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Political Costs and Corporate Tax Avoidance: Evidence from Sin Firms

Cong Wang
The Chinese University of Hong Kong, Shenzhen

Ryan J. Wilson*
University of Oregon

Shuran Zhang
The Hong Kong Polytechnic University

Hong Zou
Faculty of Business and Economics, University of Hong Kong

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ABSTRACT

The products and services of firms operating in sin industries (alcohol, tobacco, gaming, and firearms) run contrary to social norms and can produce significant negative externalities for society. As such, we expect that sin firms are at greater risk of incurring political costs in the form of additional regulation, higher excise taxes, or capital market intervention if they come under scrutiny for their income tax avoidance practices. Because of the nature of their products, regulators and policymakers are likely to face less pushback on new regulations or taxes on these firms. Sin firms start with a lower ability to influence the political process than firms in non-sin industries. Consequently, we hypothesize and find that sin firms exhibit less tax avoidance than non-sin firms, particularly through uncertain and more risky tax avoidance strategies. The negative relationship between the status of sin firms and tax avoidance is less pronounced in firms that accumulate political capital via intensive lobbying activities. Exploiting changes in partisan control of the Congress and White House, difference-in-differences tests show that firearm firms engage in less (more) tax avoidance when the Democrats (Republican) control both the Congress and White House. Overall, we conclude that political costs play an important role in corporate tax avoidance decisions.

*Corresponding author. The authors can be reached at wangcong@cuhk.edu.cn (C. Wang), rwilson3@uoregon.edu (R. Wilson), shuran.zhang@polyu.edu.hk (S. Zhang), hongzou@hku.hk (H. Zou). We appreciate helpful comments from Doidge Craig, Alex Edwards, Harrison Hong, Sean McGuire, Marcin Kacperczyk, Clive Lennox, Clemens Sialm, and Brian Williams.

1. Introduction

Corporate tax minimization has come under increasing public scrutiny in recent years. Indeed, tax payments are conventionally viewed as a value transfer from shareholders to the government and thus shareholders should find it desirable for firms to engage in tax avoidance to reduce this transfer. There is, however, wide variation in the extent of tax avoidance across firms and a significant portion of this variation is not explained by existing research. Political costs are likely an important consideration in tax avoidance decisions and can help explain why some firms forgo tax avoidance opportunities even when such opportunities involve limited uncertainty (Guenther et al., 2017). Tax payments often represent the largest contribution a firm makes to society outside employment. A firm that aggressively avoids taxes may be labelled as a "poor corporate citizen" (Hoi et al., 2013). We expect politically sensitive firms to be particularly vulnerable to criticism of their tax policies.

In this study, we apply the political cost hypothesis developed by Watts and Zimmerman (1986) to the setting of sin firms. Sin firms are companies producing alcohol, tobacco, gaming, or firearms. This is an excellent setting to examine the role of political costs in influencing firms' approach to tax avoidance because there are clearly strong societal norms against firms that profit from human vice. Operating contrary to important social norms results in sin firms having greater exposure to additional regulation – an important type of political cost because such regulation may result in wealth transfer from the firm (Bruehne and Jacob, 2019). To be specific, the negative externalities of sin firms' products on society (e.g., health problems caused to consumers by addictions, second-hand smoking, drunk driving, reduced economic productivity arising from excessive consumptions of cigarette and alcohol) make it more likely that these firms will face additional regulation in an effort to limit these externalities. Due to these negative externalities, there is a significant portion of the public in favor of imposing additional regulations on these firms.[1]

We examine whether sin firms incur additional costs relative to non-sin firms in the form

[1] We do not argue that sin products or sin firms are not popular with consumers. For example, alcohol firms that sponsor high-profile sporting events clearly enjoy great popularity with some sports fans. We only argue that sin firms face greater exposure to additional regulation because of the nature of their products.

of higher income tax payments. We expect that the implications for sin firms of being labelled as a "poor corporate citizen" will be much greater among regulators because they face such high exposure to additional regulations on their products. Other things being equal, sin firms lack the political capital (i.e., the influence a firm has with policymakers and regulators) to protect them from regulatory costs stemming from this type of criticism. Clearly, like firms in other industries, sin firms invest heavily in developing political capital and spend significant sums on political contributions and lobbying.[2] These political capital investments may help sin firms avoid additional regulations. However, despite these investments, the nature of sin firms' products and the resulting negative externalities make it much easier for policymakers to impose new taxes and regulations on them without concerns about pushback from their constituents. Therefore, we argue that the negative externalities of their products expose sin firms to much higher baseline levels of risk to additional regulations. Absent the threat of additional regulation, social norms may not affect sin firms' tax avoidance.

Hong and Kacperczyk (2009) find that sin stocks earn abnormal returns and they attribute the excess returns to investor neglect that occurs because investors stay away from sin firms whose products have a vice nature, and as a result, the level of risk-sharing in those stocks is limited (Merton 1987). They also find that sin stocks have lower levels of institutional ownership and analyst coverage. Investors' willingness to ignore stocks with abnormal returns illustrates the power of social norms that work against sin firms. Because sin firms challenge social norms, they face intense scrutiny from politicians and regulators on a number of dimensions. Specifically, sin firms are subject to higher political costs, through the additional regulations imposed on them, such as product market intervention, regulatory intervention in the capital markets, and additional industry specific taxes.

The risk of product market intervention for sin firms is higher than that for most other industries. For example, some restrictions on gun sales (e.g., background checks on firearm purchasers, and prohibition of sales of automatic weapons) have long been in existence in the U.S. The 2006 Unlawful Internet Gambling Enforcement Act (UIGEA) outlawing internet

[2] In later analysis, we show that efforts to increase political capital through lobbying allow sin firms to engage in relatively more tax avoidance.

gambling in the U.S. illustrates the power regulatory reform can have on the product market for sin firms. The law specifically bans U.S. banks from handling money related to internet gambling. An article in the *Economist* notes the act was "hastily tacked onto the end of unrelated legislation" (*The Economist*, 2011).[3] Despite the 10 million Americans participating in online gambling, the article goes on to note that federal legislation to make the industry legal again "has so far got nowhere." This example illustrates the unusual political cost faced by sin firms. Despite numerous loyal customers, the fact that placing limits on their products is viewed as benefiting society by curbing negative externalities makes it very difficult for these firms to stave off regulation. We expect that managers of sin firms are cognizant of the fact that excessive tax avoidance could be viewed negatively by regulators and policymakers leading to reprisals in the form of additional taxes and regulations. As such, we expect sin firms to be more limited in their ability to avoid taxes than firms in other industries.

Sin firms are also exposed to the risk of regulatory intervention in the capital markets. In fact, consistent with sin firms responding to concerns over regulatory scrutiny, Kim and Venkatachalam (2011) find that sin firms exhibit superior financial reporting quality. They note that "sin firms may be forced to produce higher quality financial reporting to avoid contagion in litigation exposure and heightened regulatory intervention in the capital markets" (p. 422).

Sin firms also have to consider the potential for additional (non-income) taxes to be imposed if they are perceived as being engaged in excessive tax avoidance. Sin taxes are excise taxes levied on goods viewed as harmful to society. Sin taxes are attractive to many policymakers because of the expectation that when you tax something you get less of it. Further, revenue from excise taxes is less volatile than income tax revenue and potentially allows the government to collect revenue from nonresidents. In the U.S., states collected over 32 billion dollars in sin taxes in 2014.[4] Sin taxes have a long history in the U.S. including taxes imposed to finance Revolutionary War debts on tobacco, sugar, and distilled spirits (Hines, 2007). Despite criticisms that these taxes are regressive, states have come to rely heavily on revenue

[3] The Economist, Poker face off, April 20, 2011, http://www.economist.com/node/18586698?story_id=18586698&CFID=162740365&CFTOKEN=42729011

[4] This 32 billion includes taxes on alcohol, tobacco products, casinos, racinos, and video gaming. https://howmuch.net/articles/sin-taxes-by-state

from sin taxes as budgets have tightened.

To summarize, sin firms face substantial political costs on a number of dimensions that go beyond the risks posed to non-sin firms. Using the firm-level political risk measure developed by Hassan et al. (2017b), we indeed find that sin firms are subject to higher political risk than non-sin firms in our sample.[5] Consequently, we expect that managers of these firms will take steps to avoid criticism or scrutiny that could result from significant amounts of tax avoidance. Firms in other industries can rely on job creation, product loyalty, and political connections to help offset the effects of scrutiny over their tax practices. We expect if necessary politicians and regulators will be quicker to act in imposing new taxes and regulations against sin firms because there would be less pushback from the public against regulations or taxes targeted at these firms.

Our first set of analyses use a propensity score matched sample of sin firms and non-sin firms in the U.S. over the period 1980-2018. We find evidence that sin firms engage in less tax avoidance (as measured by the long-run cash effective tax rate and the long-run GAAP effective tax rate) than their non-sin control firms, particularly through uncertain and more risky tax avoidance strategies. In addition, the negative relationship between the status of sin firms and tax avoidance is less pronounced in firms that accumulate political capital via intensive lobbying activities.

A concern with our first set of tests is that differences in tax avoidance stem from fundamental differences between the characteristics of sin and non-sin firms that are unrelated to political costs and potentially are not fully addressed by our propensity matching procedure. To address this concern, our next set of tests takes advantage of a difference-in-differences design to look for changes in tax avoidance around changes in exposure to political costs. We exploit changes in partisan control of the Congress and the U.S. Presidency and examine how

[5] Data on the firm-level political risk measure are obtained from Professor Tarek Hassan's personal website (https://sites.google.com/site/tarekalexanderhassan/papers). The authors construct a firm-level political risk measure based on the share of their quarterly earnings conference calls that they devote to political risks, and show that it correlates with a firm's actions and stock market volatility in a manner that is indicative of political risk. We find that, compared to non-sin firms, sin firms have significantly higher political risk (*t*-statistic of a *t*-test is about 9) and higher political exposure (*t*- statistic of a *t*-test is about 20).

those changes influence the tax avoidance practices of firms in the firearm industry.[6] Over the past three decades, Democrats have generally been more supportive of regulation on the sale of firearms. We use difference-in-differences tests and show that firearm firms engage in less (more) tax avoidance when the Democrats (Republican) control both the Congress and the White House. These results are consistent with firearm firms scaling back tax avoidance activities when the risk of additional regulatory restrictions is greater.

In supplemental analyses, we verify that the reduced tax avoidance by sin firms relative to non-sin firms does not appear to be alternatively explained by the differences in litigation risk, their mere regulatory status[7], product characteristics, managerial risk-taking incentives, and corporate social responsibility between sin firms and non-sin firms. These results together with our controls for a comprehensive set of tax avoidance determinants in the regressions suggest that our results are not an artifact of few opportunities that sin firms may have for tax avoidance. Taken together, our findings indicate that political costs in the form of potential regulation are an important disincentive for corporate tax avoidance.

Our study makes several contributions. First, we expand the existing analysis of the political cost hypothesis developed by Watts and Zimmerman (1986) to investigate the role of political costs in the form of the threat of regulation on firms' tax avoidance decisions. Despite our focus on sin firms, we believe our findings could have implications for many firms. While most non-sin firms do not face the persistent threat of regulation at the same level as sin firms, they do experience periods where the threat of regulation may spike, and our findings speak to how that threat could influence their tax planning decisions.

Relatedly, prior studies (e.g., Zimmerman, 1983; Porcano, 1986; Wilkie and Limberg, 1990; Kern and Morris 1992) use firm size as a proxy for the likelihood of government scrutiny and find mixed evidence on the relationship between firm size and effective tax rates. Mills et al. (2012) develop a measure of political sensitivity to government scrutiny based on federal contracts and show that these politically sensitive firms pay higher taxes. Kim and Zhang (2016)

[6] Prior studies (e.g., Hong and Kacperczyk, 2009) treat firearm firms as sin firms.

7 We stress that our result is predicated on the argument that it is the vice nature of sin products that attracts regulatory scrutiny and gives rise to higher political costs rather than industry regulation per se.

find that politically connected firms (proxied by lobbying, campaign contribution and directors with a political background) avoid more tax. Arguably, the status of sin firms, often established since the inception of a firm, as a measure of exposure to political costs is more stable and exogenous than the size of the firm, lobbying expenditures, or the existence of government contracts. As such, our study based on the status of sin firms together with these prior studies, provide a more complete picture of the effect of political costs on corporate tax avoidance. The importance of political considerations in managerial tax planning decisions is likely to persist even as tax laws change and tax strategies evolve.

Third, our study adds to the burgeoning literature on tax-related corporate political activities (CPA) (see Barrick and Brown (2019) for a review). Hillman and Hitt (1999) group firms' CPA tactics into three categories based on the nature of the resources being exchanged between policy suppliers and demanders: (1) financial (e.g., campaign contribution), (2) informational (e.g., lobbying), and (3) public-opinion building. Barrick and Brown (2019) conclude that the extant CPA literature has invariably focused on the first two tactics and there is little study of the public-opinion building tactic. To the extent that sin firms operating contrary to social norms have a poor public image and are vulnerable to additional regulations should they aggressively avoid taxes, our finding that these firms engage in less tax avoidance can be viewed as a tactic to improve public opinion.

Finally, our study extends the limited research on social norms and tax avoidance. Hasan et al. (2017a) find that the strength of social norms in a firm's headquarters county constrains corporate tax avoidance. While both our paper and Hasan et al. (2017) are related to social norms, they are different in underlying mechanisms. Hasan et al. argue that civic norms appeal to peoples' expectations of civicminded, socially-cooperative behaviors such as paying a fair share of tax. Deviation from these norms may lead managers of corporate dodgers to face higher psychic costs and higher social sanctions. We show that deviation from social norms in producing products increases the possibility of additional regulation to protect public health or safety, which leads sin firms to refrain from tax avoidance to avoid further regulatory scrutiny. In some sense, our findings are an important caveat to the work by Hasan et al. because we

show that even firms whose very nature runs contrary to social norms are constrained in their tax avoidance by a desire to avoid political costs in the form of regulation.

2. Literature Review and Hypothesis Development

Watts and Zimmerman (1978) predict that firms subject to government scrutiny will make accounting choices to minimize or deflect the consequences of government action. Subsequent studies test their political hypothesis across a variety of settings. Jones (1991) finds evidence that firms engage in downward earnings management to obtain import relief. Cahan (1992) reports that firms being investigated for anti-trust violations also engage in downward earnings management. Relatedly, Han and Wang (1998) show that oil firms expected to profit from the 1990 Persian Gulf crisis used downward earnings management to avoid potential windfall profit taxes.

Other studies make the direct connection between taxes and political costs. Zimmerman (1983) uses size as a proxy for the likelihood of government scrutiny, and finds that larger firms, especially in the oil and gas sector, exhibit higher effective tax rates.[8] More recently, Mills et al. (2012) examine firms with federal contracts and find that these politically sensitive firms pay higher taxes, but that firms with greater bargaining power incur less of these tax-related costs. Mills et al. (2012) develop a measure of political sensitivity to government scrutiny based on federal contracts. Their measure of political sensitivity incorporates both the size of the government contract and the importance of the contract to the firm itself. In this study we examine a different element of political costs in the form of the threat of regulation. We expect firms producing products that run contrary to widely held social norms and produce negative externalities will have greater exposure to political costs in the form of increased regulation and taxes.

2.1 Sin Firms

Kim and Venkatachalam (2011) note that as socially responsible investing has grown in recent years, sin stocks have become increasingly neglected by institutional investors. This

[8] Subsequent studies (e.g., Porcano, 1986; Wilkie and Limberg, 1990; Kern and Morris 1992) find that the relation between taxes and firm size is a function of the sample period examined and the context of the analysis.

neglect persists despite research showing that sin stocks earn abnormal returns after controlling for known determinants of expected return (e.g., beta, book-to-market, size, and momentum). The continued neglect of sin stocks despite their investment potential illustrates the power of social norms. Because their products and services are contrary to social norms, sin firms face elevated risk of regulatory scrutiny, and tax risk than non-sin firms. For example, advocates for additional taxes on alcohol point out that Tennessee, the state with the highest tax on beer, has the lowest rate of binge drinking and the states with the lowest tax on alcohol (Delaware, Montana, and Wisconsin) have the highest rates of binge drinking (Preidt, 2015).[9]

We expect that managers of sin firms are keenly aware of these political risks. Kim and Venkatachalam (2011) find that sin firms exhibit higher financial reporting quality, consistent with managers making financial reporting choices to avoid regulatory scrutiny. We expect managers of sin firms to engage in less corporate tax avoidance to avoid additional political scrutiny. Anecdotal evidence suggests that politicians pay attention to corporate tax decisions. For example, in a speech at the World Economic Forum in January 2013, Britain's Prime Minister, David Cameron, criticized Starbucks for their lack of tax payments. In the wake of these comments, Starbucks chose to forgo tax deductions resulting in the company paying an additional £20 million over the following two years. Dyreng et al. (2016) investigate a shock to the political scrutiny of U.K. firms by an activist group and find that the increase in public pressure caused managers to reduce their level of tax avoidance. This finding further suggests that managers are aware that activists and politicians focus on the level of tax avoidance and will adjust tax avoidance accordingly to avoid scrutiny. This leads to our first hypothesis:

H1*: Sin firms engage in less tax avoidance than non-sin firms.*

Despite the above discussion, there is some basis for expecting that sin firms may actually engage in higher levels of tax avoidance than other firms. Graham et al. (2014) survey 594 tax executives and find that 69 percent cite "potential harm to firm reputation" as a reason for not

[9] https://consumer.healthday.com/general-health-information-16/alcohol-abuse-news-12/alcohol-taxes-up-binge-drinking-down-695285.html

undertaking a particular tax planning strategy. Relatedly, Dyreng et al. (2016) examine a shock to public scrutiny of U.K. firm subsidiary locations, and find this increase in publicity leads firms to reduce their tax avoidance. Sin firms enjoy very low public standing due to the vice nature of their products, and therefore have little reputation at stake.[10] It is possible that news that sin firms are involved in aggressive or complex tax avoidance may not significantly change how the firms are viewed by the public in terms of their contribution to society. As a consequence, sin firms may be more aggressive in their tax avoidance if they believe there is little risk of reputational impairment. This possibility adds tension to our prediction of the effect of the status of sin firms on tax avoidance.

Anecdotal evidence suggests that firms can come under scrutiny for paying very low levels of corporate tax or engaging in particularly aggressive tax avoidance strategies. Activist groups like Citizens for Tax Justice publish lists of firms with the lowest cash effective tax rates. For sin firms the prospect of being identified as tax avoiders could lead to unwanted public and regulatory scrutiny. The media also often focus on stories related to very aggressive or complex tax avoidance strategies. For example, a recent Forbes articles details how Alphabet's Google saved $3.6 billion in taxes in 2015 through its "Double Irish" and "Dutch Sandwich" tax structures.[11] Following this reasoning, we expect sin firms to refrain from engaging in high levels of tax avoidance especially those strategies that are riskier and more uncertain. "Uncertain" tax avoidance refers to situations where firms may face challenges from tax authorities and ultimately lose the tax savings (Guenther et al. (2017)) (see Section 4.5 for calculation detail). This leads to our second hypothesis:

H2*: Sin firms engage in relatively lower levels of uncertain tax avoidance than non-sin firms.*

Despite this prediction, we note that recent research suggests that firms exhibiting low tax rates may not be engaging in relatively higher levels of risky tax avoidance (Guenther et al.,

[10] To be specific, because of the nature of their products and the associated negative externalities, sin firms are expected to have a poor reputation with the general public. We acknowledge it is possible other stakeholders in these sin firms (e.g. suppliers, employees, investors, etc.) have a different view than that of the public.

[11] https://www.forbes.com/sites/robertwood/2016/12/22/how-google-saved-3-6-billion-taxes-from-paper-dutch-sandwich/#3871d4f71c19

2017).[12] Further, it is difficult for policymakers or the press to identify very aggressive forms of tax avoidance given the limited tax disclosures in firms' financial statements. As such, it is possible that sin firms focus primarily on not reporting very low effective tax rates and are less concerned about the actual risk of the underlying tax positions.

Our first prediction is predicated on sin firms having little political capital to protect them against scrutiny of their tax practices. However, we recognize that firms operating in sin industries can engage in lobbying in order to develop political capital.[13] Richter et al. (2009) find that firms increasing lobbying by 1 percent appear to benefit in the form of lower tax rates in the range of 0.5 to 1.6 percent. Mills et al. (2012) also acknowledge the importance of accounting for lobbying activities in studying firms' tax avoidance and political sensitivity. Richter et al. (2009) note that lobbying expenditures go directly to registered lobbying firms that then conduct research on behalf of their clients and negotiate with policymakers. According to the Center for Responsive Politics, annual lobbying expenditure on tobacco amounted to about $20 million in 2016.[14] We expect that lobbying could provide sin firms with some political capital necessary to reduce or deflect scrutiny of their tax practices. On the other hand, the nature of their products may limit the usefulness of lobbying in building up political capital. This leads to our third hypothesis:

H3*: Lobbying expenditures mitigate the negative relationship between operating in a sin industry and tax avoidance.*

3. Research Design and Sample Construction

[12]Guenther et al. (2017) specifically look at whether firms with low cash effective tax rates have a relatively higher proportion of uncertain tax benefits. They do not find that this is the case, but their results could also be a reflection of the fact that uncertain tax benefits do not reflect all types of tax risk.

[13] Firms may also develop political capital through other ways, for example, by appointing a former politician to the board of directors (Kim and Zhang, 2016). Our purpose in this section is not to exhaust all the possible ways of developing political capital, but to show some heterogeneities in the effect of sin firm status on tax avoidance. We do not examine politically connected directors in our study because our sample goes back to early 1980s, and the politically connected director data cannot be hand collected for the period before 1996 when electronic filing started. However, to the extent that firms do have multiple ways to develop political capital, it only biases us against finding an attenuating effect of one mechanism – lobbying in our case.

[14] https://www.opensecrets.org/lobby/indusclient.php?id=A02&year=2016

3.1. Measures of Tax Avoidance

We use two measures of tax avoidance. The first measure, *CASH_ETR*, is the five-year cash effective tax rate advanced by Dyreng et al. (2008):

$$CASH\_ETR_{i,t} = \left(\sum_{j=0}^{4} Cash\ \ Tax\ \ Paid_{i,t-j}\right) / \sum_{j=0}^{4} (Pretax\ \ Income_{i,t-j} - Special\ \ Items_{i,t-j})$$

The second measure, *GAAP_ETR*, is the five-year GAAP effective tax rate:

$$GAAP\_ETR_{i,t} = \left(\sum_{j=0}^{4} Tax\ \ Expense_{i,t-j}\right) / \sum_{j=0}^{4} (Pretax\ \ Income_{i,t-j} - Special\ \ Items_{i,t-j})$$

A lower level of *CASH_ETR* or *GAAP_ETR* implies more tax avoidance. We choose these two measures because both tax rates are easier to observe than other tax avoidance proxies (e.g., book-tax differences) and therefore are more likely to be the focus of policymakers.

Admittedly, these two tax avoidance proxies can only capture the impact of actually implemented tax strategies on firms' effective tax rates, but do not allow us to assess whether political cost concerns constrain tax planning because strategies that firms do not employ due to political cost concerns are not observed (Graham et al., 2014).[15] This ex-post perspective is a common and unavoidable limitation with tax avoidance studies using archival data.

3.2. Identification of Sin Firms

We follow Hong and Kacperczyk (2009) to identify sin firms. Specifically, we start with the universe of firms in Compustat and classify firms into the Fama and French 48 industries based on their SIC codes. Alcohol firms belong to the Fama-French industry group 4 (SIC codes 2100–2199) and tobacco firms correspond to the industry group 5 (SIC codes 2080–2085). Gambling firms are those bearing the following NAICS codes: 7132, 71312, 713210, 71329, 713290, 72112, and 721120. Firearm firms are those that have SIC codes 3480–3489.[16]

Next, we obtain the SIC and NAICS codes of firms' segments from the Compustat

[15] We thank an anonymous reviewer for suggesting this caveat.

[16] Hong and Kacperczyk (2009) also include firearm stocks for robustness checks. In unreported tests, we also repeat our baseline tests after excluding firearm firms and find that our results are robust.

Segments database. A company is identified as a sin firm if any of its segments has an SIC code that falls in either the alcohol, the tobacco, or the firearm group or an NAICS code that corresponds to the gambling group (defined above). As noted by Hong and Kacperczyk (2009), this augmentation is essential for obtaining a full list of sin firms because many firms have diversified operations. In sum, sin firms in our study comprise companies that belong to the alcohol, tobacco, gambling or firearm group, either at the firm level or at the segment level.

In addition to firms' financial data, we also obtain information on institutional ownership from the Thomson Reuters Institutional Holdings (13F) Database and analyst coverage from the Thomson Reuters I/B/E/S Database. Following the convention in the literature, we exclude utilities (SIC codes 4900-4949) and financial companies (SIC codes 6000-6999) from control firms. Our sample period starts from 1980, the first year for which the institutional ownership data are available. After removing firm-year observations with missing data from Compustat, Institutional Holdings (13F) or I/B/E/S, we obtain a sample of 92,552 firm-year observations during the period 1980-2018 (1,572 sin-firm-year observations and 90,980 non-sin-firm-year observations). Of the 1,572 sin-firm-year observations, 31.66% are alcohol firms, 13.13% are tobacco firms, 40.71% are gambling firms, and 18.88% are firearm firms.[17] APPENDIX 2 reports the one-digit SIC industry distribution of sample firms.

3.3. Propensity Score Matching

The summary statistics presented in Panel A of Table 1 show that sin-firms tend to differ from non-sin firms in various firm-level characteristics. To mitigate the concern that our results might be driven by the differences in these firm characteristics, we implement a propensity score matching (PSM) to construct a matched sample of non-sin firms that are indistinguishable from sin-firms in firm characteristics. To conduct the propensity score matching, we first estimate a Probit model in which the dependent variable is equal to one for sin firms, and zero otherwise. The explanatory variables include profitability (*ROA*), firm size (*SIZE*), market-to-book ratio (*MB*), leverage (*LEV*), dividend level (*DIV*), percentage of institutional ownership (*IO*), number of analysts following the firm (*COV*), sales growth (*GROW*), firm age (*AGE*),

[17] The percentages do not add up exactly to 100% because several firms have multiple sin business segments.

and one-digit SIC industry dummies.

The selection of these covariates in the matching model is motivated by both the prior literature on the characteristics of sin firms and the empirical patterns observed from the data. Prior studies of sin firms document that sin firms tend to pay more dividends (Berman, 2002), have a lower level of institutional ownership, analyst following and valuation (Hong and Kacperczyk, 2009). In addition to these differences, the comparison between sin firms and non-sin firms in Panel A of Table 1 also reveals that sin firms are older, larger, more profitable, and have higher leverage and lower sales growth rate. Based on these empirical patterns, we further include firm size, profitability, leverage, sales growth, and firm age as matching covariates, which help mitigate the concern that differences in profitability and growth opportunities drive our observed differences in tax avoidance between sin firms and non-sin firms. We estimate the Probit model year by year, and each sin firm-year is then matched to a non-sin firm in the same year with the closest propensity score (with replacement and within a caliper of 0.01).

Table 1, Panel B presents the Fama-Macbeth mean coefficients and *t*-statistics from the Probit models before matching, and most regression coefficients are statistically significant at the 1% level. After matching, all coefficients become statistically insignificant at the 10% level and the average Pseudo R^2 is notably reduced from 0.189 before matching to 0.055 after matching. Panel C of Table 1 further presents a univariate comparison between sin firms and PSM-matched non-sin firms. We find that all the differences in characteristics between the two samples as reported in Panel A of Table 1 become statistically insignificant. Overall, our PSM approach is effective in narrowing the differences in firm-level characteristics between sin and non-sin firms that may affect corporate tax avoidance.

Panel D of Table 1 presents summary statistics of all the variables used in the tax avoidance regression for the PSM-matched sample. The mean value (0.242) of *CASH_ETR* is lower than the mean of 0.291 reported in Dyreng et al. (2008). Other sample statistics are generally comparable to those reported in Dyreng et al. (2008).

3.4. Empirical Specification

To examine whether sin-firms engage in less tax avoidance activities than non-sin firms

because of their limited political capital, we estimate the following regression model using the PSM-matched sample:

$$\begin{aligned} Tax\ \ Avoidance_{i,t} &= \beta_0 + \ \beta_1 * SIN_i + \ \beta_2 * ROA_{i,t} + \beta_3 * LEV_{i,t} + \ \beta_4 * \Delta NOL_{i,t} \\ &+ \ \beta_5 * DNOL_{i,t} + \beta_6 * FI_{i,t} + \beta_7 * PPE_{i,t} \ + \beta_8 * INTANG_{i,t} \\ &+ \ \beta_9 * EQINC_{i,t} + \beta_{10} * SIZE_{i,t-1} + \beta_{11} * MB_{i,t-1} + \beta_{12} * AQ_{i,t-1} \\ &+ \ \beta_{13} * IO_{i,t-1} + \beta_{14} * CONSTRAINT_{i,t-1} + \beta_{15} * HHI_{i,t-1} \\ &+ \ Year\ \ Dummies + \ \ Industry\ \ Dummies + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Following Chen et al. (2010) and Cheng et al. (2012), we include a comprehensive set of control variables of tax avoidance to minimize the chance that omitted (but correlated) variables explain our results on *SIN* - the key variable of interest that is equal to one for sin-firm years and zero otherwise. The first set of control variables captures firms' profitability (*ROA, ΔNOL, DNOL*), leverage (*LEV*) and income from foreign operations (*FI*). More profitable firms and firms with less loss carry forward tend to have higher effective tax rates. Highly leveraged firms may have weaker tax-avoidance motivation due to the tax benefits of paying more interests. Foreign operations provide more opportunities for tax avoidance by shifting income across different tax regimes and foreign profits are typically not subject to U.S. tax until repatriated.

The second set of control variables (*PPE, INTANG, EQINC*) captures differences in book and tax reporting that can affect our tax avoidance measures. Depreciation expense is differently calculated for tax and financial reporting purposes and this different treatment affects capital-intensive firms more than other firms. We therefore include *PPE*, the amount of property, plant and equipment scaled by the book value of total assets in the model. Amortization rules for intangible assets vary between book and tax accounting and we therefore control for *INTANG,* the amount of intangible assets scaled by the book value of assets. Income from affiliated entities is included in book income under the equity method but not in taxable income. We thus include *EQINC*, equity in earnings scaled by the book value of assets, to control for the differential book and tax treatments of consolidated earnings.

Third, we control for firm size (*SIZE*) and growth opportunities (*MB*). Larger firms may

be more likely to manage their taxes given the economies of scale in tax avoidance, or less likely to manage taxes given they face closer government scrutiny (Zimmerman, 1983). Growth firms are more likely to make investment in tax-favored assets that create tax benefits through depreciation and amortization.

Financial reporting quality, and more generally corporate transparency, are negatively associated with tax avoidance (Balakrishnan et al., 2019). Kim and Venkatachalam (2011) find that the financial reporting quality of sin firms is superior to that of non-sin firms. In addition, firms that manage tax often also manage earnings (Frank et al., 2009). We therefore also include accruals quality (*AQ*) and institutional ownership (*IO*) as proxies for transparency as well as for corporate governance (Graham and Rogers, 2002).[18]

Financially constrained firms tend to be more incentivized to avoid tax to mitigate the financial constraints (Law and Mills, 2005; Edwards et al., 2015). We therefore also control for financial constraints (*CONSTRAINT*) in our model. Following Rajan and Zingales (1998) and Derrien and Kecskés (2013), we proxy financial constraints by the cash flow-investment gap: capital expenditures plus research and development expense plus acquisitions minus income before extraordinary items minus depreciation and amortization, scaled by total assets.[19] Dyreng et al. (2020) show that firms with inelastic product demand engage in less income tax avoidance as they can pass the tax burden on to their consumers. They (inversely) proxy for firms' ability to shift tax burden to consumers and consumer demand elasticity by industry competition because in a competitive industry a firm faces more similar rivals. We therefore control for the 2-digit SIC sales-based Hefindahl index (*HHI*) in each year in the model. Note that the HHI also proxies for product market competition and hence corporate governance (Giroud and Muller, 2010).

Finally, we include one-digit SIC industry dummies to capture industry fixed effects and

[18] Khurana and Moser (2013) find that long-term institutional ownership is associated with less tax avoidance, but Khan et al. (2017) show that institutional ownership increases corporate tax avoidance.

[19] We note that there is an ongoing debate over how to measure financial constraints (Farre-Mensa and Ljungqvist, 2016), and hence acknowledge the potential limitation with the measure we use despite its intuitive appeal. Since consistent with the prior literature we find that firms that are more financially constrained tend to engage in more tax avoidance and hence exhibit lower cash and effective rates, it appears that the proxy of financial constraints we use is reasonable.

year dummies to capture year fixed effects.[20] We present detailed definitions of variables in APPENDIX 1.

4. Empirical results

4.1. Main Results

Table 2 presents the OLS estimation of Equation (1). The dependent variable is *CASH_ETR* in columns (1)-(3) and *GAAP_ETR* in columns (4)-(6). In columns (1) and (4), we only include the indicator variable, *SIN*, year and one-digit SIC industry fixed-effects. In columns (2), (3), (5) and (6), we further include the control variables of tax avoidance specified in Equation (1). When we define sin firms in columns (1), (2), (4) and (5), we include both firms that operate solely in sin segments and conglomerates that have a segment in a sin industry. We recognize that the effect of sin operation on tax avoidance could be potentially different for these two types of firms, because diversified sin firms with non-sin segments may face less political scrutiny and hence have less incentive to build up their political capital. To test this conjecture, in columns (3) and (6), we focus on a subsample of sin firms that operate solely with sin segments. As can be seen, the coefficient estimates of *SIN* are always positive and significant across all columns, suggesting that sin firms exhibit significantly less tax avoidance than their counterparts in non-sin industries. This finding supports our first hypothesis (H1) that sin firms engage in less tax avoidance than non-sin firms in order to reduce the likelihood of political backlash (e.g., additional regulations, new tax imposed).

The point estimates in the columns (2) and (5) suggest that the cash (GAAP) effective tax rates paid by sin firms are about 2.5-4 percentage points higher than those of non-sin firms. Since the mean pre-tax income is about $390 million for the matched sample, a reduction in cash effective tax rate of 2.5-4 percentage points roughly translates into a tax saving of $9.8-15.6 million annually for an average firm in our sample. Therefore, the effects of sin firm status on income tax avoidance are economically significant. In addition, the magnitude of the

[20] Given that alcohol firms occupy the whole two-digit SIC code "21", we can only use one-digit SIC industry fixed effects instead of a finer industry classification. Also note that in order to identify the effect of sin firm status on tax avoidance, we cannot include firm fixed effects as a firm's sin-business nature has little time variation.

coefficient of *SIN* in column (3) is larger than that of the coefficient of *SIN* in column (2). A similar observation can be made for the magnitude of the coefficient of *SIN* in column (6) as opposed to that of the coefficient of *SIN* in column (5). These contrasts suggest that the results are stronger for pure sin firms than for conglomerates that have both sin and non-sin segments as predicted.

With regard to the control variables, while their significance varies across different models, the patterns generally conform to our priori (see the discussion in Section 3.4 on control variables) and are largely consistent with prior studies (e.g., Chen et al., 2010). For example, firms with higher profitability (*ROA*) have higher effective tax rates. In contrast, firms with loss carry-forward (*DNOL*), more growth opportunities (*MB*) and higher financial constraint (*CONSTRAINT*) pay lower effective tax rates.

4.2. Decomposition of Tax Avoidance: Conventional versus Uncertain Avoidance

We next examine whether sin firms avoid less tax in general or just engage less in highly risky and aggressive tax strategies. We follow Guenther et al. (2017) and separate incremental tax avoidance into "uncertain" and "conventional." As noted in Guenther et al. (2017), "uncertain" tax avoidance refers to situations where firms may face challenges from tax authorities and ultimately lose the tax savings. For example, firms could be caught in complex tax sheltering.

Following Guenther et al. (2017), we first compute the *POTENTIAL TAX* for each firm. We construct a mathematical identity such that the *POTENTIAL TAX* must result in either *CASH TAX PAID* or *TAX AVOIDED*. Then we separate *TAX AVOIDED* into *CONVENTIONAL* tax avoidance and *UNCERTAIN* tax avoidance. The *UNCERTAIN* tax avoidance is defined as increases in a firm's UTB reserve (uncertain tax benefits). Effective in 2006, FASB Interpretation No. 48 (FIN 48) requires firms to separately disclose their tax-related contingent liabilities (i.e., uncertain tax positions) in their income tax footnotes. Since the UTB data starts in 2007, we drop observations prior to that year. We then estimate a system of equations to measure how much of each dollar of *POTENTIAL TAX* is represented by *CASH TAX PAID*, *CONVENTIONAL* tax avoidance and *UNCERTAIN* tax avoidance. All variables are defined in

the same way as in Guenther et al. (2017).

The regression results are reported in Table 3. We run the system of equations separately for sin firms and non-sin control firms. We find that, for sin firms, each additional dollar of *POTENTIAL TAX* is associated with 24.2 cents of *CONVENTIONAL* tax avoidance and 2 cents of *UNCERTAIN* tax avoidance. For non-sin firms, each additional dollar of *POTENTIAL TAX* is associated with 35.5 cents of *CONVENTIONAL* tax avoidance and 7.1 cents of *UNCERTAIN* tax avoidance. Although sin firms engage less in both *CONVENTIONAL* and *UNCERTAIN* tax avoidance than non-sin firms, the difference in *UNCERTAIN* tax avoidance is more statistically significant than the difference in *CONVENTIONAL* tax avoidance. For each additional dollar of *POTENTIAL TAX*, the amount of *UNCERTAIN* tax avoidance of non-sin firms more than triples that of sin firms. The difference in *UNCERTAIN* tax avoidance is also significant in economic terms. The result is consistent with our second hypothesis (H2) that sin firms engage in highly aggressive tax avoidance strategies to a lesser extent, because such aggressive tax avoidance strategies could result in more severe political backlash.

4.3. Cross-Sectional Variation: Firms' Lobbying Activities

Sin firms have high exposure to additional regulation and taxes because their products run contrary to social norms. However, some sin firms spend substantial amounts of money on lobbying activities. Through lobbying, sin firms could acquire some political capital by developing good relationships with the government and politicians. Such political capital, in turn, may enable sin firms to pursue more tax avoidance without being subject to additional political costs.

We collect the lobbying expense data from Opensecret.com. The website collects all registered lobbying expenditures including campaign contributions (including those through political action committees) and spending to lobby Congress and Federal agencies, and so the information is comprehensive to reflect non-bribe lobbying activities.[21] We manually match our sample firms to lobbying firms (or their parent company) in Opensecret.com by firm name.

[21] To the extent that a sin firm that lobbies intensively is also likely to engage in bribery (that is by definition underground and not publicly observable), the regression coefficient of lobbying also reflects a sin firm's overall effort to influence the regulator. Since some tobacco firms have been reported to engage in bribery, we also repeat the analysis by excluding tobacco firms and their matched control firms, and the unreported results are qualitatively similar. We thank an anonymous reviewer for suggesting this.

If a firm in our sample cannot be found in Opensecret.com in a certain year, we assign zero to its lobbying expenses in that year. The lobbying expense data start in 1998 and we therefore drop all observations prior to that year.

To test whether sin firms with more lobbying exhibit more tax avoidance, we add *LOBBY* and *SIN*LOBBY* in our baseline regressions and expect the interaction term to be loaded negatively. *LOBBY* is measured with a lag of one year relative to the tax avoidance variables and is defined as a firm's total amount of lobbying expenses in a year scaled by the firm's market capitalization. The regression results are reported in Table 4. In columns (1) and (3), we use sin firms defined both at the firm level and at the segment level. In columns (2) and (4), we only use sin firms that only operate in sin segments. The coefficient of the interaction term *LOBBY*SIN* is always negative and statistically significant regardless of which tax avoidance measure is used, suggesting that lobbying attenuates the negative effect of the status of sin firms on tax avoidance. This evidence supports our third hypothesis (H3) that lobbying activities can help sin firms build up political capital that enables them to be more aggressive in tax avoidance than otherwise.

We evaluate the effect of the status of sin firms on tax avoidance for a firm with a sample-mean level of lobbying expenditure by testing the combined coefficients *SIN+SIN*LOBBY* and report the test at the bottom of Table 4. As can be seen, for such sin firms with a mean level of lobbying expenditure, they still avoid less tax avoidance than non-sin firms. Therefore, lobbying on average attenuates but does not eliminate the effect of the status of sin firms on constraining tax avoidance.

4.4. Difference-in-Differences Tests and Alternative Interpretations

Collectively, evidence reported in Sections 4.1-4.3 is consistent with the interpretation that sin firms engage in less tax avoidance activities because of concerns over political costs. To further bolster confidence in this interpretation, in this section, we exploit the political events in the U.S. to perform a difference-in-differences test to sharpen the identification of the relationship between the status of sin firms and tax avoidance. The difference-in-differences test exploits time-series variations in the potential regulatory costs. We then examine several

possible alternative explanations for the negative relationship between the status of sin firms and tax avoidance. Specifically, the less aggressive tax avoidance behavior of sin firms could be driven by the higher litigation risk and the regulatory status faced by these companies. Moreover, it is also possible that sin firms have fewer tax avoidance opportunities because they produce simple consumer products that offer less room for complex tax avoidance strategies such as transfer pricing. Lastly, we consider corporate social responsibility as an alternative explanation of our results.

4.4.1 Difference-in-differences analysis: evidence from the change in partisan control

To mitigate the concern that our findings are due to the existence of omitted variables that are correlated with tax avoidance and the status of sin firms, we exploit the changes in partisan control of the White House and the Congress in the U.S. to conduct a difference-in-differences analysis. The analysis is based on the different attitudes of the Republican Party and the Democratic Party towards gun control. Gun control has been an ongoing controversial issue of interest to the general public and the controversy has intensified around major shooting tragedies. The risk of further regulatory constraint for firearm firms is heightened when the Democratic party controls both the White House and the Congress (including both the Senate and the House of Representatives) as the simultaneous control of the executive and legislative branches of government makes passage of new laws on gun control more likely. In fact, most significant gun legislation was passed when the Democrats were in power.[22] While the Democrats are in favor of gun control, the Republican party has largely been more opposed to limits on gun sales. When the Republican Party controls both the White House and the Congress, there is little prospect for further restrictions on gun sales. As such, firearm firms likely face greater potential for product market intervention by politicians, and thus incur higher political costs, when the Democratic Party is in power than when the Republican Party is in power. Therefore, we explore the Presidential and Congressional elections in the U.S. to investigate how firearm firms alter tax avoidance when the controlling political party changes.

During our sample period, we identify two Republican control events and two Democratic

[22] See the party platform http://www.ontheissues.org/celeb/Democratic_Party_Gun_Control.htm on what the Democrats advocate and have achieved on gun controls.

control events. The Republican Party gained the simultaneous control of the executive and legislative branches of government in November of 2002 and 2016. The Democratic Party gained the simultaneous control of the executive and legislative branches in November 1992 and 2008. We expect that firearm firms engage in more (less) aggressive tax avoidance activities when the Republican (Democratic) party gains control of the executive and legislative branches of government.

The Presidential and Congressional elections take place in November (with the frequency of the former being once every four years and the latter being once every two years). For the first Republican control event, we define the event year (denoted as year 0) as the fiscal year that covers November 2002 and we focus on the window of [-2, +4] where year -2, -1, +1, +2, +3 and +4 are defined relative to the event year (year 0). We make this choice to ensure that there is no change in the control of the White House and the Congress in the pre-event or the post-event period. Year -1 is the fiscal year that ends before November 2002, and year +1 is the fiscal year that begins after November 2002. Year -2, +2, +3, and +4 are defined analogously. For the second Republican control event, we define the event year as the fiscal year that covers November 2016. For the first Democratic control event, we define the event year as the fiscal year that covers November 1992. For the second Democratic control event, we define the event year as the fiscal year that covers November 2008. For these three partisan control events, we can only use a shorter window of [-2, +2] to ensure that there is no change in the control of the White House and the Congress in the pre-event or the post-event period. This short-window analysis may limit the power of our test using this setting.

For each event, we identify firearm firms and their PSM-matched firms in year -2. Depending on the tax avoidance proxy, we are able to identify 8 to 10 firearm firms and their one-to-one matched control firms. We generate an indicator variable, *Firearm,* which equals one for firms with SIC code 3480-3489 and zero for their PSM-matched non-sin control firms. We then construct an indicator *POST* that equals one for post-event years (i.e., year +1, +2, +3 or +4) and zero for pre-event years (i.e., year -2 or -1). We remove the event year (year 0) from the regressions because the prediction on firms' tax avoidance behavior in that year is

ambiguous. Since we focus on a short-term window, we use annual effective tax rates (instead of five-year average effective tax rates used in our baseline analysis) as the tax avoidance measures in our difference-in-differences analysis. This approach helps avoid the issue of overlapping between the pre- and post-event period that arises from computing effective tax rates on a multiple-year rolling basis. Note our sample size is smaller than 100 observations, and winsorizing at 1% has no effect in this small sample.[23] We therefore winsorize variables at 5% at both tails to mitigate the effects of outliers.

We run the difference-in-differences regressions for the two Republican events and the two Democratic events separately and the results are reported in Table 5. Panel A reports results from the difference-in-differences regressions. In addition to firm fixed effects, we also control for lagged determinants of tax avoidance that capture the time-varying difference in firm characteristics and in firms' tax avoidance opportunities in our difference-in-differences analysis. Our focus is on the interaction term *Firearm*POST*.[24] In columns (1)-(4), the interaction term *Firearm*POST* is negative and statistically significant for both tax avoidance measures, suggesting that firearm firms engage in more aggressive tax avoidance after the Republican Party gains effective control. In columns (5)-(8), the interaction term *Firearm*POST* is positive and statistically significant for both tax avoidance measures, suggesting that firearm firms pay more taxes after the Democratic Party gains effective control. Note that since we have already controlled for contemporaneous performance (*ROA*), the result is not simply driven by the change in firm performance around the change in partisan control. As a robustness check, we also directly examine whether firearm firms' profitability changes around the change in partisan control. Unreported results show that there is no significant change in firearm companies' profitability regardless of whether we include control variables or not.

Panel B reports tests of the parallel trends assumption for the difference-in-differences analysis. We estimate the regressions using the two years [-2, -1] prior to each change in

[23] For instance, in column (2) of Table 5, ten out of the 94 observations are winsorized if we use a 5% cutoff while none are winsorized if we use a 1% cutoff.

[24] The variables *Firearm* and *POST* alone are absorbed by the firm fixed effects and year fixed effects we include in the model.

partisan control. For all four events, we do not find significant differences in time trends between firearm firms and their matched control firms in the pre-event period. The results support the validity of the parallel trends assumption.

Taken together, despite the relatively small sample size, the results of the difference-in-differences analysis help mitigate the concern over the potential endogeneity issue arising from having unobserved correlated variables that are omitted from Equation (1), and provide further support for our political cost hypothesis.

4.4.2. Litigation risk

A potential explanation for sin firms' lower levels of tax avoidance is that sin firms face higher litigation risk and therefore they need to be more conservative in taking risk via tax avoidance. We conduct two additional tests to mitigate this concern.

First, we focus on tobacco firms that are subject to significant litigation risk. The first lawsuit against tobacco firms was filed in 1954 following the release of medical research findings in the early 1950s that smoking causes lung cancer, and the tobacco industry has experienced waves of litigation since then (Beneish et al., 2008). A landmark event is the signing of the Master Settlement Agreement (MSA) in the U.S. in November 1998, which involved 46 states and all major cigarette producers. According to the MSA, the states settled their lawsuits against the tobacco industry for recovering their tobacco-related health-care costs, and exempted tobacco companies from private tort liability for the harm caused by tobacco consumption. In exchange, tobacco firms agreed to curtail or cease certain tobacco marketing practices, and to pay a certain amount in perpetuity to the corresponding states to compensate for the medical costs in treating smoking-related illnesses. In effect, the MSA lowers future litigation risk tobacco firms face. To the extent that litigation risk causes sin firms to be more conservative in their tax avoidance, we expect the negative relation between the status of sin firms and tax avoidance to be less pronounced in the post-MSA period when litigation risk is lower.

To test this conjecture, we add an interaction term *SIN*POST_MSA* in Equation (1) and estimate the regression in the sample of tobacco firms and their PSM-matched control firms. If

litigation risk drives our results, we expect the interaction term to have a negative and significant coefficient because lower litigation risk leads firms to be less conservative in tax planning in the post-MSA period. The results are reported in Panel A of Table 6. The coefficient estimates of *SIN*POST_MSA* are statistically insignificant while the coefficient estimates of *SIN* continue to be positive and significant. Therefore, there is no evidence that the negative relation between the status of sin firms and tax avoidance varies with the level of litigation risk.

Second, gambling firms are less likely to be sued compared to tobacco firms and alcohol firms. If litigation risk is the driving force behind the negative relationship between the status of sin firms and tax avoidance, we should not find such a relationship among gambling firms. The regression results based on the sample of gambling firms and their PSM-matched control firms are reported in Panel B of Table 6. We find that gambling firms also engage in less tax avoidance activities compared to their PSM-matched control firms. Taken together, we believe that our finding of the negative relationship between the status of sin firms and tax avoidance is unlikely to be merely attributed to litigation risk.

4.4.3. Regulated industries

It is possible that sin firms engage in less tax avoidance simply because they operate in a regulated industry. If our results are primarily a function of operating in a regulated industry, and not low political capital, then we would expect firms in other regulated industries to engage in less tax avoidance as well.

To test this possibility, we follow Becher and Frye (2011) and identify a list of firms in other regulated industries, including utility firms, banks and insurance companies, as well as firms in transportation, telecommunication and sanitary service industries. We then create an indicator, *REGULATED*, that is equal to one for firms in these industries, and zero otherwise. We also use the PSM approach and identify matched firms in non-regulated industries.[25] The results from the tax avoidance regression based on regulated firms and their PSM-matched sample are reported in Table 7.

The coefficient of *REGULATED* is negative (rather than positive) for both tax avoidance

[25] We exclude sin firm-years from the pool of control firms when conducting the propensity score matching in this test.

measures. In untabulated tests, we find that the coefficient of *REGULATED* is insignificant when we use a narrower definition of highly regulated firms (i.e., when we only include banks, insurance companies, and utility firms as regulated firms). These findings suggest that regulated firms do not show a distinct pattern of tax avoidance from non-regulated firms. Therefore, the regulatory status per se is unlikely to be responsible for the negative relationship between the status of sin firms and tax avoidance. Instead, our result is predicated on the argument that it is the vice nature of sin products that attracts regulatory scrutiny and gives rise to higher political costs rather than regulation per se.

4.4.4. Product characteristics

4.4.4.1 A placebo test using food and soda companies that also offer simple products

As noted in Hong and Kacperczyk (2009), sin firms tend to supply single and simple consumer goods (i.e., tobacco, alcohol, gambling, or firearms). This unique nature of their products may leave sin firms with fewer opportunities for tax avoidance relative to firms producing more diverse and complex products, because simple consumer products offer less room for complex tax avoidance strategies such as transfer pricing. To mitigate this concern, we examine whether firms that also supply simple consumer products, such as food and soda firms, also engage in less tax avoidance. If the negative relationship between the status of sin firms and tax avoidance is due to the nature of the products, we should expect to observe less tax avoidance for food and soda producers as well.

To test this conjecture, we follow Hong and Kacperczyk (2009) and identify food and soda producers as firms in the Fama and French 48 industry group 2 (food) and group 3 (soda). We then construct an indicator variable, *COMPARABLE,* that equals one for firms belonging to the food or soda industry and zero for their PSM-matched control firms.[26] The results are reported in columns (1) and (2) of Table 8. The coefficient on *COMPARABLE* is statistically insignificant in both models, suggesting that firms in the food and soda industries that also offer simple products do not appear to engage in less tax avoidance than their matched control firms. The results are virtually unchanged if we exclude the one-digit industry fixed effects in the

[26] Again, we remove sin firm-years from the pool of control firms in the propensity score matching procedure.

regressions. Note that we include a full set of determinants of tax avoidance (e.g., firm size, ROA, foreign income) so that we compare the tax avoidance of sin firms with food and soda producers holding potential determinants of tax avoidance constant. Therefore, it is unlikely that our finding is due to the differences in product characteristics between sin and non-sin firms.[27]

4.4.4.2 Inelastic product demand as an alternative explanation

Sin firms offer unique products and consumers of these products might have an inelastic demand (e.g., smokers continue to buy cigarettes even when prices increase). This, in turn, may allow sin firms to pass the excise and income tax burden on to consumers, which reduces the need of sin firms to engage in income tax avoidance. This possibility may explain our finding.[28]

As far as excise tax is concerned, though consumption taxes are collected by firms on behalf of their consumers, such taxes can drive a wedge between the price that is paid by consumers and what is received by firms. As a result, firm profitability (e.g., due to lower aggregate demand) and corporate investment can decline (Bruhne and Jacob, 2019). Consistent with this view, Jacob et al. (2019) show that consumption taxes on average decrease investment though the effect is larger for a higher consumer demand elasticity. Therefore, sin firms are exposed to the adverse effect of higher excise tax on their products, providing them an incentive to avoid regulatory scrutiny that may be triggered by engaging in income tax avoidance.

Moreover, Dyreng et al. (2020) show that firms with inelastic product demand engage in less income tax avoidance as they can pass the tax burden on to their consumers. They (inversely) proxy for firms' ability to shift tax burden to consumers and consumer demand elasticity by industry competition because in a competitive industry a firm faces more similar rivals. Note that our model specification has already controlled for the time-varying level of market competition within the industry a firm operates. In columns (3) and (4) of Table 8, we

[27] Another possible omitted variable in our analyses is managerial risk-taking incentive, since Rego and Wilson (2012) provide evidence that equity risk incentives are a significant determinant of tax avoidance. We use the natural logarithm of CEO stock option portfolio's vega as our proxy for the managerial risk-taking incentive and include it as a control variable in our tax avoidance regressions. The sample size is reduced substantially since we require firms to have available data on CEO compensation. Untabulated results suggest firms with higher CEO vega have higher level of tax avoidance, consistent with the finding of Rego and Wilson (2012). More importantly, the coefficient of *SIN* continues to be positive and significant.

[28] We thank an anonymous reviewer for suggesting this alternative explanation.

further include the total similarity measure from Hoberg and Phillips (2016), *TNIC3TSIMM*, which is an inverse measure of product market structure and a firm's market power because firms with more similar rivals have less pricing power and face more elastic consumer demand as well as more competition. The results on *SIN* are robust to controlling for this variable, while *TNIC3TSIMM* is loaded negatively as in Dyreng et al. (2020), suggesting a negative relationship between market power and tax avoidance. Therefore, we argue that our results are not driven by the inelastic product demand.

Taken together, the tests regarding litigation risk, industry regulation, and product characteristics help mitigate the concern that our observed less tax avoidance in sin firms is due to sin firms having more limited opportunities for tax avoidance.

4.4.5. Corporate social responsibility

Another potential omitted variable that may drive the observed difference in tax avoidance is the difference in CSR activities between sin firms and non-sin firms. We first note that there is no clear empirical evidence on whether firms with a higher level of CSR engage in more or less tax avoidance (see Hoi et al. (2013) and Davis et al. (2016) for different findings). Nevertheless, we additionally control for a firm's CSR rating in our baseline regressions as a robustness check. We obtain data on firms' CSR ratings from the MSCI ESG KLD STATS (formerly known as KLD Research & Analytics) database. The variable *CSR* is defined as the total number of strengths minus the total number of concerns in the following seven aspects: community, corporate governance, diversity, employee relations, environment, human rights, and product. The variable *CSR* is lagged by one year relative to the dependent variable. The sample in this test is restricted to firms with available data on the CSR ratings. The results are reported in Table 9 and the sample size for the regressions is much smaller constrained by the availability of CSR data. Nevertheless, the coefficient on *SIN* remains positive and statistically significant at the 5% level, suggesting that our results are not explained by potential differences in CSR performance between sin firms and non-sin firms.

5. Conclusion

In this study, we expand the political cost hypothesis developed by Watts and Zimmerman (1986) to incorporate the importance of social norms. We hypothesize that sin firms are at much greater risk of being subject to additional regulation and excise taxes relative to non-sin firms because their products or services run contrary to prevalent social norms and impose significant negative externalities on society. Because it is easier for regulators and policymakers to impose additional taxes and regulations on sin firms, we predict that managers of these firms will be more cautious in avoiding corporate income taxes in an attempt to avoid scrutiny from policymakers and regulators.

Using sin firms and their matched non-sin firms from the U.S., we find that sin firms exhibit less tax avoidance than non-sin firms, particularly through uncertain and more risky tax avoidance strategies. Further, we find that the negative relationship between the status of sin firms and tax avoidance is less pronounced in firms that accumulate political capital via intensive lobbying activities. The negative relationship between the status of sin firms and tax avoidance is further bolstered by difference-in-differences analyses of how the tax avoidance behavior of firearm firms responds to the change in effective partisan control in the U.S. Overall, we conclude that social norms play a significant role in determining firms' exposure to political costs and that managers respond accordingly.

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TABLE 1
Propensity Score Matching

Panel A: Comparisons Before Matching

Variable	Sin	Non-Sin	Difference
ROA	0.126	0.073	0.053***
			(11.58)
SIZE	6.228	5.417	0.811***
			(18.02)
MB	1.755	2.003	-0.248***
			(-7.51)
LEV	0.333	0.238	0.095***
			(22.02)
DIV	0.019	0.011	0.008***
			(17.22)
IO	0.341	0.388	-0.047***
			(-7.52)
COV	5.556	5.105	0.451***
			(3.50)
GROW	0.166	0.207	-0.041***
			(-3.18)
AGE	16.040	13.090	2.950***
			(13.43)
No. of obs.	1,572	90,980	

Panel B: Probit Regression (Y= *SIN* (0/1))

	Before Matching	After Matching
ROA	0.419***	-0.071
	(4.65)	(-0.41)
SIZE	0.121***	0.004
	(15.68)	(0.30)
MB	-0.316***	0.051
	(-7.85)	(0.84)
LEV	0.899***	-0.057
	(13.88)	(-0.68)
DIV	3.917***	-0.780
	(11.29)	(-1.01)
IO	-0.631***	-0.010
	(-11.26)	(-0.09)
COV	-0.088***	0.001
	(-4.33)	(0.13)
GROW	-0.002	0.077
	(-0.11)	(0.86)
AGE	0.006***	-0.004
	(5.82)	(-1.27)
Sin obs.	1,572	1,572
Non-Sin obs.	90,980	1,572
Total obs.	92,552	3,144
Average Pseudo R^2	0.189	0.055

Panel C: Comparisons After Matching			
Variable	**Sin**	**Non-Sin**	**Difference**
ROA	0.126	0.123	0.003
			(0.57)
SIZE	6.228	6.194	0.034
			(0.07)
MB	1.755	1.770	-0.015
			(-0.82)
LEV	0.333	0.329	0.004
			(0.35)
DIV	0.019	0.020	-0.001
			(-1.24)
IO	0.341	0.347	-0.006
			(-0.49)
COV	5.556	5.682	-0.126
			(-0.33)
GROW	0.166	0.152	0.014
			(0.95)
AGE	16.040	16.340	-0.300
			(-1.28)
No. of obs.	1,572	1,572	

Panel D: Descriptive Statistics for the Matched Sample						
Variable	***N***	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**
CASH_ETR	2,126	0.242	0.217	0.068	0.228	0.336
GAAP_ETR	2,986	0.281	0.216	0.112	0.299	0.388
SIN	3,144	0.500	0.500	0.000	1.000	1.000
ROA	3,144	0.125	0.172	0.075	0.133	0.196
SIZE	3,144	6.191	2.465	4.272	6.110	8.002
MB	3,144	1.755	1.284	1.077	1.362	1.928
LEV	3,144	0.330	0.243	0.148	0.293	0.471
DIV	3,144	0.019	0.033	0.000	0.006	0.025
IO	3,144	0.345	0.301	0.068	0.276	0.573
COV	3,144	5.647	7.045	0.000	3.000	8.000
GROW	3,144	0.160	0.586	-0.031	0.062	0.183
AGE	3,144	16.100	12.680	6.000	13.000	23.000
ΔNOL	3,144	0.026	0.177	0.000	0.000	0.000
DNOL	3,144	0.343	0.475	0.000	0.000	1.000
FI	3,144	0.010	0.030	0.000	0.000	0.002
PPE	3,144	0.396	0.299	0.159	0.324	0.596
INTANG	3,144	0.140	0.212	0.000	0.038	0.202
EQINC	3,144	0.002	0.007	0.000	0.000	0.000
AQ	3,144	0.054	0.051	0.023	0.039	0.067
CONSTRAINT	3,144	0.059	0.232	-0.044	0.003	0.085
HHI	3,144	0.102	0.115	0.041	0.061	0.097

This table reports results from the propensity score matching. Panel A reports the comparisons between sin firms and non-sin firms on variables used in the propensity score matching, using the broad sample before matching. Panel B reports the Fama-Macbeth mean coefficients and *t*-statistics of the Probit model where the dependent variable is the dummy variable *SIN* (0/1). The Probit model is estimated each year and the time series of the coefficient estimates are used to compute the mean coefficients and *t*-statistics. Panel C reports the comparisons between sin firms and non-sin firms on variables used in the propensity score matching, using the matched sample. Panel D reports the descriptive statistics for the matched sample on variables used in PSM and the regression models on tax avoidance. *t*-statistics are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% level (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 2
Regression Analysis of Tax Avoidance

Y=	***CASH_ETR***			***GAAP_ETR***		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
SIN	0.020**	0.040**	0.053***	0.021***	0.025**	0.031**
	(2.19)	(2.58)	(2.70)	(2.65)	(2.17)	(2.57)
ROA		0.156***	0.186***		0.161***	0.300***
		(2.97)	(4.40)		(3.47)	(7.71)
LEV		-0.063*	-0.077**		-0.032	-0.064**
		(-1.88)	(-2.28)		(-1.17)	(-2.10)
ΔNOL		0.026	-0.047**		0.011	-0.093***
		(0.96)	(-1.97)		(0.32)	(-3.08)
DNOL		-0.054***	-0.067***		-0.043***	-0.049***
		(-3.99)	(-3.70)		(-3.37)	(-2.74)
FI		-0.028	-0.342		-0.039	-0.350**
		(-0.14)	(-1.41)		(-0.26)	(-1.96)
PPE		-0.086***	-0.052*		-0.035*	-0.015
		(-3.27)	(-1.87)		(-1.70)	(-0.57)
INTANG		-0.010	-0.002		0.017	0.036
		(-0.38)	(-0.08)		(0.73)	(1.32)
EQINC		-1.346	-1.196		0.517	0.806
		(-1.39)	(-0.90)		(0.70)	(0.89)
SIZE		0.013***	0.012***		0.008***	0.010***
		(3.47)	(2.72)		(2.93)	(2.84)
MB		-0.027***	-0.021***		-0.010**	-0.017***
		(-5.10)	(-4.25)		(-2.31)	(-4.10)
AQ		0.079	-0.286*		-0.012	-0.103
		(0.59)	(-1.66)		(-0.10)	(-0.53)
IO		0.008	0.078***		0.048***	0.077***
		(0.35)	(2.91)		(2.64)	(3.23)
CONSTRAINT		-0.128***	-0.135***		-0.107***	-0.073**
		(-3.66)	(-3.96)		(-4.51)	(-2.43)
HHI		0.201**	-0.132		0.015	-0.013
		(1.99)	(-1.17)		(0.23)	(-0.11)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Sin obs.	1,063	1,063	763	1,493	1,493	1,052
Non-Sin obs.	1,063	1,063	763	1,493	1,493	1,052
Total obs.	2,126	2,126	1,526	2,986	2,986	2,104
Adj. R^2	0.040	0.111	0.127	0.054	0.130	0.151

This table reports the OLS estimation of Equation (1) using *CASH_ETR* or *GAAP_ETR* as the dependent variable. Sin firms and their matched control firms are used in the regressions. In columns (1), (2), (4), (5), we use sin firms defined at the firm level or at the segment level. In columns (3) and (6), we only use sin firms defined at the firm level. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 3
Marginal Tax Avoidance: Conventional versus Uncertain

Y=	***CASH TAX PAID***		***TAX AVOIDED (=CONVENTIONAL + UNCERTAIN)***		***CONVENTIONAL***		***UNCERTAIN***		***SETTLEMENTS***	
	Sin	**Non-Sin**	**Sin**	**Non-Sin**	**Sin**	**Non-Sin**	**Sin**	**Non-Sin**	**Sin**	**Non-Sin**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
POTENTIAL TAX	0.733***	0.583***	0.262***	0.426***	0.242***	0.355***	0.020*	0.071***	-0.005	0.009
	(31.48)	(22.58)	(14.62)	(16.49)	(8.02)	(12.95)	(1.78)	(3.64)	(-0.10)	(0.90)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	232	232	232	232	232	232	232	232	232	232
Adj. R^2	0.847	0.737	0.541	0.621	0.594	0.515	0.224	0.250	0.099	0.072
Difference in coefficient	0.150**		-0.164**		-0.113*		-0.051***		-0.014	
Chi^2	3.99		5.07		3.68		5.32		0.50	

This table reports the OLS estimation of a system of four equations using *POTENTIAL TAX* as the dependent variable, for sin firms and non-sin firms separately. All variables have the same definition as in Guenther et al. (2017). Sin firms and their matched control firms are used in the regressions. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively.

TABLE 4
Regression Analysis of Tax Avoidance: Lobbying Expenses

Y=	***CASH_ETR***		***GAAP_ETR***	
	(1)	**(2)**	**(3)**	**(4)**
SIN	0.052***	0.046**	0.048***	0.045**
	(3.79)	(2.41)	(3.05)	(2.34)
LOBBY	-0.086**	-0.126***	-0.122**	-0.170***
	(-2.14)	(-3.88)	(-2.17)	(-2.74)
*SIN*LOBBY*	-0.214***	-0.341**	-0.474**	-0.558***
	(-3.02)	(-2.26)	(-2.29)	(-2.79)
ROA	0.155**	0.133	0.174**	0.172
	(2.17)	(1.29)	(2.55)	(1.57)
LEV	-0.084*	-0.127**	-0.063*	-0.144**
	(-1.90)	(-2.16)	(-1.88)	(-2.58)
ΔNOL	0.047	-0.021	0.028	-0.190***
	(1.28)	(-0.41)	(0.52)	(-4.66)
DNOL	-0.075***	-0.082***	-0.055***	-0.061**
	(-4.25)	(-2.80)	(-3.53)	(-2.37)
FI	-0.275	-0.805*	-0.192	-0.608**
	(-1.11)	(-1.79)	(-0.91)	(-2.12)
PPE	-0.065*	0.014	-0.026	0.022
	(-1.80)	(0.28)	(-0.89)	(0.49)
INTANG	0.012	0.051	0.049	0.096*
	(0.32)	(1.05)	(1.52)	(1.86)
EQINC	-1.257	-0.846	0.596	0.521
	(-1.12)	(-0.53)	(0.60)	(0.37)
SIZE	0.008	0.003	0.007*	0.001
	(1.46)	(0.37)	(1.69)	(0.16)
MB	-0.023***	-0.020***	-0.009	-0.010
	(-3.29)	(-2.65)	(-1.53)	(-1.17)
AQ	0.030	0.043	0.028	-0.224
	(0.17)	(0.09)	(0.23)	(-0.59)
IO	0.014	0.105**	0.049**	0.081*
	(0.46)	(1.99)	(2.31)	(1.87)
CONSTRAINT	-0.120***	-0.096	-0.078***	-0.135***
	(-3.06)	(-1.43)	(-2.83)	(-2.61)
HHI	0.087	-0.127	0.223	-0.089
	(0.51)	(-0.45)	(1.39)	(-0.35)
*SIN+ SIN*LOBBY* (at mean *LOBBY*)	0.047**	0.039**	0.038**	0.033*
	(2.39)	(2.15)	(2.12)	(1.89)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Sin obs.	644	386	796	478
Non-Sin obs.	644	386	796	478
Total obs.	1,288	772	1,592	966
Adj. R^2	0.113	0.114	0.120	0.110

This table reports the OLS estimation of Equation (1) using *CASH_ETR* or *GAAP_ETR* as the dependent variable. Sin firms and their matched control firms are used in the regressions. In columns (1) and (3), we use sin firms defined at the firm level or at the segment level. In columns (2) and (4), we only use sin firms defined at the firm level. The variable *LOBBY* is defined as a firm's total amount of lobbying expenses in the previous year scaled by market capitalization. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 5
Difference-in-differences Analysis: Change in Tax Avoidance of Firearm Firms around Changes in Effective Partisan Control

Panel A: Main analysis

	Republican event 1		**Republican event 2**		**Democratic event 1**		**Democratic event 2**	
Event year	**2002**		**2016**		**1992**		**2008**	
Event window	[-2, +4]		[-2, +2]		[-2, +2]		[-2, +2]	
Y=	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
*FIREARM*POST*	-0.059*	-0.083**	-0.044*	-0.060**	0.020*	0.053*	0.023*	0.057*
	(-1.88)	(-2.04)	(-1.79)	(-2.21)	(1.79)	(1.77)	(1.72)	(1.71)
ROA	-1.683**	-1.330	0.650	0.910*	-1.458	0.502	-0.360	0.166
	(-2.45)	(-1.76)	(0.77)	(1.87)	(-0.47)	(0.54)	(-0.48)	(0.21)
LEV	0.311	-1.816*	0.516	1.177	0.750	0.944	0.123	0.356
	(0.47)	(-2.06)	(0.95)	(1.32)	(0.97)	(1.66)	(0.32)	(0.62)
ΔNOL	1.329	-0.219	-0.894**	-0.258**	6.208	-0.534*	0.078	-0.400
	(1.63)	(-0.52)	(-2.47)	(-2.30)	(1.34)	(-2.08)	(0.69)	(-1.62)
DNOL	-0.172	-0.118	-0.018	-0.215	0.811***	0.021	-0.108	-0.064
	(-1.13)	(-1.22)	(-0.16)	(-0.83)	(3.81)	(0.28)	(-1.34)	(-0.59)
FI	0.733	1.417	-0.775*	-0.812	-11.267**	-1.971	-0.395	0.367
	(0.28)	(1.31)	(-1.97)	(-0.67)	(-2.82)	(-0.65)	(-0.27)	(0.31)
PPE	0.945	-1.797**	-0.182	-0.122	-0.571	-1.002	-2.052**	0.017
	(1.06)	(-2.40)	(-0.69)	(-0.32)	(-0.33)	(-1.61)	(-2.48)	(0.02)
INTANG	0.613	1.173*	0.057	-0.305	-1.006	1.117*	0.376	0.458
	(0.63)	(2.06)	(0.17)	(-0.76)	(-0.76)	(1.90)	(1.06)	(1.70)
EQINC	0.633	4.824	-0.743	-1.672**	1.480	-14.216*	27.344***	9.564*
	(0.12)	(1.35)	(-0.26)	(-2.33)	(0.22)	(-1.78)	(4.67)	(1.86)
SIZE	0.034	-0.140	-0.071	-0.351**	-0.116	0.126	0.096	0.145
	(0.31)	(-0.88)	(-0.75)	(-2.48)	(-0.28)	(1.04)	(1.41)	(1.51)
MB	0.130	0.122	-0.175**	0.095	0.990	-0.024	-0.080	0.022
	(0.58)	(0.67)	(-2.39)	(0.66)	(0.82)	(-0.09)	(-0.82)	(0.25)
AQ	1.608	0.054	-0.057	0.773	-2.837	2.346*	-0.289	4.085
	(0.95)	(0.05)	(-0.03)	(1.51)	(-0.65)	(2.13)	(-0.42)	(1.47)
IO	-0.662	0.454	-0.001	-0.307	-1.304**	0.291	0.262	0.387

	(-1.68)	(1.27)	(-0.00)	(-0.53)	(-2.31)	(0.64)	(0.85)	(0.60)
CONSTRAINT	0.318	0.025	0.233	0.258	-1.583*	0.514	0.340	0.328
	(0.54)	(0.05)	(0.53)	(0.28)	(-1.86)	(1.36)	(0.97)	(1.01)
HHI	2.030	-1.885	4.076	8.604**	4.294	3.968**	1.055	-0.830
	(1.73)	(-1.03)	(0.95)	(2.26)	(1.67)	(2.40)	(0.49)	(-0.46)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sin obs.	43	47	34	34	24	36	38	38
Non-Sin obs.	43	47	34	34	24	36	38	38
Total obs.	86	94	68	68	48	72	76	76
Adj. R^2	0.490	0.479	0.521	0.232	0.308	0.477	0.449	0.382

Panel B: Test of the parallel trend assumption

Y=	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***	***Annual CASH_ETR***	***Annual GAAP_ETR***
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
*FIREARM*YEAR*$^{-1}$	-0.088	-0.056	0.113	0.079	0.034	0.094	0.082	-0.096
	(-0.37)	(-0.50)	(0.60)	(0.41)	(0.28)	(0.56)	(1.04)	(-0.34)
FIREARM	-0.011	0.072	-0.076	-0.048	-0.130	0.117	0.094	0.103
	(-0.06)	(1.08)	(-0.36)	(-0.49)	(-1.51)	(0.68)	(0.78)	(0.94)
YEAR^{-1}	0.121	-0.065	0.017	-0.011	-0.085	-0.106	-0.096	0.097
	(0.46)	(-0.66)	(0.18)	(-0.10)	(-0.61)	(-0.79)	(-1.32)	(1.04)

This table reports the difference-in-differences analysis of the change in tax avoidance of firearm firms around changes in effective partisan control of the White House and the Congress (including both the Senate and the House of Representatives). The dependent variables are the annual cash effective tax rate and the annual GAAP effective tax rate. Firearm firms and their control firms matched in year = -2 (with year 0 being the event year) are used in the regressions. The Republican Party gained simultaneous control of the White House and the Congress in November 2002 and 2016. The Democratic Party gained simultaneous control of the White House and the Congress in November 1992 and 2008. In columns (1) and (2), we use the Republican event with the event year (0) defined as the fiscal year covering the election in November 2002. In columns (3) and (4), we use the Republican event with the event year (0) defined as the fiscal year covering the election in November 2016. In columns (5) and (6), we use the Democratic event with the event year (0) defined as the fiscal year covering the election in November 1992. In columns (7) and (8), we use the Democratic event with the event year (0) defined as the fiscal year covering the election in November 2008. In Panel A, we focus on the window [-2, +4] in columns (1)-(2) and the window [-2, +2] in columns (3)-(8). Event year 0 is excluded from the regressions. *POST* is a dummy variable that equals one if the observations are in post-event years and zero otherwise. Year fixed effects and firm fixed effects are included. In Panel B, we focus on the two years [-2, -1] prior to changes in partisan control. *YEAR*$^{-1}$ is a dummy variable that equals one if the observations are in year = -1 and zero otherwise. The coefficients on control variables are omitted for brevity. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 6
Tests of Alternative Interpretations: Litigation Risk

Panel A: Tests of tobacco firms around the Master Settlement Agreement (MSA) in 1998

Y=	***CASH_ETR***	***GAAP_ETR***
	(1)	**(2)**
SIN	0.077*	0.062*
	(1.67)	(1.72)
*SIN*POST_MSA*	0.011	-0.021
	(0.20)	(-0.40)
ROA	0.273**	0.214***
	(2.47)	(2.65)
LEV	-0.075	0.063
	(-1.25)	(0.91)
ΔNOL	-0.100	0.049
	(-0.97)	(0.57)
DNOL	-0.042	0.020
	(-1.34)	(0.61)
FI	-0.319	-0.326
	(-1.49)	(-1.31)
PPE	-0.164**	-0.100
	(-2.15)	(-1.58)
INTANG	-0.015	-0.059
	(-0.23)	(-1.12)
EQINC	1.724	-2.075
	(0.74)	(-0.99)
SIZE	0.010	0.000
	(1.17)	(0.01)
MB	-0.003	-0.005
	(-0.45)	(-0.58)
AQ	-0.863*	0.225
	(-1.79)	(0.42)
IO	-0.018	0.059
	(-0.35)	(1.22)
CONSTRAINT	0.111	-0.038
	(1.00)	(-0.60)
HHI	1.096**	0.027
	(2.21)	(0.17)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Sin obs.	90	168
Non-Sin obs.	90	168
No. of obs.	180	336
Adj. R^2	0.264	0.194

Panel B: Tests using gambling firms and matched control firms only		
Y=	***CASH_ETR***	***GAAP_ETR***
	(1)	**(2)**
SIN	0.042*	0.038**
	(1.94)	(2.18)
ROA	0.081	0.166***
	(1.05)	(3.18)
LEV	-0.093**	-0.071*
	(-2.08)	(-1.96)
ΔNOL	-0.064**	-0.069**
	(-2.29)	(-2.09)
DNOL	-0.090***	-0.049**
	(-3.74)	(-2.17)
FI	-0.688	-0.402
	(-1.63)	(-1.22)
PPE	-0.093***	-0.046
	(-3.08)	(-1.58)
INTANG	-0.005	0.052
	(-0.16)	(1.28)
EQINC	-2.067	1.990
	(-1.29)	(1.62)
SIZE	0.013*	0.016**
	(1.76)	(2.50)
MB	-0.018**	-0.026***
	(-2.11)	(-4.51)
AQ	-0.232	0.014
	(-0.98)	(0.06)
IO	0.010	0.063*
	(0.26)	(1.84)
CONSTRAINT	-0.197***	-0.094***
	(-3.82)	(-3.36)
HHI	0.220	-0.106
	(1.10)	(-1.02)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Sin obs.	628	789
Non-Sin obs.	628	789
No. of obs.	1,256	1,578
Adj. R^2	0.107	0.140

This table reports the results from testing litigation risk as an alternative explanation of the baseline finding. In Panel A, we restrict the sample to tobacco firms and their matched control firms. *POST_MSA* is a dummy variable that equals one for the period after the signing of the Master Settlement Agreement (MSA) in the U.S. in November 1998. Year fixed effects and one-digit SIC industry fixed effects are included. The variable *POST_MSA* alone is redundant since we include year fixed effects. In Panel B, we restrict the analysis to gambling firms and their matched control firms. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 7
Tests of Alternative Interpretations: Regulatory Scrutiny

Y=	***CASH_ETR***	***GAAP_ETR***
	(1)	**(2)**
REGULATED	-0.015	-0.028*
	(-1.16)	(-1.78)
ROA	0.129***	0.264***
	(2.59)	(10.52)
LEV	-0.080***	-0.097***
	(-3.15)	(-3.56)
ΔNOL	-0.049**	-0.077**
	(-2.00)	(-2.53)
DNOL	-0.053***	-0.019*
	(-4.56)	(-1.68)
FI	0.444***	0.186*
	(3.07)	(1.69)
PPE	-0.082***	-0.010
	(-4.79)	(-0.41)
INTANG	-0.022	-0.044
	(-0.88)	(-1.23)
EQINC	-1.473	-0.715
	(-1.40)	(-0.99)
SIZE	0.016***	0.014***
	(4.92)	(4.68)
MB	-0.015***	-0.022***
	(-2.59)	(-6.13)
AQ	-0.035	-0.327***
	(-0.26)	(-2.81)
IO	-0.034**	0.072***
	(-2.12)	(5.35)
CONSTRAINT	-0.077**	-0.068***
	(-2.16)	(-3.87)
HHI	0.061	-0.184***
	(0.81)	(-2.97)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Sin obs.	11,639	16,883
Non-Sin obs.	11,639	16,883
Total obs.	23,278	33,766
Adj. R^2	0.115	0.142

This table reports the OLS estimation of Equation (1) except that we replace the variable *SIN* with *REGULATED*, a dummy variable that equals one if a firm's SIC code falls within the following range: 4900-4939 (electric and gas), 1300-1399 (oil and gas extraction), 6020-6039 (commercial banks and savings institutions), 6710-6719 (bank holding companies), 6300-6399 (insurance), 4000-4700 (transportation), 4800-4899 (telecommunications), 4950-4959 (sanitary services); and zero otherwise. The propensity score matched sample based on *REGULATED* is used. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% level (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 8
Tests of Alternative Interpretations: Product Characteristics

Y=	*CASH_ETR*	*GAAP_ETR*	*CASH_ETR*	*GAAP_ETR*
	(1)	**(2)**	**(3)**	**(4)**
COMPARABLE	0.004	0.012		
	(0.37)	(0.90)		
SIN			0.057***	0.047***
			(3.04)	(3.04)
ROA	0.229***	0.314***	0.139**	0.095*
	(7.50)	(12.25)	(2.34)	(1.76)
LEV	-0.021	-0.009	-0.042	-0.029
	(-0.67)	(-0.31)	(-1.11)	(-0.87)
ΔNOL	-0.030	-0.058***	0.031	-0.048
	(-1.36)	(-2.74)	(0.95)	(-1.48)
DNOL	-0.047***	-0.050***	-0.064***	-0.047***
	(-4.25)	(-5.36)	(-4.00)	(-2.93)
FI	-0.171	-0.209**	-0.087	-0.178
	(-1.46)	(-2.09)	(-0.37)	(-0.95)
PPE	-0.070***	-0.028	-0.077**	-0.023
	(-2.91)	(-1.59)	(-2.55)	(-0.86)
INTANG	-0.027	-0.030	0.009	0.022
	(-1.14)	(-1.39)	(0.33)	(0.83)
EQINC	-0.536	0.117	-1.945	0.384
	(-0.63)	(0.16)	(-1.58)	(0.38)
SIZE	0.008***	0.008***	0.010*	0.009**
	(2.95)	(3.58)	(1.90)	(2.25)
MB	-0.033***	-0.022***	-0.022***	-0.010*
	(-9.41)	(-7.68)	(-3.53)	(-1.74)
AQ	-0.238*	-0.080	0.072	0.157
	(-1.79)	(-0.76)	(0.47)	(1.04)
IO	-0.018	0.010	-0.006	0.051*
	(-0.81)	(0.64)	(-0.18)	(1.75)
CONSTRAINT	-0.059**	-0.102***	-0.117***	-0.096***
	(-2.45)	(-4.33)	(-3.03)	(-3.42)
HHI	0.089	0.125**	0.266*	0.153
	(1.30)	(2.17)	(1.77)	(1.00)
TNIC3TSIMM			-0.004**	-0.003**
			(-2.42)	(-2.09)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Sin obs.	1,948	2,933	798	871
Non-Sin obs.	1,948	2,933	798	871
Total obs.	3,896	5,866	1,596	1,742
Adj. R^2	0.100	0.150	0.117	0.127

This table reports the OLS estimation of Equation (1) using *CASH_ETR* or *GAAP_ETR* as the dependent variable. In Columns (1) and (2), we replace the variable *SIN* with *COMPARABLE*, a dummy variable that equals one if a firm belongs to the Fama-French 48 industry group 2 food (SIC 2000-2046, 2050-2063, 2070-2079, 2090-2092, 2095, 2098-2099) or group 3 soda (SIC 2064-2068, 2086-2087, 2096-2097), and zero otherwise. The propensity score matched sample based on *COMPARABLE* is used. In Columns (3) and (4), sin firms and their matched control firms are used in the regressions. *TNIC3TSIMM* is Hoberg and Phillips's (2016) total similarity measure that inversely measures a firm's market power. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

TABLE 9
Tests of Alternative Interpretations: Corporate Social Responsibility

Y=	***CASH_ETR***	***GAAP_ETR***
	(1)	**(2)**
SIN	0.049**	0.055**
	(2.06)	(2.37)
ROA	0.184*	0.012
	(1.66)	(0.07)
LEV	-0.044	-0.025
	(-0.86)	(-0.50)
ΔNOL	-0.031	-0.023
	(-0.56)	(-0.35)
DNOL	-0.065***	-0.049***
	(-3.21)	(-2.69)
FI	-0.708***	-0.256
	(-2.72)	(-0.79)
PPE	-0.132***	0.007
	(-2.92)	(0.17)
INTANG	0.026	0.081*
	(0.55)	(1.85)
EQINC	-3.117**	0.477
	(-2.00)	(0.49)
SIZE	0.015*	0.004
	(1.91)	(0.54)
MB	-0.027***	-0.004
	(-3.46)	(-0.39)
AQ	0.143	0.034
	(0.41)	(0.34)
IO	-0.145**	0.079
	(-2.57)	(1.55)
CONSTRAINT	-0.154*	-0.155*
	(-1.85)	(-1.74)
HHI	0.314	0.077
	(1.27)	(0.27)
CSR	-0.003	0.001
	(-0.62)	(0.35)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Sin obs.	253	268
Non-Sin obs.	253	268
Total obs.	506	536
Adj. R^2	0.195	0.142

This table reports the OLS estimation of Equation (1) using *CASH_ETR* or *GAAP_ETR* as the dependent variable. Sin firms and their matched control firms are used in the regressions. Sin firms defined at the firm level or at the segment level. The variable *CSR* is defined as the total number of strengths minus the total number of concerns in the following aspects: community, corporate governance, diversity, employee relations, environment, human rights, and product. Year fixed effects and one-digit SIC industry fixed effects are included. *t*-statistics adjusted for heteroscedasticity and clustering at the firm level are reported in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels (two-tailed), respectively. Detailed definitions of all variables are provided in APPENDIX 1.

APPENDIX 1

Variable	Definition
Tax Avoidance Variables (Compustat data items in brackets)	
CASH_ETR	The long-run cash effective tax rate, which equals the cumulative cash taxes paid (TXPD) over years t-4 to t, divided by the cumulative pretax income (PI) minus special items (SPI) over years t-4 to t. We require non-missing data of at least 3 years to compute *CASH_ETR* and truncate *CASH_ETR* to the range [0, 1].
GAAP_ETR	The long-run GAAP effective tax rate, which equals the cumulative income tax expense (TXT) over years t-4 to t, divided by the cumulative pretax income (PI) minus special items (SPI) over years t-4 to t. We require non-missing data of at least 3 years to compute *GAAP_ETR* and truncate *GAAP_ETR* to the range [0, 1].
Matching and Control Variables (Compustat data items in brackets)	
SIN	A dummy variable which equals one if a firm or any of its segment belongs to the alcohol, tobacco, gambling and firearm industry; and zero otherwise. Alcohol industry is defined by SIC code 2100–2199. Tobacco industry is defined by SIC code 2080–2085. Gambling industry is defined by NAICS code 7132, 71312, 713210, 71329, 713290, 72112, and 721120. Firearm industry is defined by SIC code 3480-3489.
ROA	Return on assets, which equals EBITDA/lagged AT.
SIZE	Market value of equity, which equals Ln(PRCC_F*CSHO).
MB	Market-to-book ratio, which equals (AT – CEQ + (PRCC_F*CSHO))/AT.
LEV	Leverage, which equals total long-term debt (DLTT) divided by total assets (AT).
DIV	Dividend, which equals DVT/AT. DVT is set to zero when missing.
IO	Percentage of institutional ownership at the fiscal year end obtained from Thomson Reuters Institutional Holdings (13F) Database.
COV	Number of analysts following a firm at the fiscal year end. Firms not covered by the I/B/E/S database are assumed to have zero analysts following.
GROW	Sales growth, which equals the change in sales scaled by lagged sales (SALE).
AGE	Firm age, which equals the number of years a firm appears in the Compustat database.
ΔNOL	Change in net operating loss, which equals the change in TLCF/lagged AT. TLCF is tax loss carry forward and set to zero if missing.
DNOL	A dummy variable that equals one if the lagged TLCF is positive and zero otherwise.
FI	Foreign income, which equals foreign pretax income (PIFO) divided by lagged total assets (AT). PIFO is set to zero if missing.
PPE	Property, Plant and Equipment, which equals PPENT/AT.
INTANG	Intangibility, which equals INTAN/lagged AT. INTAN is set to zero if missing.
EQINC	Equity income, which equals equity in earnings (ESUB) scaled by lagged AT. ESUB is set to zero if missing.
AQ	Accruals quality, which equals the standard deviation of residuals over a five-year rolling window from an industry-year-level Dechow-Dichev model augmented with fundamental variables from the Jones model.
CONSTRAINT	Financial constraint, which equals capital expenditures plus research and development expense plus acquisitions minus income before extraordinary items minus depreciation and amortization, scaled by total assets.
LOBBY	A firm's total amount of lobbying expenses in the previous year scaled by market capitalization.
HHI	The 2-digit SIC sales-based Hefindahl index in each year.
REGULATED	A dummy variable that equals one if a firm has an SIC code that falls within the following range: 4900-4939 (electric and gas), 1300-1399 (oil and gas extraction), 6020-6039 (commercial banks and savings institutions), 6710-6719 (bank holding companies), 6300-6399 (insurance), 4000-4700 (transportation), 4800-4899 (telecommunications), 4950-4959 (sanitary services); and zero otherwise.
COMPARABLE	A dummy variable that equals one if a firm belongs to the Fama-French 48 industry group 2 (food) or group 3 (soda), and zero otherwise.
CSR	The total number of strengths minus the total number of concerns in the following aspects: community, corporate governance, diversity, employee relations, environment, human rights, and product.

APPENDIX 2

Industry Distribution of Sin Firms and Non-sin Control Firms		
One-digit SIC code	Sin firms	Non-sin firms
0	0.31%	0.17%
1	0.97%	1.24%
2	37.26%	37.08%
3	20.94%	22.9%
4	0.89%	1.08%
5	2.29%	3.03%
7	33.29%	30.44%
8	1.09%	0.95%
9	2.95%	3.11%
Total	100%	100%
Alcohol	31.66%	
Tobacco	13.13%	
Gambling	40.71%	
Firearms	18.88%	

This table reports the one-digit SIC industry distribution of sin firms and non-sin firms in the matched sample as well as the breakdown of sin firms. Note that the percentages do not add up exactly to 100% because several firms have multiple sin business segments.