2013) and earlier empirical research (DH; RST). But we acknowledge the shortcomings of looking only at change in ETRs, as tax policies affect an array of corporate attributes.

In addition to those already mentioned, our study leaves several other questions unanswered. Lobbying, like any behavior, is driven by complex motives. While we have attempted to identify two motivations, there are likely supplemental and complementary motives that may moderate or accentuate our results. Likewise, we have not examined whether firms use other types of corporate

political activities, such as campaign contributions or in-kind gifts, as a substitute for or complement to their lobbying efforts (see Brown et al. 2015). Additional research hopefully can explore more fully the role firms play in shaping tax policy, and in so doing, broaden the perspective of current tax accounting research to include the government as a contracting party.

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## APPENDIX A

### Definition of Variables

| Variable | Definition |
|---|---|
| **Lobbying Variables** | |
| *If_Lobby_Tax* | Indicator variable, taking the value of 1 if the firm lobbies on tax issues in the year. |
| *If_Lobby_Tax3* | Indicator variable, taking the value of 1 if the firm lobbies on tax issues in any of the past three years. |
| *$_Lobby_Tax3* | Natural log transformation of a three-year weighted average of tax lobbying expenditures, $\log(1/6 * \$\_Lobby\_Tax_t + 1/3 * \$\_Lobby\_Tax_{t-1} + \tfrac{1}{2} * \$\_Lobby\_Tax_{t-2})$, where *$_Lobby_Tax* is annual tax lobbying expenditure estimated by taking 1/n of the total amount on any report that lists tax as one of the n issues lobbied (Drope and Hansen 2008). |
| **Tax Variables** | |
| *Current_ETR3* | 3-year average effective tax rate, defined as the ratio of current tax expense to pretax income excluding special items. |
| *High_ETR* | Indicator variable, taking the value of 1 if the firm's *Current_ETR3* is above the median of all tax lobbiers of that year. When *High_ETR* is measured in year $t-4$, the related measure of *Current_ETR3* is over years $t-6$, $t-5$, and $t-4$. |
| *Cash_ETR3* | 3-year average cash effective tax rate per Dyreng et al. (2008). |
| **Control Variables** | |
| *Concentration* | Industry concentration ratio, percentage of sales or value added from top four firms of the same four-digit NAICS industry. Available at: http://www.census.gov/econ/concentration.html. |
| *Capital_Intensity* | Capital intensity, measured as PPEGT/AT, where PPEGT is gross property, plant, and equipment, and AT is total assets. |
| *Inventory_Intensity* | Inventory intensity, INVT/AT. |
| *R&D_Intensity* | Research and development expenses relative to total assets, XRD/AT. |
| *Total_Assets* | Logarithm of total assets, $\log(AT + 1)$. |
| *Sales_Growth* | Percentage growth in sales, $(SALE_t - SALE_{t-1})/SALE_{t-1}$. |
| *ROA* | Pretax income relative to total assets, PI/AT. |
| *Leverage* | Total liabilities relative to average total assets, LT/AT. |
| *Multinational* | Indicator variable, taking the value of 1 if foreign exchange income or pretax income from foreign operations is reported. |
| *Age* | Number of years from first appearance in CRSP or Compustat, whichever is earlier. |
| *Regulated* | Indicator variable for regulated industry, taking the value of 1 if the firm operates in Radiotelephone communications (4812); Telephone communications (4813); Television broadcasting stations (4833); Cable and other pay TV services (4841); Electric services (4911); Natural gas transmission (4922); Gas distribution (4923); or Electric and other services (4931) per Brown, Helland, and Smith (2006). |
| *Environmental* | Indicator variable for environmental impact industry, taking the value of 1 if the firm operates in Lumber, wood, and paper products (2400, 2600, 2621, 2631); Chemicals and plastics (2800, 2810, 2820–2821, 2860, 2870); or Petroleum refining (2911) per Brown et al. (2006). |