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# Industry Tax Planning and Stock Returns

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**ABSTRACT:** We find evidence that equity returns increase with the propensity for tax planning in a firm's industry. This risk premium is imposed on all firms in the industry, even those that are less aggressive than their peers. The industry-based risk premium coexists with a firm-specific discount associated with active tax planning strategies that carry low systematic risk. The discount on tax planning at the firm level, however, is dwarfed by the premium on tax planning at the industry level, and is concentrated in industries that are less likely to attract scrutiny from the tax authority.

**Keywords:** tax planning; tax avoidance; risk; asset pricing.

## I. INTRODUCTION

Investments in corporate tax planning generate cash flows for shareholders by reducing the share of profits paid in taxes. These risky cash flows must then be priced. The effect of tax planning on expected returns has been the focus of a recent stream of research that yields apparently conflicting findings. Although firms that engage in more active tax planning enjoy lower expected returns than their less active counterparts (Goh, Lee, Lim, and Shevlin 2016), aggregate tax planning in the economy is associated with higher market-wide expected returns (Sikes and Verrecchia 2016).[1] These results can be reconciled by recognizing that tax planning can either raise or lower a firm's expected return. That is, whether and how tax planning affects expected returns is a function of the cash flow risk connected to tax planning, as well as investors' ability to diversify that risk.

Extending prior literature, we ask whether the firm's expected return is influenced by the tax planning intensity of its industry. The firm's industry plays a key role in its tax strategy and outcomes. Tax laws are often industry-focused, tax enforcement is structured around taxpayer industry, and tax consultancies advertise their industry focus and expertise. Firms not only organize their tax planning strategies around industry-specific incentives and opportunities for tax reduction, they appear to respond to the tax planning of other firms in their industry for competitive and strategic reasons (Armstrong, Glaeser, and Kepler 2018; Bird, Edwards, and Ruchti 2018; Kubick, Lynch, Mayberry, and Omer 2015). Together, this implies an industry-based commonality in firms' current *and future* tax positions—and hence the cash flows they create. As a result, if investors believe that industry-driven tax planning increases the firm's exposure to future non-diversifiable cash flow shocks, they will demand a higher risk premium for any firm that belongs to a high tax planning industry.[2]

While this is ultimately an empirical question, we explore tax policy as a potential specific channel for this systematic risk effect. What makes the government's claim on firms' cash flows unique is that the sharing rule varies over time in response to

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[1] Goh et al. (2016) attribute their results to the negative impact of cash flow shocks on expected returns that arises if cash flows generated by a firm's tax planning policies have low systematic risk (Lambert, Leuz, and Verrecchia 2007). Sikes and Verrecchia (2016) suggest that an increase in the aggregate propensity for tax planning reduces cash flow risk shared with the government. This leads to a covariance risk that increases the expected returns of all firms through the market risk premium, and imposes a negative externality on firms that engage in relatively little tax planning. See, also, Hasan, Hoi, Wu, and Zhang (2014) and Shevlin, Urcan, and Vasvari (2019) for evidence that firm-level tax planning is associated with a higher cost of debt.

[2] For example, tax planning may affect systematic risk through increasing a correlation between the firm's after-tax cash flows and the stochastic discount factor (Sikes and Verrecchia 2016). The government resembles a minority shareholder with a legal claim to a share of firms' cash flows (Desai, Dyck, and Zingales 2007). More aggressive tax planning reduces the government's share, leading to higher payoffs on shareholders' invested capital in the good states of the world and lower payoffs in the bad states of the world, which increases a firm's systematic risk (Sikes and Verrecchia 2016).

changing tax policies determined by legislation, regulatory interpretation, and judicial opinion. These policies are not stationary and are difficult to predict (Bagchi 2016; C. Romer and D. Romer 2010; Brennan, Epstein, and Staudt 2009). Thus, all firms face a risk that tax policies will change, affecting after-tax cash flows. A firm's exposure to tax policy shocks depends on its current and future tax planning strategy. Due to a commonality in the tax planning strategies within an industry, industry membership may serve as a key determinant of a firm's expected exposure to tax policy shocks. To the extent that tax policy is not perfectly correlated with the market or macroeconomic conditions, policy uncertainty can be a separate source of non-diversifiable risk (e.g., Pastor and Veronesi 2013; Brogaard and Detzel 2015; Kelly, Pastor, and Veronesi 2016; Liu, Shu, and Wei 2017).

We predict that industry tax planning is likely to increase a firm's exposure to systematic risk in ways that the firm's individual tax planning activities do not. Firm-specific tax planning practices that deviate from industry norms may create incremental cash flows that contribute relatively little to systematic risk and, thus, reduce the firm's expected return (Lambert et al. 2007). This is consistent with the positive association between a firm's industry-adjusted tax planning intensity and its cost of equity documented by Goh et al. (2016).[3] In contrast, we hypothesize that firms in industries with a higher propensity for tax planning have higher expected returns, controlling for individual firms' tax planning policies.

Our primary industry tax planning proxy is the median three-year cash-based effective tax rate of firms with positive pretax income. We assume that firms with lower cash-based effective tax rates do more tax planning, characterized by more uncertain outcomes (Dyreng, Hanlon, and Maydew 2019). Because we focus on industry-level measurement, our tests can accommodate firms with negative pretax income, addressing the truncation bias critique of Henry and Sansing (2018). While we adopt the cash tax rate to provide closer comparability to prior research, we discuss the sensitivity of our results to using the GAAP-based (generally accepted accounting principles) effective tax rate and the book-tax difference.

To document the link between tax planning and expected returns, we use tax planning proxies from year $t-1$ to predict firm-specific realized returns from July of year $t$ through June of year $t+1$. Specifically, we investigate whether firms in industries with more intensive tax planning have higher future stock returns, after controlling for exposure to standard asset pricing factors and other firm characteristics. In our multivariate tests, we also control for firm-specific tax planning. As predicted, our results provide evidence of an industry-based tax planning-induced risk premium. The average difference in returns between the equal-weighted portfolios of stocks in the lowest quintile versus the highest quintile of industry cash tax rates is about 4.1 percent to 6.7 percent, annualized. These results are supported by cross-sectional regressions of monthly returns on tax rates that control for a wide range of stock characteristics, including size, book-to-market, profitability, investment, leverage, and research and development (R&D) intensity, among others. Consistent with the results of Goh et al. (2016), we also find that greater firm-specific tax planning is associated with lower future stock returns. This result, however, is sensitive to using alternative tax planning measures, such as effective tax rates, and is generally driven by active tax planners—firms that engage in more aggressive tax planning than the median firm in their industry.

We next investigate the interactions between firm and industry tax planning effects. First, we ask whether the premium on industry tax planning is a negative externality for some firms. Our evidence suggests that it is: firms in industries characterized by greater tax planning are penalized with significantly higher expected returns, even when their individual cash tax rates are above the industry median. In other words, a greater propensity for tax planning in the industry appears to impose an externality on peer firms that are less active tax planners. This finding is similar in spirit to the results of Sikes and Verrecchia (2016), who show that aggregate tax planning increases equity risk premiums and raises the cost of capital for all firms, regardless of firm-specific policies.

The second interaction we explore is whether the firm-level effect documented by Goh et al. (2016) depends on industry tax planning characteristics. Active tax planning can achieve a cost of capital reduction by creating cash flows with a positive expected value and low systematic risk. Hence this effect should be strongest in settings where active tax planning is less likely to attract scrutiny by policy makers, in particular, the tax authorities. Due to limited resources, tax authorities likely prioritize cases that generate more tax revenue or are less costly to detect. We measure tax-related regulatory scrutiny within the industry in three ways: by industry median cash tax rates (to proxy for a greater potential for recovery of tax revenue); by the detectability of aggressive tax planning within the industry (to proxy for the ease with which aggressive deviations from the "normal" tax level can be detected); and by the extent of industry tax lobbying (to proxy for firms' perceptions of regulatory scrutiny).[4,5] Consistent with our prediction, we find that the positive association between the firm's cash tax rate and its cost of

[3] Throughout the paper, we use the terms "expected returns" and "cost of equity" interchangeably.

[4] Low cash tax rate (higher propensity for tax planning) industries are almost certainly subject to more scrutiny, due to Internal Revenue Service (IRS) audit priorities and Treasury regulations addressing court decisions. The IRS is evaluated on its ability to detect and collect underpayments by firms—firms that push the envelope on tax questions. Treasury regulations are often written in response to court decisions regarding disputes between tax authorities and firms that were not resolved privately, due to a high uncertainty about the underlying policy and sufficient tax revenue at stake.

[5] Tax planning that is closely linked to observable fundamentals should enable the regulator to detect deviations from "normal" tax levels with greater precision. To the best of our knowledge, our approach to measuring industry tax planning detectability is novel.

capital is concentrated in industries with the least tax authority scrutiny. When scrutiny is high, the cost of capital benefits of adopting a more aggressive strategy at the firm level appear to be mitigated.

We then address the role of tax policy in our findings. If exposure to a government's tax policies drives the sensitivity of stock returns to industry tax planning, then risk premiums should be highest when the probability of an adverse shift in policy is high. To capture this intertemporal variation, we focus on the political ideologies of the president and the U.S. Tax Court judges. If the ideologies of a Democrat president or his judicial appointees favor pro-government tax policy shifts, then the sensitivity of stock returns to industry tax planning should be higher when Democrat influence over tax policy is stronger. The results are somewhat mixed. The difference in premiums between Democrat and Republican presidencies is, in general, not statistically significant. However, the premiums are consistently significant across different tax planning measures only during Democrat presidencies. The difference in premiums between periods with a high and low fraction of Democrat-appointed judges is statistically significant when we use cash tax rates or book-tax differences to measure tax planning, but it is not statistically significant when GAAP effective tax rates are used.

This study makes several contributions. First, we extend our understanding of the economic consequences of tax planning. Remarks by the IRS, law and accounting firms, and governance advisors point to the increasing importance of managing tax risk.[6] Our finding that investors associate a higher propensity for industry tax planning with greater exposure to systematic risk for firms in that industry, contributes to our understanding of the determinants of a firm's cost of capital. Our results also suggest the presence of industry-driven negative externalities for firms with low firm-level tax planning, a finding that complements the negative externalities of economy-wide tax planning documented by Sikes and Verrecchia (2016). We also confirm the Goh et al. (2016) finding that individual firms' tax planning may decrease their cost of capital, and extend these results to show that the cost of capital reduction is sensitive to the tax planning characteristics of the industry and disappears when the industry faces high scrutiny by regulators. We also speak to the literature on the pricing of policy uncertainty. Growing evidence suggests that exposure to government policy risk is an important determinant of stock returns (Boutchkova, Doshi, Durnev, and Molchanov 2012; Croce, Kung, Nguyen, and Schmid 2012; Pastor and Veronesi 2013). We focus on a specific aspect of that risk tied to corporate tax policies. Finally, our industry-based approach to measuring tax planning is new and appears to provide a novel metric of risk associated with tax planning activity.

## II. CONCEPTUAL DEVELOPMENT

### Related Literature: Tax Planning and Risk

Tax planning reflects efforts by managers to structure the organization and its investments, transactions, and reporting to exploit tax-based opportunities to increase firm value.[7] These opportunities arise from investments that are tax-favored, transactions that exploit ambiguity in the tax law, and discretion over the location, timing, and characterization of reported income and deductions in tax returns.[8] The impact of corporate tax planning on security values depends on how tax planning affects after-tax cash flows and the discount rate.[9] In a typical valuation model, the numerator picks up the effect of tax planning on expected cash flows (cash tax savings less the costs of defending the position, accounting and audit costs, restructuring costs, and agency costs).[10] The discount rate in the denominator picks up the effect of tax planning on investors' exposure to non-diversifiable risk.

The idea that tax planning has implications for risk is not new. Practitioner commentary on tax management and corporate governance points to the increasing prominence of tax risk considerations in corporate decision making and control (Levin, Petrini, Smith, and White 2006; Larsen 2011; Ernst & Young 2014). Neubig and Sangha (2004) illustrate several tax-based sources of risk, some that apply to all firms and others that apply only to firms that exploit ambiguity in the tax law. However, it is not clear *a priori* how tax planning should affect expected returns, if at all. Risk driven by increased exposure to an idiosyncratic audit process, for example, should not require a risk premium. In fact, when cash flows from tax planning are positive and have low systematic risk, the risk premium may even fall (Lambert et al. 2007). On the other hand, when tax

[6] See IRS (2009), Goldberg (2010), and Ernst & Young (2014).

[7] We use tax planning as a general expression to encompass descriptive terms such avoidance, aggression, and evasion.

[8] Of course, managers not only respond to tax law, they actively attempt to influence future tax laws through lobbying activity, as shown by Gupta and Swenson (2003) and others.

[9] Given incomplete models of optimal tax planning, an inherent complexity and opacity of corporate tax reporting, measurement error in firm-specific proxies for tax planning, and infrequent natural experiments, it has been difficult to draw concrete inferences about the relation between tax planning and value (Desai and Hines 2002; Hanlon and Slemrod 2009; Gallemore, Maydew, and Thornock 2014).

[10] These net cash flow benefits clearly exist, but can be challenging to document since the costs of tax planning primarily affect earnings before tax, while the benefits of tax planning are difficult to infer given the limited disclosure required by financial reporting rules. See Hanlon and Heitzman (2010) for a review of the recent literature.

planning exposes investors to a risk that cannot be diversified, investors should demand a risk premium associated with the expected exposure, increasing the firm's cost of equity. In either case, the impact on incremental cash flows (the numerator) is no longer the only relevant metric for tax planning strategy. To the extent that these premiums or discounts are more than negligible, they should be detectable in firms' stock returns.

Several recent studies shed light on the relation between tax planning and risk. Building on the idea that tax planning risk should be connected to fundamental uncertainty of the firm's after-tax cash flows, Hutchens and Rego (2015) find mixed evidence that tax planning risk is associated with stock return volatility. Guenther, Matsunaga, and Williams (2017) show that the variance in the cash tax rate is positively correlated with future stock return volatility, while the level of the effective tax rate is not. Hasan et al. (2014) and Shevlin et al. (2019) show that firms that avoid more tax incur higher costs of debt. They interpret these results as an outcome of high tax planning firms having lower information quality and amplified agency problems.[11]

Our study is most directly related to recent work by Goh et al. (2016) and Sikes and Verrecchia (2016), who focus on tax planning and the cost of equity. In Goh et al. (2016), the impact of tax planning decisions on the cost of equity depends on the magnitude of additional cash flows created by tax planning relative to the additional risk imposed by them. They find that high firm-specific tax planning is associated with a lower cost of capital, and attribute this to a Lambert et al. (2007) effect in which positive cash flows (from aggressive tax planning, for example) can lower a firm's expected return if they do not covary with other firms' cash flows. More generally, as long as the systematic risk of tax planning cash flows is lower than the systematic risk of the firm's other cash flows, the expected return of the firm should fall.

In contrast to the firm-level focus of Goh et al. (2016), Sikes and Verrecchia (2016) argue that aggregate tax planning can increase expected returns through the equity risk premium. As firms in the economy increase their tax planning activity, the government bears less overall risk in the economy, causing the covariance between firms' after-tax cash flows to increase. This manifests in a larger market risk premium. They show that equity risk premium increases when the propensity for tax planning by all firms in the economy rises, and that this increase affects firms' individual expected returns regardless of whether they engage in aggressive tax planning. We depart from prior research by asking whether the propensity for tax planning within the industry increases a firm's expected returns through its effect on systematic risk.

## Hypothesis Development

We ask whether investors require compensation to invest in firms that compete in industries characterized by greater tax planning intensity. Our approach to this question is based on two key assertions. First, the firm's tax planning is heavily influenced by its industry, which leads investors to expect firms in industries with ample tax planning opportunities to adopt similar tax strategies in the future. Second, more intensive tax planning in the industry increases investors' expectation of the firm's future exposure to non-diversifiable risk.

### *The Role of Industry in Tax Planning*

Evidence that industry plays a central role in the tax planning environment is abundant. At the legislative level, the importance of industry is reflected in the Treasury's annual *Tax Expenditures* report that details, for each sector, the "revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability."[12] This implies that opportunities for tax reductions are significantly dispersed across industries. At the enforcement level, there is evidence of enforcement organization along industry lines. Until 2016 and throughout our sample period, the Large Business and International (LB&I) Division of the IRS that is responsible for the enforcement of tax laws at large corporations was explicitly organized around industry sectors. In 2016, the Division implemented a new organizational structure centered around geography and practice area. However, industry remains as an organizing force through "Industry Issue Resolutions" that address tax positions that affect a large number of taxpayers and have uncertain treatment.[13]

[11] This interpretation contrasts with the narrative in Gallemore and Labro (2015), who show that firms engaged in more intensive tax planning actually require high-quality information systems to identify and support aggressive tax planning strategies.

[12] The example of Treasury's *Tax Expenditures* report can be found at: https://www.treasury.gov/resource-center/tax-policy/Documents/Tax-Expenditures-FY2019.pdf. A specific example of industry-based tax legislation can be found in the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, with tax provisions specifically benefitting the motorsports, film, rum, restaurant, and railroad industries.

[13] For an example of industry specialization in IRS audits, see: https://www.irs.gov/businesses/pharmaceutical-industry-research-credit-audit-guidelines-revised-4-30-04

Industry-centered tax law making and enforcement also creates industry-driven variation in the investments in tax planning and tax lobbying. Lobby participation, in particular, is related to the existing tax planning intensity by firms in its industry (Brown, Drake, and Wellman 2015).[14] The centrality of industry in tax planning is also recognized by auditing and assurance firms that provide tax consulting services. These firms structure their practices to leverage industry expertise.[15] Such expertise is non-trivial—for example, firms using auditors with industry-specific tax expertise achieve lower effective tax rates (McGuire, Omer, and Wang, 2012).

Recent empirical evidence confirms the existence of strong industry dynamics in tax planning. Kubick et al. (2015) find that firms mimic the tax planning of industry leaders. Bird, Edwards, and Ruchti (2018) show that firms increase tax planning in response to an increase in tax planning by a peer firm with new management. Armstrong et al. (2018) find that firms adjust their tax planning in response to other firms in the industry to avoid "standing out." Regardless of the suggested mechanism, the empirical evidence presented in these papers supports the existence of within-industry forces that determine norms and behaviors in the individual firm's tax planning decisions. Competitive forces push firms toward the industry norm, causing them to adopt industry-driven tax strategies that generate cash flows that are more highly correlated with those of their industry peers.[16]

### *Industry Tax Planning and Systematic Risk*

The second key assertion is that industry-based tax planning affects investors' expectations of a firm's future exposure to non-diversifiable risk. This exposure could be driven by increased sensitivity to tax policy, enhanced exposure to aggregate demand shocks, or any other shock to macroeconomic conditions that yields a disproportionate impact on firms in high tax planning industries. If investors believe that the intensity of industry-driven tax planning exposes firms to future risks that cannot be diversified, then they should demand higher returns from all firms in that industry, including those currently opting for less aggressive tax planning than the industry norm (Sikes and Verrecchia 2016). This assertion is admittedly general and permits a number of possible explanations. In the next section, we focus on a specific channel centered around a connection to tax policy uncertainty.

## Industry Tax Planning and Uncertainty about Tax Policy

While tax policies appear central to the creation of tax planning opportunities that vary across industries, they are subject to considerable uncertainty about their persistence over time. If industry membership determines uncertainty about a particular set of tax policies in ways that firm-specific actions do not, then the effects of changing tax policies should lead to cash flow shocks that correlate across firms in the same industry, but vary across industries.[17]

To motivate uncertainty about tax policy as a driver of priced risk exposure tied to tax planning, we rely on an emerging literature in financial economics addressing the link between policy uncertainty and stock returns (e.g., Boutchkova et al. 2012; Croce et al. 2012; Pastor and Veronesi 2013; Brogaard and Detzel 2015). Pastor and Veronesi (2013) argue that policy uncertainty represents a separate source of non-diversifiable risk. In their model, policy risk arises from "impact" shocks due to investors learning about the effect of current policies on firm cash flows, as well as "political" shocks when politicians change current policies independent of broader economic conditions.[18]

The risks that derive from tax policy uncertainty come from at least three sources: legislation, enforcement, and judicial decisions. In the Pastor and Veronesi (2013) sense, impact shocks are linked to uncertainty over how an existing tax policy might be implemented (through Treasury Regulations or enforcement priorities and methods, for example), while political shocks are linked to uncertainty over tax policies in the pipeline or on the chopping block (through legislative actions or Executive Orders, for example).[19] In Pastor and Veronesi (2013), both types of shocks contribute to policy uncertainty and create non-diversifiable risk. Next, we expand on the three sources of tax policy uncertainty.

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[14] For anecdotal evidence of industry concentration in lobbying, see: https://sunlightfoundation.com/blog/2013/04/15/tax-lobbying/

[15] For example, KPMG states "[our] industry-focused approach helps us provide an informed perspective on the industry issues and complex market challenges our clients face. What's more, it helps enable us to identify and respond to key business and performance issues and provide the Audit, Tax, and Advisory services that take into account their unique industry-specific processes, risks, and accounting and reporting practices" (see: https://home.kpmg.com/us/en/home/insights/2016/01/industries.html). See, also: https://www2.deloitte.com/us/en/pages/tax/solutions/tax-services-by-industry.html

[16] Recognizing the importance of industry effects, studies often use "net of industry" effective tax rates to extract the idiosyncratic component of a firm's tax planning (Armstrong, Blouin, and Larcker 2012) or fixed industry effects (Goh et al. 2016).

[17] This approach is similar in spirit to Baker et al. (2016), who use industry-weighted exposures to government purchases to proxy for a firm's exposure to fiscal policy risk.

[18] A recent study by Li, Maydew, Willis, and Xu (2018) asks whether uncertainty about government policies affects tax planning decisions. They argue that managers are sensitive to the (potentially sunk) fixed costs of tax planning and exploit their existing structures when there is some risk that these costs could change in the future. Thus, tax planning increases in times of uncertainty. We recognize the potential circularity of tax planning and policy uncertainty, and our results are not inconsistent with such an effect.

[19] Policy shocks coming from the judicial side likely correspond to impact shocks in which the court is clarifying what the policy means. Policy shocks coming from the legislative side largely correspond to political shocks in which legislators are responding to political costs of current tax policy. Shocks coming from the enforcement side could fall into either category.

### *Legislation*

The outcome of the political process that drives tax legislation is subject to significant uncertainty. This uncertainty is recognized by firms that engage in extensive tax lobbying to influence legislative outcomes.[20] The legislative side of tax policy is also inextricably linked to the enforcement side. Although Congress writes the tax law that goes to the president's desk for signature, it is the regulator—the Department of the Treasury—that writes the specific regulations that implement the legislation. Uncertainty about future tax legislation is a component of the economic policy uncertainty index proposed by Baker, Bloom, and Davis (2016).[21] Using a similar approach, Brown, Lin, Moore, and Wellman (2017) develop a comprehensive news-based measure of tax policy uncertainty and link it to time-series of stock return volatility.[22] In the cross-section, uncertainty about tax legislation should have a greater impact on high tax planning industries if investors expect future legislation (and its implementation) to affect firms in those industries disproportionately. Such an expectation is justifiable since firms in high tax planning industries are more likely to exploit tax rules and incentives that favor certain industries or activities, and that may be repealed if political pressures or ideologies shift.[23]

### *Enforcement*

A government's tax enforcement policies affect firms by changing the expected payoffs to tax planning decisions, both past and future. Enforcement policies vary over time and depend on the ideologies of political leaders. The IRS commissioner, for example, reports to the secretary of the treasury. These individuals are, in turn, appointed by the president, with the advice and consent of the Senate. Bagchi (2016) finds that the president's political affiliation influences how IRS enforcement resources are allocated; when a Democrat occupies the White House, more corporate returns are audited. The agency charged with enforcing tax laws also sets tax policy in other ways. IRS enforcement activities often center on particular issues, such as R&D tax credits and transfer pricing. As discussed earlier, large firms also face a corporate tax enforcement regime that is organized by industry.

### *Judiciary*

The court's opinion establishes a legal precedent that can have direct implications for a broad range of firms engaged in similar activities. Indeed, one of the benefits of obtaining a judicial opinion is its applicability to a large number of firms and its ability to clarify regulations. As a result, uncertainty about judicial opinions on tax planning strategies can potentially influence investor perceptions of tax policy risk. Judicial attitude toward tax planning intensity appears to vary over time, perhaps due to

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[20] The relative amount of resources dedicated to lobbying on tax issues is impressive: taxation is consistently on par with issues such as health and defense in terms of the number of lobbyists and clients participating in the process (see: http://www.opensecrets.org/).

[21] Despite growing evidence that economic policy uncertainty risk is priced, the significance of systematic corporate tax policy risk, exposure to which can be influenced by firms' tax planning choices (for instance, the real and reporting decisions, such as the use of credits, deductions, organizational form, treatment of foreign income, etc.), is not a foregone conclusion. Tax policies are a single, albeit highly visible, component of economic policies that affect firms and their owners; corporate tax policies are an even smaller subset. Prior empirical evidence concerning economic policy uncertainty (EPU) is not directly applicable to our setting. For example, the EPU measure in Baker et al. (2016) uses a wide-net approach to select news articles that mention policy uncertainty. The tax policy uncertainty component of their EPU index counts articles mentioning "taxes," "tax," "taxation," and "taxed." These terms are very broad and include individual taxes that dominate corporate taxes as a revenue source by orders of magnitude. A recent working paper by Hassan, Hollander, van Lent, and Tahoun (2017) offers a more detailed look into the specific tax-related topics of interest to the investing community. Hassan et al. (2017) distill measures of policy risk from analyst conference calls. Top terms that drive their tax policy risk measure include "estate tax," "tax relief," "bush tax," "the estate," "middleclass tax," "continued unfair," "full repeal," and "typical American," among others. Thus, while corporate tax policy is undoubtedly important, individual tax policy appears to dominate the media discussion because of its link to consumer demand. Overall, the focus of these studies on broad-based notions of tax policy risk makes it difficult to extrapolate their evidence or utilize their data to answer questions about the systematic risk consequences of corporate tax policy risk. Whether the magnitude of the corporate tax policy risk premium is large enough to be detectable in asset pricing tests is ultimately an empirical question.

[22] Brown et al. (2017) differ from our study, as it is largely a time-series test correlating variation in stock return volatility with variation in TPU. While we do exploit time-series variation in political ideology, we propose it as a way to explain the magnitude of cross-sectional variation in returns driven by industry tax planning. Their focus is also on total return volatility, not expected returns *per se*. This distinction is important, as we aim to motivate the conditions for priced systematic risk in the cross-section—while allowing for the effects suggested by Goh et al. (2016), in which an idiosyncratic cash flow from tax planning can have the opposite effect on expected returns. While Brown et al. (2017) do provide a test that focuses on the systematic portion of return volatility, it is ultimately a time-series test relying only on variation in TPU and not conditional on the level of tax planning in the industry or by the firm. In the cross-section, Brown et al. (2017) do predict that the relation between TPU and return volatility is stronger in firms with higher historical variation in their cash ETRs. In this case, they use historical ETR volatility as a proxy for investor uncertainty about possible policy effects on the firm. We do not speak to ETR volatility here, but acknowledge the contributions of studies such as Guenther et al. (2017) who do.

[23] A case in point is the 2017 Tax Cut and Jobs Act (TCJA). While reducing the corporate tax rate to 21 percent, TCJA eliminates carrybacks and imposes tighter limits on the use of new loss carryforwards. The domestic manufacturing deduction is eliminated and the immediate expensing of R&D turns into a capitalization and amortization over five years. For multinational firms, the Act imposes a 15.5 percent tax on accumulated foreign income held in liquid assets and largely eliminates U.S. tax on future foreign income. This reshuffling of the tax law should have a substantial and disproportionate impact on industries that exploited the eliminated incentives more aggressively.

political forces. Staudt, Epstein, and Wiedenbeck (2006) find that the ideology of the Supreme Court (liberal versus conservative) affects the likelihood of a pro-government ruling. More liberal courts are more likely to rule against corporate taxpayers, but are no different in their rulings against individual taxpayers. Additionally, the composition of judges in any given court varies through time and the appointment of a judge to most federal courts—including the Tax Court—is also made by the president, with the advice and consent of the Senate.

### Empirical Predictions

To summarize the discussion above, we suggest that firms in the same industry face correlated exposures to future cash flow shocks associated with tax planning. To the extent that these shocks are non-diversifiable (i.e., they are correlated with priced risk factors), we predict that a firm's expected return increases in the propensity for tax planning within its industry. If industry tax planning affects systematic risk of all firms, then the effect should also be present in firms that are less aggressive tax planners. Finally, if tax policy uncertainty is one source of this non-diversifiable risk, then the pricing of industry tax planning should be strongest in regimes dominated by Democrat influence over the White House or Judiciary.

## III. EMPIRICAL METHODOLOGY AND SUMMARY STATISTICS

### Sample and Variable Definitions

The sample consists of all U.S. firms traded on NYSE, AMEX, or NASDAQ with at least three years of Compustat coverage and monthly returns available from CRSP between July 1991 and June 2014. The sample begins in 1991 to ensure consistency in the definitions of tax expense and the availability of three years of cash tax payment information under Statement of Financial Accounting Standards (SFAS) 95. Stock returns from July of year $t$ through June of year $t+1$ are matched to accounting and industry information for the fiscal year ending in year $t-1$. Industry SIC codes are obtained from Compustat. The sample is constrained to firms incorporated in the United States. We exclude stocks with prices below $1 at the end of the fiscal year and stocks with market capitalizations of less than $10 million in 1984 dollars. We also exclude stocks with missing information about their total assets and total liabilities, as well as firms from regulated and financial industries (those with SIC codes between 4900 and 4999 and 6000 and 6999).

### Tax Planning Measures

Our setting requires a measure of exposure to future government actions that affect the payoffs to present and future tax planning strategies. Prior research provides little guidance on which tax planning proxies best capture such exposure. The cash effective tax rate is often adopted based on the argument that it should reflect all tax planning strategies, including those missed by accrual-based measures. In untabulated tests, however, we find that the accruals-based GAAP effective tax rate appears more adept at explaining future settlements with the tax authority and interest and penalties for the underpayment of tax—proxies for exposure to enforcement activities. To maximize comparability to existing research, we present our results using cash-based effective tax rates. However, we also replicate our primary tests using the GAAP effective tax rate and a third frequently employed tax planning proxy, the book-tax difference (the difference between book income and estimated taxable income).

We identify a firm's exposure to tax policy uncertainty using the propensity for tax planning in the firm's industry. This propensity is based on the median firm's three-year cash tax rate based on firms with positive pretax income before special items.[24] The three-year cash tax rate is the sum of total cash paid for taxes over the three-year period ending in year $t-1$ divided by the sum of pretax income before special items over the same period.[25] The GAAP-based effective tax rate is defined similarly except that we replace cash taxes paid with total tax expense in the numerator. We omit tax rates below 0 and above 1 when estimating industry medians. The book-tax difference is the median three-year difference between pretax income before special items and an estimate of taxable income (current tax expense/0.35) scaled by the three-year average of total assets, and is computed using firms with usable effective tax rates. In empirical tests, we use the negative of the industry book-tax difference to provide directional comparability with the tax rate measures. Industry definitions are based on the Fama and French (1997) 48-industry classification.

In Table 1, we describe a subset of the industries sorted on their propensity for tax planning. The ten highest tax planning industries have cash tax rates between 14.4 percent and 25.9 percent, and include communications, computers, electronic

[24] We attempted other measures of industry tax planning, including the average, those based on other points in the distribution, and those constructed from the most visible firms in the industry. Our results are qualitatively similar across these alternatives and are discussed later in the paper.

[25] The results are robust to using pretax income without adjusting for special items.

**TABLE 1**

**Tax Planning Across Industries**

| Fama-French Industry | Description | No. of Firms | *Industry Cash Tax Rate* | *Industry GAAP Tax Rate* | *Industry – [Book-Tax]* | *Tax Planning Detect-ability* | *Tax Lobby* |
|---|---|---|---|---|---|---|---|
| Ten Highest Tax Planning Industries: | | | | | | | |
| 30 | Petroleum and Natural Gas | 143 | 0.144 | 0.336 | −0.041 | 39% | 21% |
| 40 | Transportation | 98 | 0.204 | 0.369 | −0.033 | 28% | 30% |
| 35 | Computers | 172 | 0.217 | 0.314 | −0.025 | 21% | 22% |
| 36 | Electronic Equipment | 220 | 0.217 | 0.292 | −0.028 | 16% | 11% |
| 32 | Communication | 113 | 0.231 | 0.364 | −0.025 | 34% | 30% |
| 13 | Pharmaceutical Products | 219 | 0.233 | 0.287 | −0.041 | 30% | 25% |
| 12 | Medical Equipment | 125 | 0.237 | 0.312 | −0.028 | 26% | 10% |
| 7 | Entertainment | 62 | 0.247 | 0.358 | −0.022 | 42% | 22% |
| 34 | Business Services | 432 | 0.249 | 0.348 | −0.026 | 14% | 11% |
| 37 | Measuring and Control Equip. | 85 | 0.259 | 0.309 | −0.023 | 29% | 1% |
| Ten Lowest Tax Planning Industries: | | | | | | | |
| 33 | Personal Services | 41 | 0.294 | 0.372 | −0.021 | 48% | 19% |
| 22 | Electrical Equipment | 37 | 0.297 | 0.335 | −0.023 | 51% | 8% |
| 23 | Automobiles and Trucks | 56 | 0.301 | 0.340 | −0.015 | 43% | 19% |
| 9 | Consumer Goods | 57 | 0.309 | 0.341 | −0.018 | 39% | 23% |
| 17 | Construction Materials | 74 | 0.310 | 0.341 | −0.017 | 32% | 9% |
| 41 | Wholesale | 147 | 0.312 | 0.368 | −0.013 | 21% | 8% |
| 42 | Retail | 222 | 0.317 | 0.375 | −0.014 | 21% | 13% |
| 18 | Construction | 52 | 0.322 | 0.360 | −0.014 | 43% | 17% |
| 10 | Apparel | 53 | 0.323 | 0.358 | −0.020 | 39% | 7% |
| 8 | Printing and Publishing | 37 | 0.326 | 0.362 | −0.017 | 42% | 21% |

This table describes industries with the lowest and the highest levels of tax planning (industry median cash tax rates). Industries follow the Fama-French 48 industry classification. The reported values are time-series averages of yearly industry medians. The sample includes fiscal years ending between 1990 and 2012. This table includes industries with at least 20 observations available.
All variables are as defined in Appendix A.

equipment, pharmaceuticals, natural gas, and transportation. These industries have higher rates of mobile capital that is more easily shifted to low tax jurisdictions, benefit from historically generous tax incentives for research and development, or receive industry-specific tax benefits.[26] In contrast, the ten lowest tax planning industries have cash tax rates that lie between 29.4 percent and 32.6 percent, and comprise retail, wholesale, construction, and consumer goods.[27] The patterns in effective tax rates and book-tax difference across industries appear largely consistent with this sort.

## Stock Characteristics

In cross-sectional asset pricing regressions, we include three groups of control variables. First, we control for firm-specific tax planning by including the firm-level analog of the industry measure. This measure is typically not calculated when the firm's pretax income is negative. To preserve observations with missing firm-level tax planning values in the regressions, we set the firm-level value to 0, and a separate indicator variable to 1 (the indicator variable is set to 0 when the firm-level value is available). Second, we control for common characteristics associated with stock returns, including the firm's market capitalization, book-to-market ratio, prior returns, and leverage. Following Hou, Xue, and Zhang (2015) and Fama and French (2015), we also include firm characteristics underlying two additional risk factors: profitability, measured as earnings before taxes divided by book equity; and net investment, measured as the percentage change in total assets from the prior year. Third,

[26] See the *Tax Expenditures* report published annually by the U.S. Treasury and described in Section II. The report for Fiscal 2019 lists 26 special provisions for the energy sector, and six for the transportation sector.

[27] Only industries with an average of at least 20 firms per year are included in this analysis.

we include controls associated with incentives and opportunities for tax planning, including net property, plant, and equipment (PPE), balance sheet intangibles, and R&D and advertising expenses, all scaled by beginning assets (Dyreng, Hanlon, and Maydew 2008). We also include an indicator variable equal to 1 when the firm reports foreign pretax earnings to control for multinational tax planning opportunities. Finally, we include a proxy for industry tax lobby intensity. We measure tax lobby intensity as the fraction of all firms in the industry involved in tax lobbying, using data from Brown, Drake, and Wellman (2015). Details pertaining to control variable measurement are described in Appendix A. All firm characteristics measured as continuous variables are winsorized yearly at 1 and 99 percent of their distributions.

### Descriptive Statistics

Panel A of Table 2 reports the average characteristics of portfolios sorted on industry tax planning. Firms are assigned to portfolios at the end of each June based on the quintile of their industry cash tax rate from the prior year. For most characteristics, the sorting produces patterns consistent with prior literature on the determinants of tax planning and with general intuition. Firms in low tax rate industries are, on average, larger and, thus, have greater resources available for tax planning. They are also less levered due to lower tax benefits of debt. These firms have higher R&D activity that allows them to benefit from tax credits and generate assets with income streams that are more easily shifted to lower-taxed jurisdictions. Moreover, their industries are more likely to engage in tax lobbying activity. Although less profitable, firms in low cash tax rate industries have greater investment growth and lower book-to-market ratios. Finally, they have higher uncertain tax benefit accruals that reflect the riskiness of their tax positions.[28] Surprisingly, there is no obvious association between cash tax rates and foreign activity, although untabulated results indicate stronger differences in GAAP effective tax rates, consistent with the accrual-based measure better reflecting foreign tax rate variation. Panel B of Table 2 provides results for firms sorted on their firm-specific cash effective tax rate. Most of the directional patterns obtained with industry sorts hold up when using individual firm tax rate sorts.

## IV. MAIN EMPIRICAL RESULTS

### Nonparametric Tests: Returns on Portfolios Sorted by Tax Planning Intensity

In this section, we examine the returns on portfolios formed on the industry cash tax rate. Unlike asset pricing regressions estimated in the next section, portfolio sorting does not specify the exact functional form of the relation between returns and tax planning proxies. It relies only on information available in real time and approximates an implementable trading strategy. We assign stocks to portfolios at the end of June in year $t$ based on the quintile of their tax planning measure in year $t-1$. This timing ensures that public information about tax planning activity is impounded in price prior to the measurement of stock returns. We rebalance the portfolios monthly to incorporate stock delistings. When a stock delists, we include the delisting return in the portfolio return calculation. We substitute missing delisting returns with average delisting returns, following Shumway (1997) and Shumway and Warther (1999).

Table 3 reports average returns and summary statistics for portfolios sorted on industry (Panel A) or firm (Panel B) tax planning. The sample in Panel B is smaller than the sample in Panel A because firm-level effective tax rates cannot be calculated when the firm's pretax income is negative. We estimate returns in excess of the risk-free rate, as well as portfolio alphas. The three-factor model (Fama and French 1993) includes the market, size, and book-to-market factors. The four-factor model adds momentum to the three-factor model (Carhart 1997), while the five-factor model adds investment and profitability factors (Fama and French 2015). We obtain all factor series from Kenneth French's website at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/. The last column contains returns on the hedge portfolio that is long (short) in the quintile of stocks with low (high) tax rates.

Reported in the top half of Panel A of Table 3, the three-, four-, and five-factor alphas on the hedge portfolios constructed from industry tax planning intensity are statistically significant. The average hedge portfolio alpha from the three-factor model amounts to 35 basis points per month (4.2 percent annually) ($t = 2.11$), while the average alpha from the five-factor model amounts to 56 basis points per month (6.7 percent annually) ($t = 3.37$). The top half of Panel B reports the results from sorts on firm-specific tax planning. Using the alphas obtained from the four-factor model, high tax planning firms generate returns that are 24 basis points per month lower than low tax planning firms ($t = -2.32$), consistent with Goh et al. (2016).

[28] We also find that the firm's reserve for uncertain tax benefits (UTB)—tax positions that may be challenged by the tax authority—is higher for low cash effective tax rate firms, consistent with the cash tax rate capturing variation in tax planning strategies that increase risk. We do not use the UTB reserve to measure tax planning, as it is only available since 2007.

## TABLE 2
## Descriptive Statistics

### Panel A: Industry Cash Tax Rate Quintiles

| | Q1 Low Tax | Q2 | Q3 | Q4 | Q5 High Tax | Q1 − Q5 |
|---|---|---|---|---|---|---|
| *Industry Cash Tax Rate* | 0.190 | 0.235 | 0.260 | 0.288 | 0.325 | −0.137*** |
| *Industry ETR* | 0.319 | 0.317 | 0.326 | 0.339 | 0.357 | −0.039*** |
| *Industry −[Book − Tax]* | −0.035 | −0.029 | −0.026 | −0.021 | −0.016 | −0.019*** |
| *MVE* | 1.239 | 0.958 | 0.963 | 0.989 | 0.984 | 0.193** |
| *BM* | 0.565 | 0.499 | 0.548 | 0.603 | 0.685 | −0.102*** |
| *OP* | 0.094 | 0.035 | 0.127 | 0.135 | 0.208 | −0.116*** |
| *INV* | 0.428 | 0.440 | 0.508 | 0.342 | 0.240 | 0.175*** |
| *Assets* | 1.160 | 0.736 | 0.839 | 0.847 | 0.942 | 0.201** |
| *Debt/MV Assets* | 0.295 | 0.246 | 0.296 | 0.329 | 0.385 | −0.083*** |
| *PPE/Assets* | 0.366 | 0.207 | 0.250 | 0.253 | 0.252 | 0.113*** |
| *Intangibles/Assets* | 0.095 | 0.118 | 0.136 | 0.130 | 0.119 | −0.020** |
| *R&D/Assets* | 0.094 | 0.129 | 0.080 | 0.060 | 0.013 | 0.076*** |
| *Advertising/Assets* | 0.007 | 0.011 | 0.014 | 0.019 | 0.027 | −0.021*** |
| *Tax Lobby* | 0.210 | 0.169 | 0.173 | 0.164 | 0.142 | 0.071*** |
| *Foreign Income* (0,1) | 0.340 | 0.375 | 0.396 | 0.389 | 0.344 | −0.005 |
| *UTB Reserve/Assets* | 0.014 | 0.020 | 0.014 | 0.011 | 0.009 | 0.005** |
| *σ(Ret)* | 0.170 | 0.177 | 0.157 | 0.156 | 0.141 | 0.027*** |
| *Lag(Ret)* | 0.221 | 0.202 | 0.196 | 0.171 | 0.166 | −0.043 |

### Panel B: Firm Cash Tax Rate Quintiles

| | Q1 Low Tax | Q2 | Q3 | Q4 | Q5 High Tax | Q1 − Q5 |
|---|---|---|---|---|---|---|
| *Industry Cash Tax Rate* | 0.243 | 0.255 | 0.268 | 0.28 | 0.279 | −0.037*** |
| *Firm Cash Tax Rate* | 0.058 | 0.183 | 0.270 | 0.34 | 0.491 | −0.430*** |
| *Industry ETR* | 0.237 | 0.292 | 0.322 | 0.35 | 0.379 | −0.140*** |
| *Industry −[Book − Tax]* | −0.095 | −0.047 | −0.031 | −0.018 | 0.002 | −0.098*** |
| *MVE* | 0.894 | 1.817 | 1.911 | 1.375 | 0.937 | −0.100 |
| *BM* | 0.592 | 0.584 | 0.563 | 0.571 | 0.716 | −0.112*** |
| *OP* | 0.267 | 0.287 | 0.305 | 0.307 | 0.246 | 0.015 |
| *INV* | 0.387 | 0.267 | 0.209 | 0.187 | 0.164 | 0.206*** |
| *Assets* | 0.810 | 1.505 | 1.530 | 1.093 | 0.946 | −0.151 |
| *Debt/MV Assets* | 0.321 | 0.322 | 0.303 | 0.290 | 0.360 | −0.034** |
| *PPE/Assets* | 0.315 | 0.289 | 0.283 | 0.268 | 0.252 | 0.061*** |
| *Intangibles/Assets* | 0.109 | 0.134 | 0.141 | 0.130 | 0.130 | −0.016** |
| *R&D/Assets* | 0.051 | 0.044 | 0.034 | 0.025 | 0.025 | 0.025*** |
| *Advertising/Assets* | 0.011 | 0.013 | 0.016 | 0.019 | 0.017 | −0.007*** |
| *Tax Lobby* | 0.176 | 0.175 | 0.172 | 0.166 | 0.162 | 0.016*** |
| *Foreign Income* (0,1) | 0.342 | 0.498 | 0.492 | 0.420 | 0.414 | −0.061*** |
| *UTB Reserve/Assets* | 0.014 | 0.014 | 0.011 | 0.010 | 0.010 | 0.005*** |
| *σ(Ret)* | 0.159 | 0.137 | 0.124 | 0.121 | 0.133 | 0.026*** |
| *Lag(Ret)* | 0.268 | 0.211 | 0.192 | 0.162 | 0.123 | 0.136*** |

**, *** Denote statistical significance at the 5 percent, and 1 percent levels, respectively.
This table describes firm characteristics within tax planning quintiles. Panel A (Panel B) reports sorts based on industry (firm-specific) cash tax rates. The reported values are time-series averages of yearly portfolio means. The last column in each panel contains the average difference between the lowest and highest quintiles, where statistical significance is based on standard errors after the Newey and West (1987) adjustment for autocorrelation. The sample includes fiscal years ending between 1990 and 2012.
All variables are as defined in Appendix A.

**TABLE 3**

**Portfolios Sorted on Tax Planning: Returns and Summary Statistics**

**Panel A: Industry Cash Tax Rate Quintiles**

| | Q1 Low Tax | Q2 | Q3 | Q4 | Q5 High Tax | Q1 − Q5 |
|---|---|---|---|---|---|---|
| $R - R_f$ | 0.96 | 1.30 | 0.71 | 0.84 | 0.68 | 0.28 |
| | [2.35] | [2.90] | [1.76] | [2.30] | [1.89] | [1.46] |
| α[3F] | −0.02 | 0.40 | −0.21 | −0.09 | −0.37 | 0.35 |
| | [−0.13] | [2.48] | [−1.04] | [−0.54] | [−2.59] | [2.11] |
| α[4F] | 0.23 | 0.57 | 0.11 | 0.22 | −0.11 | 0.34 |
| | [1.48] | [3.72] | [0.63] | [1.65] | [−0.97] | [1.99] |
| α[5F] | 0.38 | 0.70 | 0.17 | 0.25 | −0.18 | 0.56 |
| | [2.43] | [4.67] | [0.98] | [1.81] | [−1.58] | [3.37] |
| Avg. Number of Stocks | 616 | 646 | 548 | 658 | 613 | |
| Avg. Stock Price | 20.34 | 18.09 | 17.79 | 21.69 | 23.06 | |
| $\beta_{Mkt}$[4F] | 1.09 | 1.04 | 0.98 | 0.95 | 0.99 | 0.10 |
| | | | | | | [2.40] |
| $\beta_{SMB}$[4F] | 0.82 | 1.13 | 0.80 | 0.74 | 0.80 | 0.01 |
| | | | | | | [0.21] |
| $\beta_{HML}$[4F] | 0.01 | −0.27 | −0.04 | 0.13 | 0.45 | −0.44 |
| | | | | | | [−7.81] |
| $\beta_{UMD}$[4F] | −0.29 | −0.20 | −0.37 | −0.36 | −0.31 | 0.02 |
| | | | | | | [0.48] |
| $\beta_{RMW}$[5F] | −0.36 | −0.42 | −0.09 | −0.15 | 0.11 | −0.48 |
| | | | | | | [−5.87] |
| $\beta_{CMA}$[5F] | −0.31 | 0.02 | −0.56 | −0.21 | −0.28 | −0.04 |
| | | | | | | [−0.36] |

**Panel B: Firm Cash Tax Rate Quintiles**

| | Q1 Low Tax | Q2 | Q3 | Q4 | Q5 High Tax | Q1 − Q5 |
|---|---|---|---|---|---|---|
| $R - R_f$ | 0.87 | 1.11 | 0.76 | 0.74 | 1.10 | −0.22 |
| | [2.36] | [2.45] | [1.71] | [1.99] | [3.33] | [−1.97] |
| α[3F] | −0.11 | 0.11 | −0.15 | −0.21 | 0.14 | −0.24 |
| | [−0.82] | [0.66] | [−0.72] | [−1.32] | [1.21] | [−2.41] |
| α[4F] | 0.10 | 0.36 | 0.18 | 0.10 | 0.33 | −0.24 |
| | [0.89] | [2.39] | [0.97] | [0.87] | [3.74] | [−2.32] |
| α[5F] | 0.13 | 0.51 | 0.35 | 0.18 | 0.23 | −0.10 |
| | [1.12] | [3.45] | [1.87] | [1.53] | [2.64] | [−1.02] |
| Avg. Number of Stocks | 411 | 411 | 411 | 411 | 411 | |
| Avg. Stock Price | 19.72 | 26.65 | 28.34 | 27.39 | 21.8 | |
| $\beta_{Mkt}$[4F] | 1.03 | 1.02 | 0.94 | 0.89 | 0.94 | 0.09 |
| | | | | | | [3.64] |
| $\beta_{SMB}$[4F] | 0.81 | 0.65 | 0.61 | 0.65 | 0.76 | 0.05 |
| | | | | | | [1.51] |
| $\beta_{HML}$[4F] | 0.10 | 0.23 | 0.28 | 0.38 | 0.36 | −0.27 |
| | | | | | | [−7.84] |
| $\beta_{UMD}$[4F] | −0.24 | −0.21 | −0.19 | −0.20 | −0.23 | 0.00 |
| | | | | | | [−0.07] |
| $\beta_{RMW}$[5F] | −0.10 | 0.18 | 0.30 | 0.32 | 0.13 | −0.24 |
| | | | | | | [−4.82] |

*(continued on next page)*

**TABLE 3 (continued)**

| | Q1 Low Tax | Q2 | Q3 | Q4 | Q5 High Tax | Q1 − Q5 |
|---|---|---|---|---|---|---|
| $\beta_{CMA}$[5F] | −0.31 | −0.24 | −0.08 | −0.05 | −0.14 | −0.17 [−2.67] |

The table reports summary statistics, average excess returns, and alphas (intercepts) from the time-series regressions of excess returns on risk factors for portfolios of stocks sorted into tax planning quintiles. The sample spans 276 months (7:1991 to 6:2014). Panel A (Panel B) sorts are based on industry (firm) cash tax rates. The alphas are from the three-factor (market, size, and book-to-market), four-factor (market, size, book-to-market, and momentum), and five-factor (market, size, book-to-market, profitability, and investment) models. The portfolio returns are equal-weighted. The last column reports excess returns and alphas on a hedge portfolio that is long (short) in the Low Tax (High Tax) stocks. Returns are in monthly percentage points. t-statistics are reported in brackets. Summary statistics include the average number of stocks in each portfolio, average stock prices for the beginning of the month, and factor loadings from the four-factor ($\beta_{Mkt}$, $\beta_{SMB}$, $\beta_{HML}$, $\beta_{UMD}$) and five-factor ($\beta_{CMA}$, $\beta_{RMW}$) models.

In the bottom half of both Panel A and Panel B of Table 3, we report the average betas on the various risk factors used in the models. In general, the risk factor sensitivities appear correlated with firm and industry tax planning in similar ways. For example, the market beta is highest in firms that either operate in high tax planning industries or pursue more active tax planning. We report these betas for completeness and leave a more thorough examination of their determinants to future research.

Overall, our initial portfolio results are consistent with a risk premium correlated with industry tax planning and a discount correlated with firm-specific tax planning. In the next section, we extend the model to include additional controls for characteristics likely to affect both tax planning and stock returns, and examine the time-series variation in tax planning premiums to provide additional evidence on whether tax planning represents a unique source of priced risk.

### Asset Pricing Regressions

Simple portfolio sorts provide some evidence of a tax planning-based risk premium. However, the descriptive statistics suggest that tax planning intensity is correlated with multiple firm characteristics that may, on their own, be associated with a firm's systematic risk. Moreover, firm and industry tax planning are likely to be correlated in ways that make the univariate results difficult to interpret. To test whether industry tax planning intensity predicts stock returns after controlling for such characteristics, we employ cross-sectional regressions (Fama and MacBeth 1973) for the remainder of the paper.

In Table 4, we report average coefficients from monthly cross-sectional regressions of individual stock returns on stock characteristics, as well as the t-statistics corresponding to the time-series distribution of the estimated regression coefficients. The regressions include the firm-specific tax planning proxy and a separate dummy variable that takes a value of 1 if that proxy is missing. In column (1), we find that the industry cash tax rate has a negative and statistically significant association with returns after controlling for other firm characteristics. Reducing the cash tax rate by 10 percentage points (from 35 to 25 percent) is associated with a 3.5 percent higher annualized stock return (−2.95 coefficient in column (1) × 0.1 effective tax rate change × 12 months). To put the magnitude of the premium in perspective, a 10 percentage point increase in the industry cash tax rate is what separates the third-highest tax planning industry, Computers (a rate of 21.7 percent), from the fourth-lowest tax planning industry, Retail (a rate of 31.7 percent), in Table 1. When we include only the firm's cash tax rate in column (2), we find no evidence that it is significantly associated with expected returns.

Controlling for industry variation paints a different picture. Reported in Table 4, column (3), a regression that includes both industry and firm tax planning proxies generates coefficients on both firm and industry tax planning that increase in magnitudes and are statistically significant. In the full regression, the coefficient on the industry tax rate implies that a 10 percentage point decrease in the industry cash tax rate is associated with a 3.9 percent higher annualized return (−3.27 coefficient in column (3) × 0.1 tax rate change × 12 months); the coefficient on the firm cash tax rate implies that a 10 percentage point decrease in the firm-level tax rate is associated with a 0.5 percent lower annualized stock return (0.39 coefficient in column (3) × 0.1 tax rate change × 12 months). The latter finding is consistent with Goh et al. (2016).[29] Overall, our results show that firms in industries with a high propensity for tax planning appear to have significantly higher expected returns, while firms that adopt a more aggressive policy than their industry peers appear to have significantly lower returns. This does not suggest, however, that a firm can fully undo its industry tax planning risk by taking exceedingly aggressive tax positions. Based on the coefficient

[29] Our estimate is slightly larger than what Goh et al. (2016) report. In their sample, a one-standard-deviation reduction in the cash tax rate (0.189) equates to a 19 basis point reduction in the estimated cost of capital. Using the same 0.189 spread, our estimates suggest an 88 basis point reduction.

**TABLE 4**

**Fama and MacBeth Regressions of Stock Returns on Tax Planning**

| | Full Sample | | | Firm's Tax Management | | |
|---|---|---|---|---|---|---|
| | | | | Active | Non-Active | Difference |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Industry Cash Tax Rate* | −2.95** | | −3.27*** | −3.49*** | −2.36** | 1.13 |
| | [−2.58] | | [−3.05] | [−3.25] | [−2.08] | [1.28] |
| *Firm Cash Tax Rate* | | 0.23 | 0.39** | 0.91** | 0.37 | −0.54 |
| | | [1.12] | [2.17] | [2.08] | [1.40] | [−0.98] |
| *ln(MVE)* | −0.03 | −0.05 | −0.04 | −0.01 | −0.05 | |
| | [−0.57] | [−0.92] | [−0.77] | [−0.15] | [−0.94] | |
| *ln(BM)* | 0.27*** | 0.26*** | 0.26*** | 0.35*** | 0.12 | |
| | [4.64] | [4.77] | [4.79] | [3.45] | [1.10] | |
| *INV* | −0.41*** | −0.40*** | −0.40*** | −0.49*** | −0.38*** | |
| | [−6.23] | [−6.23] | [−6.30] | [−5.13] | [−3.65] | |
| *OP* | 0.67*** | 0.61*** | 0.61*** | 0.60** | 0.35 | |
| | [4.09] | [4.69] | [4.67] | [2.16] | [1.14] | |
| *Debt/MV Assets* | −0.14* | −0.13* | −0.13* | 0.08 | 0.01 | |
| | [−1.83] | [−1.72] | [−1.70] | [1.03] | [0.07] | |
| *Lag(Ret)* | 0.16 | 0.06 | 0.18 | −0.18 | 0.46 | |
| | [0.53] | [0.19] | [0.61] | [−0.51] | [1.46] | |
| *PPE/Assets* | −0.38 | −0.19 | −0.36 | −0.11 | −0.23 | |
| | [−1.28] | [−0.66] | [−1.20] | [−0.41] | [−0.96] | |
| *Intangibles/Assets* | −0.49** | −0.48** | −0.49** | −0.36 | −0.25 | |
| | [−2.37] | [−2.34] | [−2.43] | [−1.32] | [−1.06] | |
| *R&D/Assets* | 2.53*** | 2.76*** | 2.57*** | 3.52*** | 3.55*** | |
| | [4.09] | [4.61] | [4.38] | [3.76] | [3.47] | |
| *Advertising/Assets* | 0.34 | −0.24 | 0.31 | −0.10 | 0.72 | |
| | [0.41] | [−0.27] | [0.37] | [−0.12] | [0.71] | |
| *Foreign Income* (0,1) | 0.02 | 0.04 | 0.02 | 0.00 | 0.04 | |
| | [0.37] | [0.69] | [0.35] | [0.02] | [0.55] | |
| *Tax Lobby* | −0.07 | 0.14 | −0.08 | 0.06 | −0.09 | |
| | [−0.17] | [0.37] | [−0.19] | [0.15] | [−0.25] | |
| *Miss* | | −0.06 | −0.04 | | | |
| | | [−0.42] | [−0.28] | | | |
| Intercept | 2.06*** | 1.24** | 2.10*** | 1.96*** | 1.62*** | |
| | [2.94] | [2.52] | [3.22] | [3.11] | [2.73] | |
| n | 806,331 | 806,331 | 806,331 | 274,874 | 279,400 | |
| Average $R^2$ | 0.037 | 0.037 | 0.039 | 0.040 | 0.037 | |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

This table reports average coefficients from monthly cross-sectional regressions of firm stock returns on industry and/or firm tax planning, measured with effective cash tax rates. Columns (1) to (3) contain estimates for the full sample, where missing firm cash tax rates are set to zero. Columns (4) and (5) split the sample into firms with cash tax rates below (Active) and above (Non-Active) the industry median, respectively. The last column reports the difference between Non-Active and Active regression coefficients. The last three columns are based on a sample constrained to firm cash tax rate availability. t-statistics for the time-series of monthly coefficients are in brackets.

All variables are as defined in Appendix A.

estimates in column (3), the impact of a 1 percentage point change in the industry's cash tax rate is about eight times (−3.27/0.39) the impact of a similar size change in the firm's cash tax rate.

The evidence of a risk premium related to industry tax planning suggests a potential externality that raises the cost of capital for all firms in that industry. To provide more direct evidence on this conjecture, we partition the sample based on whether the firm is an active tax planner relative to the industry. Active tax planners are defined as firms with cash tax rates below the industry median. Non-active tax planners are those with cash tax rates above the industry median. This classification requires a non-missing individual firm cash tax rate, and hence excludes observations where firm-specific cash tax rates cannot be calculated due to negative pretax income.

In column (4) of Table 4, we report the results for firms with relatively low cash tax rates ("active" tax planners), while in column (5), we report the results for firms with relatively high tax rates. Critically, industry tax planning affects both groups of firms by increasing expected returns. While the estimated effect appears larger for the active tax planners (−3.49 versus −2.36), the difference in the coefficients is insignificant (t = 1.28).[30] The propensity for industry tax planning by firms in the industry appears to impose an externality on less aggressive tax planning firms by increasing their cost of capital. This result is consistent with Sikes and Verrecchia (2016), who document externalities created by aggregate tax planning activity.

In Table 5, we report the results using alternative proxies for tax planning: the GAAP effective tax rate (Panel A) and the book-tax difference (Panel B). In both cases, industry tax planning appears to increase expected returns (column (3)), while the firm-level effect is inconsistent. In columns (4) and (5), we test whether the industry effect is conditional on the firm being more or less aggressive than the industry median. We continue to define active tax planning firms relative to the industry median, so these tests exclude firms with missing firm-specific effective tax rates or book-tax differences. Using effective tax rates reported in Panel A, the effect is negative and significant only for active tax planners (coeff. = −3.79, t = −2.27); however, the difference between the two groups is insignificant (t = 1.48). Using the book-tax difference reported in Panel B, we find that the effect of industry tax planning is negative and significant in both groups. These results continue to support the conclusion that the propensity for tax planning in the industry imposes a negative externality on firms that are less active tax planners.

### Tax Policy Uncertainty: Evidence from Time-Series Variation in Political Ideology

The identified spread in expected returns could arise from any source of systematic risk that is driven by, or correlated with, industry tax planning. In this section, we address the tax policy risk interpretation by exploiting time-series variation in the political ideologies of policy makers. For example, there is a significant increase in the proportion of IRS resources devoted to criminal investigations and in the number of corporate tax audits during Democrat presidential administrations (Bagchi 2016). If Democrat administrations are perceived by the market as more determined to curtail tax planning (through legislated tax policy, appointments to the Treasury Department, enforcement budgets, mandates, and so on), then firms that engage in more intensive tax planning should be more exposed to policy risk during those administrations.

In Table 6, we report the average coefficients from monthly cross-sectional regressions estimated separately for the months in which a Democrat or a Republican held the presidency. In our sample, Democrat presidencies run from 1993 to 2000 and from 2009 through the end of the sample. The results suggest significant industry tax planning premiums during both Democrat and Republican presidencies. A reduction in the cash effective tax rate from 35 to 25 percent is associated with a 33 basis points per month higher return (column (1)) during Democrat presidencies (t = −2.15), and a 32 basis point per month higher return (column (2)) during Republican presidencies (t = −2.30). Perhaps not surprisingly, these returns are not significantly different (t = 0.94).

Next, we build on the findings in Staudt et al. (2006), who show that Supreme Court ideology affects the likelihood of a pro-government ruling in corporate tax cases. The United States Tax Court hears most tax cases involving federal income tax issues, so we focus on the variation in the political ideology of Tax Court judges over time.[31] Because it is difficult to measure the ideology of specific Tax Court judges, we create a proxy based on the party of the appointing president. Tax Court judges serve 15-year terms as regular judges, after which they remain on as senior judges, ensuring that ideological-based appointments outlast a particular president. Each year, we identify the fraction of all active Tax Court judges appointed by Democrat presidents and sort the sample into the periods with relatively high and low fractions of Democrat-appointed judges. We base our classification on the de-trended fraction of Democrat-appointed judges falling above or below the full-period median. In our sample, the fraction of Democrat appointees is high from 1994 to 2004 and from 2012 forward.

Columns (4) and (5) of Table 6 report average coefficients from monthly cross-sectional regressions estimated separately for the months in which the proportion of Democrat appointees to the Tax Court was high or low. The premiums associated with tax planning are statistically significant only when the percentage of Democrat appointees is high. From column (5), a 10 percentage point reduction in the cash tax rate is associated with a 55 basis points per month (6.6 percent annually) higher return during the periods when Democrat appointees make up a larger fraction of the Tax Court (t = −3.60) and a statistically insignificant change in returns when they do not (column (4)). The difference is statistically significant (t = −2.34).

In Table 7, we replace the cash tax rate with the GAAP effective tax rate and the book-tax difference. The controls from Table 4 are included in the regression, but not tabulated for brevity. In column (2) of Panels A and B, firms in high tax planning industries based on both effective tax rates and book-tax differences appear to have the highest premiums during Democrat presidencies. The premiums on effective tax rates do not vary significantly across Tax Court regimes (columns (4) and (5) of

[30] Interestingly, the impact of firm tax planning appears significant only among active tax planners (column (4)); there is no cost of capital benefit to being more aggressive among less active tax planners (column (5)).

[31] We understand that appointments to the U.S. Tax Court are potentially less political than appointments to other courts and, as a result, differences in ideologies may be less likely to manifest in judicial decisions and policy uncertainty.

**TABLE 5**

**Alternative Tax Planning Measures**

**Panel A: GAAP Effective Tax Rate**

| | | | | Firm's Tax Management | | |
|---|---|---|---|---|---|---|
| | Full Sample | | | Active | Non-Active | Difference |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Industry ETR* | −3.64** | | −3.87** | −3.79** | −1.52 | 2.27 |
| | [−2.01] | | [−2.17] | [−2.27] | [−0.91] | [1.48] |
| *Firm ETR* | | 0.16 | 0.30 | −0.03 | 0.04 | 0.07 |
| | | [0.74] | [1.44] | [−0.08] | [0.10] | [0.11] |
| Control Variables Included | | | | | | |
| Intercept | 2.46*** | 1.26** | 2.51*** | 2.22*** | 1.70** | |
| | [3.09] | [2.59] | [3.29] | [2.94] | [2.36] | |
| n | 805,881 | 805,881 | 805,881 | 267,813 | 270,773 | |
| Average $R^2$ | 0.036 | 0.037 | 0.038 | 0.040 | 0.037 | |

**Panel B: Book-to-Tax Differences**

| | | | | Firm's Tax Management | | |
|---|---|---|---|---|---|---|
| | Full Sample | | | Active | Non-Active | Difference |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Industry* −[*Book* − *Tax*] | −14.80** | | −14.80** | −18.99*** | −14.35** | 4.65 |
| | [−2.45] | | [−2.45] | [−3.34] | [−2.04] | [0.80] |
| *Firm* −[*Book* − *Tax*] | | −0.23 | −0.22 | 2.65*** | −0.40* | −3.05*** |
| | | [−1.24] | [−1.19] | [4.17] | [−1.78] | [−4.46] |
| Control Variables Included | | | | | | |
| Intercept | 0.90* | 1.23** | 0.88* | 0.85* | 0.93 | |
| | [1.74] | [2.42] | [1.69] | [1.83] | [1.65] | |
| n | 806,283 | 806,283 | 806,283 | 296,233 | 494,187 | |
| Average $R^2$ | 0.037 | 0.036 | 0.038 | 0.038 | 0.039 | |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
This table reports average coefficients from monthly cross-sectional regressions of firm stock returns on industry and/or firm tax planning, measured with GAAP effective tax rates (Panel A) and book-to-tax differences (Panel B). All regressions include a full set of controls, with coefficients on control variables omitted for brevity. In each panel, Columns (1) to (3) contain estimates for the full sample, where missing firm-specific GAAP effective tax rates or book-to-tax differences are set to zero. Columns (4) and (5) split the sample into firms with firm-specific measures below (Active) and above (Non-Active) industry medians, respectively. The last column reports the difference between Non-Active and Active regression coefficients. The last three columns are based on a sample constrained to firm-specific tax planning measure availability. t-statistics for the time-series of monthly coefficients are in brackets.
All variables are as defined in Appendix A.

Panel A), but, similar to cash tax rates, book-tax differences do (Panel B), suggesting significantly higher returns to high tax planning firms when the Tax Court is dominated by Democrat appointees. Taken together, the results suggest that, if anything, there is a modest premium on industry tax planning that is concentrated in those periods in which policy making is more likely to reflect Democrat ideology.[32]

Overall, the returns to stocks in industries with more intensive tax planning appear statistically and economically higher than their low tax planning industry counterparts, even after controlling for other characteristics associated with tax planning. The strength of the association varies across the tax planning proxies used and over time, with generally higher premiums

[32] In untabulated tests, we find that the risk premium on industry tax planning is strongest in months when there is Democrat influence over both the White House and the Tax Court.

**TABLE 6**

**Intertemporal Variation in the Pricing of Industry Tax Planning**

| | Presidential Administration | | | Tax Court Judges Appointed by a Democrat | | |
|---|---|---|---|---|---|---|
| | Rep. (1) | Dem. (2) | Difference (3) | Low % (4) | High % (5) | Difference (6) |
| *Industry Cash Tax Rate* | −3.18** | −3.33** | −0.15 | −0.58 | −5.52*** | −4.94** |
| | [−2.30] | [−2.15] | [0.94] | [−0.40] | [−3.60] | [−2.34] |
| *Firm Cash Tax Rate* | 0.62** | 0.23 | −0.38 | 0.49** | 0.31 | −0.18 |
| | [2.20] | [0.99] | [0.29] | [2.08] | [1.16] | [−0.52] |
| *ln*(*MVE*) | −0.12 | 0.02 | | −0.01 | −0.06 | |
| | [−1.60] | [0.35] | | [−0.13] | [−0.82] | |
| *ln*(*BM*) | 0.18** | 0.31*** | | 0.18** | 0.32*** | |
| | [2.43] | [4.16] | | [2.56] | [4.08] | |
| *INV* | −0.17* | −0.57*** | | −0.56*** | −0.28*** | |
| | [−1.85] | [−6.67] | | [−5.28] | [−3.59] | |
| *OP* | 0.73*** | 0.53*** | | 0.59*** | 0.63*** | |
| | [3.40] | [3.22] | | [3.15] | [3.44] | |
| *Debt/MV Assets* | −0.19 | −0.08 | | 0.01 | −0.24** | |
| | [−1.59] | [−0.85] | | [0.11] | [−2.24] | |
| *Lag*(*Ret*) | −0.18 | 0.43 | | 0.59 | −0.17 | |
| | [−0.44] | [1.03] | | [1.16] | [−0.51] | |
| *PPE/Assets* | −0.54 | −0.23 | | 0.02 | −0.68 | |
| | [−1.16] | [−0.59] | | [0.06] | [−1.50] | |
| *Intangibles/Assets* | −0.21 | −0.69*** | | 0.03 | −0.92*** | |
| | [−0.65] | [−2.63] | | [0.13] | [−3.04] | |
| *R&D/Assets* | 1.26 | 3.49*** | | 2.05*** | 3.00*** | |
| | [1.66] | [4.17] | | [2.69] | [3.46] | |
| *Advertising/Assets* | 0.53 | 0.15 | | 0.10 | 0.48 | |
| | [0.43] | [0.14] | | [0.09] | [0.41] | |
| *Foreign Income* (0,1) | −0.07 | 0.09 | | 0.10 | −0.04 | |
| | [−0.74] | [1.11] | | [1.02] | [−0.55] | |
| *Tax Lobby* | −0.13 | −0.04 | | 0.12 | −0.24 | |
| | [−0.18] | [−0.08] | | [0.22] | [−0.41] | |
| *Miss* | −0.25 | 0.11 | | −0.06 | −0.02 | |
| | [−0.99] | [0.76] | | [−0.47] | [−0.07] | |
| Intercept | 2.09** | 2.11** | | 0.50 | 3.45*** | |
| | [2.27] | [2.33] | | [0.72] | [3.31] | |
| n | 320,325 | 486,006 | | 318,785 | 487,546 | |
| Average $R^2$ | 0.039 | 0.039 | | 0.031 | 0.046 | |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

This table reports average coefficients from monthly cross-sectional regressions of firm stock returns for industry and firm-specific tax planning, measured with effective cash tax rates and estimated separately by subperiods. Columns (1) and (2) split the period on the political party of the president in office at the time returns are measured; column (3) reports a difference in coefficients between columns (2) and (1). Columns (4) and (5) split the period on whether the proportion of Democrat administration appointees among the U.S. Tax Court judges is high or low at the time returns are measured; column (6) reports a difference in coefficients between columns (5) and (4). Missing firm-specific cash tax rates are set to zero. t-statistics for the time-series of monthly coefficients are in brackets.

All variables are as defined in Appendix A.

observed during periods when the expected benefits of tax planning are more uncertain because of an elevated risk of tax policy changes.

While the effect of firm tax planning is not our primary focus in these regressions, there is very weak evidence that firm-level effects vary with the political ideology of policy makers. We do find that the effect of firm-level tax planning is present only during Republican presidencies or when the Tax Court has a low fraction of Democrat appointees when using the cash tax rate (columns (1) and (4) of Table 6), or only when the Tax Court has a low fraction of Democrat appointees when using

**TABLE 7**

**Intertemporal Variation**
**Alternative Tax Planning Measures**

**Panel A: GAAP Effective Tax Rate**

| | Presidential Administration | | | Tax Court Judges Appointed by a Democrat | | |
|---|---|---|---|---|---|---|
| | **Rep. (1)** | **Dem. (2)** | **Difference (3)** | **Low % (4)** | **High % (5)** | **Difference (6)** |
| *Industry ETR* | −1.74 | −5.37** | −3.64 | −3.23** | −4.41 | −1.18 |
| | [−0.62] | [−2.32] | [−1.00] | [−2.06] | [−1.46] | [−0.35] |
| *Firm ETR* | 0.31 | 0.29 | −0.02 | 0.48** | 0.14 | −0.34 |
| | [0.93] | [1.10] | [−0.04] | [2.00] | [0.44] | [−0.85] |
| Control Variables Included | | | | | | |
| Intercept | 2.01** | 2.87** | | 1.42* | 3.43*** | |
| | [2.07] | [2.59] | | [1.79] | [2.78] | |
| n | 320,157 | 485,724 | | 318,509 | 487,372 | |
| Average $R^2$ | 0.038 | 0.038 | | 0.029 | 0.045 | |

**Panel B: Book-to-Tax Differences**

| | Presidential Administration | | | Tax Court Judges Appointed by a Democrat | | |
|---|---|---|---|---|---|---|
| | **Rep. (1)** | **Dem. (2)** | **Difference (3)** | **Low % (4)** | **High % (5)** | **Difference (6)** |
| *Industry* −[*Book* − *Tax*] | −11.15 | −17.38** | −6.23 | −1.85 | −25.68*** | −23.83** |
| | [−1.11] | [−2.31] | [−0.50] | [−0.24] | [−2.90] | [−2.01] |
| *Firm* −[*Book* − *Tax*] | −0.25 | −0.20 | 0.05 | −0.47 | −0.00 | 0.47 |
| | [−0.89] | [−0.80] | [0.15] | [−1.46] | [−0.01] | [1.24] |
| Control Variables Included | | | | | | |
| Intercept | 1.01 | 0.79 | | 0.30 | 1.37 | |
| | [1.11] | [1.28] | | [0.53] | [1.65] | |
| n | 320,325 | 485,958 | | 318,785 | 487,498 | |
| Average $R^2$ | 0.039 | 0.038 | | 0.031 | 0.044 | |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
This table replicates the Fama-MacBeth regressions reported in Table 6 using alternative tax planning measures—GAAP effective tax rate in Panel A, and the negative book-tax difference in Panel B. All regressions include a full set of controls, with coefficients on control variables omitted for brevity. Columns (1) and (2) split the period on the political party of the president in office at the time returns are measured; column (3) reports a difference in coefficients between columns (2) and (1). Columns (4) and (5) split the period on whether the proportion of Democrat administration appointees among the U.S. Tax Court judges is high or low at the time returns are measured; column (6) reports a difference in coefficients between columns (5) and (4). Missing firm-specific GAAP effective tax rates or book-to-tax differences are set to zero. t-statistics for the time-series of monthly coefficients are in brackets.

effective tax rates (column (4) of Table 7, Panel A). However, these effects are much less pronounced—an expected result if the benefits of firm-level tax planning are less sensitive to variation in political ideology.

### Industry Characteristics and the Pricing of Firm Tax Planning

A natural question that arises is whether there is an interaction between industry and firm tax planning that extends beyond the externalities documented in Table 4. In this section, we ask whether the cost of capital benefits documented here and in Goh et al. (2016) depend on characteristics of the industry that plausibly affect the firm's ability to generate tax cash flows with low systematic risk.

We build these cross-sectional tests on the assumption that the tax authority's scrutiny of the firm's tax planning decisions depends on industry characteristics. A firm that expects more scrutiny from the tax authority should expect lower net cash flows

from its tax planning, reducing the cost of capital benefit suggested by Goh et al. (2016). Moreover, high scrutiny driven by industry characteristics can increase the systematic risk of the firm's tax planning if the tax authority's resistance to a particular method or instrument of tax planning increases the correlation of the firm's cash tax savings with those of other firms.

Due to limited resources, tax authorities likely prioritize cases that generate more tax revenue or are less costly to detect. Accordingly, we measure tax authority scrutiny three ways. The first is driven by an attempt to identify industries in which challenges to tax planning activity are more likely to have a higher rate of payoff for the tax authority. We use the propensity for tax planning in the industry, as captured by the median cash tax rate, to proxy for a potential for recovery of tax revenue and, thus, regulatory scrutiny.

The second is the detectability of firm-specific tax planning within the industry, measured by the $R^2$ from industry-specific regressions of firm tax planning on a set of economic determinants.[33] Industries in which the cross-firm variation in tax planning is better explained by observable factors potentially offers regulators greater precision to detect more aggressive tax reporting by a given firm. This lowers the cost of detecting deviations from a "normal" tax level.

The third is the propensity for tax lobbying by industry participants. Lobbying is more likely when the firm is exposed to uncertain tax policies, but is also a visible investment in political influence to hedge against adverse tax policies. In other words, greater lobbying effort partially reflects firms' perceptions of higher regulatory scrutiny. To capture the intensity of industry tax lobbying, we use the number of firms involved in tax lobbying by industry from Brown et al. (2015) scaled by the total number of firms in the industry.

The results are reported in Table 8. Throughout, we find that the relation between firm tax planning and stock returns depends critically on industry tax planning scrutiny. The effect is stark and suggests that the cost of capital benefits to firm tax planning activities are achieved only in industries with low scrutiny: those having higher median cash tax rates, lower ability to detect aggressive tax planning, and lower tax lobbying. In high-scrutiny industries, the firm's decision to become more aggressive has no discernible effect on its cost of capital. In these industries, investors either place a lower value on the expected cash savings or associate a higher degree of systematic risk with firm tax planning.

We make no predictions for the variation in industry-based tax planning risk across regulatory scrutiny partitions. *Ex post,* the coefficients on the industry cash tax rates do not vary significantly across any of the considered partitions. It is worth noting that our first partition on the industry median cash tax rate effectively splits the sample on our industry tax planning measure, so that the regressions estimated within the two resulting subsamples lack statistical power to detect the industry-based tax planning risk.

### Does the Pricing of Industry Tax Planning Depend on Firm Characteristics?

In Tables 4 and 5, we show that the pricing of industry tax planning is not significantly different when the firm is less aggressive than the industry's median firm. In this section, we extend the investigation to ask whether the pricing of industry tax planning depends on other characteristics of the firm. To do this, we estimate our main regression within subsamples partitioned on four dimensions: the availability of firm tax rates, the presence of R&D, firm size, and the presence of multinational operations.

#### *Selecting on Profitability*

We first examine whether the industry effect holds up when the sample is limited to firms with available firm-level tax rates (positive pretax income). This limitation is typical of studies focused on firm-level tax planning effects. Reported in column (1) of Table 9, we find that the coefficient on the industry cash tax rate remains negative and significant (coeff. = −2.76, t = −2.69).

#### *Research and Development*

R&D expenditures are tax deductible and historically generate additional tax credits, giving managers incentives to classify corporate expenses as R&D to reduce tax liabilities. Furthermore, assets generated by firms with high R&D intensity are more mobile and, thus, facilitate shifting taxable income to lower tax jurisdictions. On the other hand, R&D tax incentives are in place precisely because of the desire to stimulate real and risky investment. Thus, it may be a less risky form of tax rate reduction than an aggressive transfer pricing strategy designed strictly to reduce taxes without affecting real activity. In columns (2) and (3), we estimate the regression among firms with and without R&D. In both samples, the impact of industry

[33] These determinants include firm size, growth (measured by book-to-market and growth in total assets), operating profitability, past returns, leverage, fixed and intangible asset intensity, research and development activity, advertising activity, the presence of foreign operations, and the presence of net operating loss (NOL) carryforwards.

## TABLE 8

## Regulatory Scrutiny

| | Regulatory Scrutiny Partitions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Industry Cash Tax Rate* | | | *Tax Planning Detectability* | | | *Tax Lobby* | | |
| | Low (1) | High (2) | High − Low (3) | High (4) | Low (5) | Low − High (6) | High (7) | Low (8) | Low − High (9) |
| *Industry Cash Tax Rate* | −3.07 | −1.37 | 1.70 | −3.89*** | −3.39 | 0.50 | −3.51*** | −5.13*** | −1.62 |
| | [−1.23] | [−0.84] | [0.60] | [−2.62] | [−1.61] | [0.19] | [−2.74] | [−3.03] | [−0.83] |
| *Firm Cash Tax Rate* | 0.13 | 0.61*** | 0.48* | 0.12 | 0.59** | 0.47 | 0.31 | 0.52** | 0.20 |
| | [0.54] | [2.81] | [1.74] | [0.49] | [2.40] | [1.48] | [1.32] | [2.35] | [0.72] |
| *ln*(*MVE*) | −0.06 | 0.00 | | −0.03 | −0.06 | | −0.03 | −0.05 | |
| | [−1.17] | [0.07] | | [−0.52] | [−1.11] | | [−0.50] | [−0.94] | |
| *ln*(*BM*) | 0.28*** | 0.28*** | | 0.27*** | 0.24*** | | 0.27*** | 0.24*** | |
| | [4.53] | [4.59] | | [4.33] | [3.61] | | [4.48] | [3.86] | |
| *INV* | −0.39*** | −0.44*** | | −0.45*** | −0.34*** | | −0.44*** | −0.39*** | |
| | [−5.44] | [−5.27] | | [−4.89] | [−4.66] | | [−5.65] | [−4.77] | |
| *OP* | 0.67*** | 0.60*** | | 0.74*** | 0.60*** | | 0.56*** | 0.70*** | |
| | [5.07] | [3.23] | | [4.94] | [3.62] | | [4.00] | [4.12] | |
| *Lag*(*Ret*) | −0.14 | −0.06 | | −0.11 | −0.12 | | −0.11 | −0.12 | |
| | [−1.56] | [−0.75] | | [−1.17] | [−1.46] | | [−1.22] | [−1.44] | |
| *Debt/MV Assets* | 0.22 | 0.19 | | 0.02 | 0.43 | | 0.18 | 0.25 | |
| | [0.63] | [0.61] | | [0.06] | [1.28] | | [0.56] | [0.79] | |
| *PPE/Assets* | −0.39 | −0.27 | | −0.31 | −0.13 | | −0.50 | 0.09 | |
| | [−1.06] | [−1.16] | | [−1.04] | [−0.45] | | [−1.53] | [0.32] | |
| *Intangibles/Assets* | −0.41 | −0.54** | | −0.24 | −0.82*** | | −0.39 | −0.70** | |
| | [−1.32] | [−2.55] | | [−1.07] | [−2.77] | | [−1.60] | [−2.40] | |
| *R&D/Assets* | 1.96*** | 3.79*** | | 2.42*** | 2.03*** | | 2.66*** | 2.22*** | |
| | [3.44] | [4.76] | | [3.10] | [3.35] | | [3.65] | [3.78] | |
| *Advertising/Assets* | −1.24 | 0.91 | | −0.19 | 0.11 | | 0.68 | 0.17 | |
| | [−0.87] | [1.07] | | [−0.22] | [0.09] | | [0.86] | [0.15] | |
| *Foreign Income* (0,1) | −0.01 | −0.02 | | −0.08 | 0.13* | | −0.05 | 0.09 | |
| | [−0.11] | [−0.33] | | [−0.94] | [1.77] | | [−0.62] | [1.20] | |
| *Tax Lobby* | −0.82 | 0.28 | | −0.22 | −0.45 | | 0.39 | 1.31 | |
| | [−1.21] | [0.76] | | [−0.31] | [−0.54] | | [0.84] | [0.97] | |
| *Miss* | −0.00 | −0.06 | | −0.15 | 0.05 | | −0.10 | 0.06 | |
| | [−0.01] | [−0.41] | | [−1.01] | [0.29] | | [−0.63] | [0.43] | |
| Intercept | 2.45*** | 1.01 | | 2.26*** | 2.34** | | 2.05*** | 2.43*** | |
| | [3.10] | [1.58] | | [3.62] | [2.53] | | [3.05] | [3.03] | |
| n | 399,492 | 406,839 | | 381,241 | 384,345 | | 395,669 | 410,662 | |
| Average $R^2$ | 0.045 | 0.037 | | 0.049 | 0.038 | | 0.048 | 0.039 | |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

This table reports average coefficients from monthly cross-sectional regressions of firm stock returns for industry and firm-specific tax planning, measured with effective cash tax rates and estimated separately by subsamples with varying degree of regulatory scrutiny. Columns (1) and (2) split the sample into industries with above and below the sample median industry cash tax rates, respectively; column (3) reports a difference between columns (2) and (1). Columns (4) and (5) split the sample into industries with above and below the sample median level of tax planning detectability, respectively; column (6) reports a difference between columns (4) and (5). Columns (7) and (8) split the sample into industries with above and below the sample median level of tax lobby activity, respectively; column (9) reports a difference between columns (8) and (7). Missing firm-specific cash tax rates are set to zero. t-statistics for the time-series of monthly coefficients are in brackets.

All variables are as defined in Appendix A.

**TABLE 9**

**Tax-Related Risk Premiums Across Various Subsamples**

| | Rate Non-Missing (1) | No R&D (2) | Positive R&D (3) | MNC (4) | Domestic (5) | Small (6) | Large (7) |
|---|---|---|---|---|---|---|---|
| *Industry Cash Tax Rate* | −2.76*** | −2.48** | −3.79** | −2.32** | −3.93*** | −4.49*** | −1.92* |
| | [−2.69] | [−1.98] | [−2.33] | [−2.02] | [−3.23] | [−3.69] | [−1.68] |
| *Firm Cash Tax Rate* | 0.47*** | 0.42** | 0.37 | 0.42* | 0.46* | 0.61*** | 0.17 |
| | [2.85] | [1.99] | [1.57] | [1.90] | [1.96] | [2.65] | [0.76] |
| *ln(MVE)* | −0.03 | −0.01 | −0.06 | −0.05 | −0.03 | −0.09 | −0.03 |
| | [−0.56] | [−0.21] | [−1.10] | [−0.99] | [−0.46] | [−0.84] | [−0.59] |
| *ln(BM)* | 0.24*** | 0.30*** | 0.23*** | 0.25*** | 0.30*** | 0.29*** | 0.18*** |
| | [2.66] | [3.92] | [3.57] | [3.16] | [4.72] | [3.92] | [3.12] |
| *INV* | −0.46*** | −0.36*** | −0.41*** | −0.47*** | −0.41*** | −0.46*** | −0.30*** |
| | [−5.89] | [−4.33] | [−5.32] | [−4.90] | [−5.68] | [−5.31] | [−4.65] |
| *OP* | 0.47* | 0.86*** | 0.56*** | 0.72*** | 0.61*** | 0.67*** | 0.50*** |
| | [1.81] | [4.22] | [3.96] | [3.36] | [4.43] | [4.59] | [3.03] |
| *Lag(Ret)* | 0.05 | 0.03 | −0.19** | −0.07 | −0.15* | −0.14 | −0.10 |
| | [0.61] | [0.35] | [−2.31] | [−0.67] | [−1.90] | [−1.60] | [−1.13] |
| *Debt/MV Assets* | 0.14 | 0.04 | 0.71* | 0.01 | 0.27 | 0.26 | 0.15 |
| | [0.45] | [0.15] | [1.87] | [0.02] | [0.94] | [0.90] | [0.41] |
| *PPE/Assets* | −0.15 | −0.12 | −0.72** | −0.28 | −0.43 | −0.61* | −0.10 |
| | [−0.67] | [−0.47] | [−2.05] | [−0.85] | [−1.37] | [−1.83] | [−0.33] |
| *Intangibles/Assets* | −0.27 | −0.57** | −0.32 | −0.14 | −0.70*** | −0.61** | −0.34 |
| | [−1.26] | [−2.56] | [−0.97] | [−0.50] | [−3.05] | [−2.07] | [−1.51] |
| *R&D/Assets* | 3.45*** | | 2.05*** | 3.32*** | 2.40*** | 2.72*** | 2.31*** |
| | [3.87] | | [3.63] | [3.80] | [3.96] | [3.95] | [4.14] |
| *Advertising/Assets* | 0.42 | 0.91 | −0.03 | 0.62 | −0.20 | 0.59 | −0.19 |
| | [0.53] | [0.99] | [−0.03] | [0.64] | [−0.21] | [0.60] | [−0.19] |
| *Foreign Income* (0,1) | 0.03 | −0.06 | −0.05 | | | 0.03 | 0.03 |
| | [0.42] | [−0.86] | [−0.59] | | | [0.31] | [0.37] |
| *Tax Lobby* | −0.00 | 0.14 | −0.16 | −0.03 | −0.02 | 0.00 | −0.12 |
| | [−0.01] | [0.33] | [−0.28] | [−0.08] | [−0.04] | [0.01] | [−0.26] |
| *Miss* | | −0.05 | −0.02 | −0.04 | 0.03 | 0.08 | −0.19 |
| | | [−0.40] | [−0.10] | [−0.29] | [0.18] | [0.50] | [−1.26] |
| Intercept | 1.75*** | 1.51*** | 2.52*** | 1.83*** | 2.24*** | 2.55*** | 1.68** |
| | [2.86] | [2.62] | [2.89] | [2.69] | [3.41] | [3.87] | [2.27] |
| n | 554,274 | 388,316 | 418,015 | 308,283 | 498,048 | 396,227 | 410,104 |
| Average $R^2$ | 0.037 | 0.036 | 0.040 | 0.048 | 0.038 | 0.030 | 0.059 |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

This table reports average coefficients from monthly cross-sectional regressions of firm stock returns on industry and firm-specific tax planning measures, estimated within various subsamples. Column (1) restricts the sample to firms with non-missing effective cash tax rates. Columns (2) and (3) contain regressions estimated for firms with zero and positive R&D expenses, respectively. Columns (4) and (5) contain regressions estimated for firms with non-zero and zero pretax foreign earnings, respectively. Columns (6) and (7) are based on firms below and above the industry median market value of equity, respectively. Missing firm-specific cash tax rates are set to zero in columns (2) through (7). t-statistics for the time-series of monthly coefficients are in brackets.

All variables are as defined in Appendix A.

tax planning on expected returns is significant, although returns are slightly more sensitive to industry tax planning when the firm reports R&D.

### *Foreign Operations*

A firm with foreign operations arguably has more tax planning opportunities through income shifting than a purely domestic firm. Moreover, the expected payoffs to those tax strategies are more exposed to changes in currency exchange rates,

foreign tax policies, and trade policies, among other things. On the other hand, multinational firms are potentially less exposed to domestic tax policies if they operate in multiple countries, and may face foreign tax rates that are higher than their U.S. tax rate. While we make no signed predictions on how the pricing of industry tax planning varies with foreign operations, we report the results from these tests in Table 9, columns (4) and (5). The results suggest that expected returns are sensitive to industry tax planning in both multinational and domestic firms, although the sensitivity appears slightly stronger in domestic firms.

### *Firm Size*

The relation between firm size and tax policy risk is also ambiguous. On one hand, small firms lack the scale and complexity of large firms. With less diversified tax strategies, they have more exposure to adverse consequences of future government tax policies. Unlike their larger counterparts, they may also be less willing to invest in political influence to protect their strategies, further increasing their exposure to policy changes. On the other hand, large firms are more likely to be multinational and have incentives to exploit tax-reducing transactions that shift income across tax jurisdictions—strategies at the forefront of the debate on corporate tax planning activity (e.g., U.S. Senate 2014). They also attract more media attention to their tax status. This can expose larger firms to more tax policy risk. In Table 9, columns (6) and (7), we find that the pricing of industry tax planning is driven by small firms (coeff. = −4.49, t = −3.69), although the effect is also present in large firms (coeff. −1.92, t = −1.68).

It is important to note that the latter three partitions help us establish whether the premium holds up for subsets of the sample where a particular tax planning strategy is infeasible or costlier to implement (i.e., firms that have no R&D, no foreign operations, or are small in scale). Our results suggest that tax policy risk is priced across the various sample cuts that we consider and is not strongly tied to a single tax management instrument or driver.

## V. ADDITIONAL ANALYSES AND SENSITIVITY TESTS

### Tax Planning and Exposure to Tax Policy Changes

Earlier in the paper, we explore whether uncertainty about corporate tax policy is a potential channel through which industry tax planning affects firms' systematic risk. Ideally, we would provide concrete empirical evidence on the greater impact that tax policy changes have on industries with greater propensity for tax planning. However, clean empirical identification of the effects of policy events on markets is hamstrung in the legislative setting by the fact that many dials are turned at the same time and event dates are often difficult to pin down. In the court setting, it is difficult to identify these event dates without a time-consuming search and categorization of Tax Court dockets. We are not aware of any empirical work based on multiple corporate tax legislation or Tax Court event dates, which is what would be required in our setting.

However, we do identify a potential empirical setting based on a recent study by Snyder (2017), who measures market reactions to issuances of Treasury regulations. Treasury regulations, to the extent that they represent the kinds of policy making we are interested in, should have a larger impact on firms with greater tax policy risk exposure. A well-known regulation that had a direct impact on firms more likely to engage in tax planning is the "Check-the-box" regulation (Treasury Decision 8697) adopted in 1996, and used by Desai and Dharmapala (2009) as an exogenous shock to tax policy in their investigation of tax avoidance and firm value. While the cash flow effect of any given regulation can be positive or negative, we are interested in whether the average impact of a new regulation is greater in industries with a higher propensity for tax planning.

To exploit this setting, we collect a sample of 45 final regulations issued between 1995 and 2016 from the Federal Register. These regulations pertain to five code sections that, according to Snyder (2017), cover one-third of all uncertain positions reported to the IRS: §41 (R&D tax credit), §482 (transfer pricing), §199 (domestic production activities deduction), §263 (capitalization), and §162 (trade or business deductions). In the spirit of Beaver (1968), we use a simple measure of intraday price volatility based on the spread between high and low trading prices for the day (scaled by the average price) to construct a measure of abnormal market reaction—the difference between intraday volatility on event and non-event days. Our final sample used in this analysis consists of 34 event-days. We then estimate cross-sectional Fama-MacBeth regressions of abnormal intraday volatility on industry- and firm-level effective cash tax rates and control variables. The statistical significance is evaluated based on the time-series of cross-sectional coefficients.

Our results (untabulated) suggest that abnormal volatility is increasing in the degree of industry tax planning on days when the Treasury releases new regulations. We interpret this result as evidence that firms in higher tax planning industries are indeed more exposed to tax policy changes. Our interpretation is tempered by the marginal statistical significance of the coefficients, likely due to a low statistical power of the tests based on daily returns from only 34 days. In regressions that include both

industry and firm tax planning measures, the one-sided p-values for the coefficients on industry tax planning measures are 0.02 for GAAP effective tax rate, 0.08 for cash tax rate, and 0.11 for the book-tax difference.

### Mispricing

An additional concern, applicable to nearly all asset pricing studies, is that our results capture mispricing correction. Prior research documents that firms with higher tax expense (relative to book income) experience higher future earnings growth and stock returns (Chi, Pincus, and Teoh 2014; Lev and Nissim 2004; Thomas and Zhang 2011; Weber 2009). In those studies, associations between firm-level taxes and returns are interpreted as evidence of mispricing and subsequent price correction due to the market's failure to fully incorporate information about future profitability contained in taxable income.[34] Another possible mispricing story relates to future profits from government expenditure policies. Belo, Gala, and Li (2013) show that firms in government contracting industries earn higher returns in the periods when a Democrat holds the presidency, a finding that they attribute to stock market under-reaction.[35] A residual concern is that industries with low tax rates also benefit more from government expenditure policies.

To empirically alleviate the concern that our results are driven by the market not fully incorporating signals about future profitability conveyed through industry-level tax rates, we first examine how the trends in future profitability vary with the tax planning measures. We measure profitability as either return on assets (ROA)—earnings before extraordinary items scaled by lagged total assets—or earnings-to-price ratios (E/P)—earnings before extraordinary items scaled by lagged market value of equity. Profitability growth in high tax rate industries is marginally lower than or similar to firms in industries with lower tax rates. In untabulated results, we regress future earnings growth on both firm- and industry-level tax rates and find consistent evidence that a higher tax rate at the firm level predicts future earnings growth, while a higher rate at the industry level does not.

To offer a direct test of the mispricing explanation for our results, we reestimate Fama-MacBeth regressions of realized returns on tax planning proxies and include future profitability changes as an additional control. To the extent that potential mispricing is driven by the market not fully impounding all available information about future profitability changes into the stock price, including the future change in ROA or the E/P ratio in the regression should control for the returns associated with a mispricing correction. In untabulated tests, we find that the positive association between stock returns and industry tax planning continues to hold, while the negative association between returns and firm-specific tax planning does not.[36] In additional tests aimed at ruling out a mispricing explanation for our results, we examine the association between stock returns and lagged tax planning proxies. In the mispricing correction scenario, tax planning should not explain returns after we allow more time to pass before forming the portfolios. In untabulated tests, we find that the premiums to tax planning remain statistically significant if we require an additional 12 months to pass between measuring tax planning intensity and return accumulation.

### Robustness to Alternative Measures of Expected Returns

Our empirical analyses focus on realized returns to proxy for expected returns. For completeness, we also replicate our analyses with Easton's (2004) PEG measure of the implied cost of equity used by Goh et al. (2016). The PEG estimate is the square root of the ratio of the difference between two- and one-year-ahead earnings forecasts to stock price. We use I/B/E/S median sell-side analysts' consensus forecasts available at the end of June in the numerator and end-of-June stock price in the denominator of the ratio. We then replace the dependent variable in the annual cross-sectional Fama-MacBeth regressions specified in column (3) of Table 4 with this PEG measure. Our results (untabulated) suggest that the implied cost of capital is positively associated with firm-specific cash tax rates, replicating Goh et al. (2016), and negatively associated with industry-level cash tax rates, supporting our main results.[37]

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[34] The mispricing suggested by prior research implies that low tax rates (low taxable income) should be associated with lower returns, which biases against our hypothesized positive association between tax planning intensity and expected returns. If investors systematically underweight the cash savings from tax planning, then high tax planning firms have higher future returns because future cash flow realizations surprise investors. This could happen, for example, if investors are misled by a manager's decision to "over-reserve" for expected settlements with the tax authority. Prior research also suggests explanations other than mispricing for these empirical patterns (Hanlon and Heitzman 2010).

[35] At the firm level, Mills, Nutter, and Schwab (2013) report that firms with more exposure to government contracts also report higher effective tax rates. It is not clear whether industry measures display similar patterns.

[36] We find similar results when we measure earnings surprise as a difference between the realized earnings before extraordinary items and expected earnings. The difference is scaled by the beginning of the month market value of equity. Expected earnings are derived by combining previous-year earnings with an intercept and a slope from the cross-sectional AR(1) model estimated over the past year (see Ogneva [2012] for a similar estimation).

[37] In contrast, Dhaliwal, Heitzman, and Li (2006) show that implied cost of capital measures are decreasing in Graham's firm-specific marginal tax rates. However, marginal tax rates estimates are not designed to capture variation in tax planning intensity (e.g., through income shifting to foreign affiliates). Rather, they focus on the likelihood that the marginal dollar of income is subject to tax.

Our primary tests are based on monthly cross-sectional ordinary least squares (OLS) regressions that allow us to control for a wider range of factors plausibly associated with both stock returns and effective tax rates. In Table 3, we document alphas generated on portfolios formed using cash tax rates. The portfolio approach to estimating excess returns is commonly employed in empirical asset pricing research. Its main advantage relative to regressions is that it avoids parametric premium estimation and mimics executable trading strategies. In untabulated sensitivity tests, we find similar results for portfolios formed on the median GAAP effective tax rates and the book-tax differences.

### The Measurement of Industry Tax Planning

In this section, we investigate whether our results are sensitive to our decision to use the industry median to proxy for the propensity for tax planning in that industry. We use the median to describe the central tendency of tax planning in the industry that is less influenced by extreme values. However, other reasonable methods to characterize industry tax planning are possible. For example, an industry's policy risk could be driven by the tax planning of the most aggressive or the most visible firms. In the absence of theoretical or empirical guidance on this question, we consider a number of industry tax planning statistics in Table 10. In this analysis, we consider industries with at least 20 observations per industry-year to enable meaningful estimation of extreme quantiles. Our metrics include the cash tax rate of the 10th and 25th percentile firm in the industry (columns (1) and (2)), the median of all firms in the industry (column (3)), the median of only Standard & Poor's (S&P) 500 in the industry (column (4)), and an equal-weighted and value-weighted average (columns (5) and (6)). In each case, the relation between industry tax planning and the cost of equity is negative and statistically significant, although the magnitudes and the levels of statistical significance vary.

### Caveats

This study sheds light on the role of industry and firm tax planning in determining a firm's cost of capital, but important caveats remain. First, empirical research (and, often, enforcement efforts) suffers from a lack of detailed information about the firm's tax planning; the complexity of the tax planning function and the aggregated nature of its disclosure in the financial statements can yield only limited insight.[38] Even proprietary data from IRS tax returns can be inadequate as they ignore the bulk of foreign activity. Second, we lack a well-accepted theory on the political economy of tax legislation, enforcement, and the judicial process. We have limited knowledge of how tax policies respond to economic conditions and whether they affect firms differently depending on firms' stances against the tax authority. As a result, the theoretical predictions behind tax policy risk are largely *ad hoc*. Third, we lack a robust and well-accepted theory on the definition and measurement of tax planning risk, both at the firm or industry level. Finally, Harvey, Liu, and Zhu (2016) suggest a t-statistic cutoff for statistical significance closer to 3.0 to account for the long history of risk factor tests. This would yield more limited support for a risk premium tied to industry tax planning activity.

## VI. CONCLUSION

This study tackles a topic of growing interest in political, practitioner, and academic circles: the asset pricing implications of tax planning activity. We focus on the potential for tax planning to increase investors' exposure to priced risk. There is robust anecdotal and empirical support for the centrality of industry in firms' tax planning decisions. If the resulting commonality in tax planning potentially exposes investors to cash flow shocks that cannot be diversified, then they should demand higher returns from all firms in the industry. Uncertainty about tax policy could be one potential channel for non-diversifiable risk. Tax legislation, enforcement efforts, and judicial decisions vary over time, depend on political ideology, and, by definition, affect numerous firms. If the magnitude of the impact of tax policy shocks on firm values is positively correlated with tax planning activity in the industry, then the pricing of industry tax planning should be highest in periods with the greatest uncertainty.

The results in this paper provide support for a risk premium in stock returns that is increasing in the propensity for tax planning by firms in the industry. The premium on industry-based tax planning affects all firms in the industry, including those currently opting for less aggressive tax policies. This suggests that negative externalities are present and important. Exploring tax policy uncertainty as one possible channel, we find that the effect is concentrated in periods of Democrat presidencies and

[38] We do not directly address the possibility that industry tax rates mitigate measurement error in firm-level estimates. Problems attributed to firm-specific measures of tax planning include: (1) bias caused by dropping or eliminating firms with negative pretax income, (2) the impact of idiosyncratic accounting shocks in the measurement of earnings, (3) the need for a long time-series of data to calculate long-run cash tax rate measures, (4) the relatively short time-series of data on unrecognized tax benefits, (5) lack of observability due to incentives for opaque disclosures, and (6) correlations between tax proxies and shocks to economic performance. See Dyreng et al. (2008) and Henry and Sansing (2018) for additional evidence.

**TABLE 10**

**Alternative Estimation of Industry Tax Planning**

| | 10th Perc. (1) | 25th Perc. (2) | Median (3) | Median S&P 500 (4) | Simple Average (5) | Weighted Average (6) |
|---|---|---|---|---|---|---|
| *Industry Cash Tax Rate* | −2.98** | −1.85* | −3.52*** | −2.74*** | −3.97*** | −1.83* |
| | [−2.52] | [−1.76] | [−3.03] | [−3.01] | [−2.77] | [−1.92] |
| *Firm Cash Tax Rate* | 0.32 | 0.30 | 0.36* | 0.31 | 0.35* | 0.26 |
| | [1.62] | [1.58] | [1.91] | [1.54] | [1.84] | [1.25] |
| *ln(MVE)* | −0.05 | −0.05 | −0.04 | −0.05 | −0.04 | −0.05 |
| | [−0.94] | [−0.92] | [−0.86] | [−0.95] | [−0.89] | [−0.95] |
| *ln(BM)* | 0.25*** | 0.25*** | 0.24*** | 0.25*** | 0.25*** | 0.25*** |
| | [4.55] | [4.55] | [4.49] | [4.61] | [4.51] | [4.73] |
| *INV* | −0.40*** | −0.40*** | −0.39*** | −0.38*** | −0.39*** | −0.38*** |
| | [−5.96] | [−5.97] | [−5.95] | [−5.72] | [−5.96] | [−5.77] |
| *OP* | 0.60*** | 0.60*** | 0.59*** | 0.59*** | 0.59*** | 0.59*** |
| | [4.64] | [4.62] | [4.56] | [4.54] | [4.59] | [4.55] |
| *Lag(Ret)* | −0.12 | −0.12 | −0.12 | −0.12 | −0.12 | −0.12 |
| | [−1.53] | [−1.53] | [−1.59] | [−1.61] | [−1.59] | [−1.57] |
| *Debt/MV Assets* | 0.14 | 0.14 | 0.21 | 0.13 | 0.18 | 0.10 |
| | [0.46] | [0.46] | [0.71] | [0.43] | [0.62] | [0.31] |
| *PPE/Assets* | −0.21 | −0.24 | −0.31 | −0.07 | −0.28 | −0.12 |
| | [−0.70] | [−0.78] | [−1.02] | [−0.26] | [−0.90] | [−0.42] |
| *Intangibles/Assets* | −0.51** | −0.53** | −0.50** | −0.51** | −0.51** | −0.54*** |
| | [−2.46] | [−2.56] | [−2.47] | [−2.48] | [−2.45] | [−2.60] |
| *R&D/Assets* | 2.63*** | 2.68*** | 2.53*** | 2.53*** | 2.56*** | 2.64*** |
| | [4.46] | [4.54] | [4.33] | [4.31] | [4.38] | [4.46] |
| *Advertising/Assets* | −0.17 | −0.15 | −0.06 | −0.02 | −0.10 | −0.35 |
| | [−0.20] | [−0.17] | [−0.07] | [−0.02] | [−0.12] | [−0.38] |
| *Foreign Income* (0,1) | 0.05 | 0.05 | 0.03 | 0.04 | 0.04 | 0.05 |
| | [0.83] | [0.71] | [0.49] | [0.59] | [0.65] | [0.74] |
| *Tax Lobby* | −0.09 | −0.00 | −0.37 | −0.15 | −0.29 | 0.02 |
| | [−0.18] | [−0.00] | [−0.67] | [−0.28] | [−0.55] | [0.03] |
| *Miss* | −0.07 | −0.07 | −0.06 | −0.06 | −0.06 | −0.07 |
| | [−0.55] | [−0.50] | [−0.47] | [−0.43] | [−0.45] | [−0.50] |
| Intercept | 1.48*** | 1.57*** | 2.24*** | 1.96*** | 2.35*** | 1.74*** |
| | [2.75] | [2.68] | [3.32] | [3.10] | [3.22] | [2.86] |
| n | 769,333 | 769,333 | 769,333 | 768,235 | 769,333 | 769,333 |
| Average $R^2$ | 0.039 | 0.039 | 0.039 | 0.039 | 0.039 | 0.039 |

*, **, *** Denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
This table reports average coefficients from monthly cross-sectional regressions of firm stock returns on alternative definitions of industry tax planning. The sample is restricted to industry-years with at least 20 valid observations. Missing firm cash tax rates are set to zero. t-statistics for the time-series of monthly coefficients are in brackets.
All variables are as defined in Appendix A.

Democrat appointee-dominated Tax Courts, suggesting that policy makers' ideologies influence perceptions of tax planning risk in the market. The premium holds across a number of other sample cuts, including R&D activity and foreign operations, and becomes stronger in small firms. Our evidence is broadly consistent with recent findings that fiscal policy uncertainty is priced, in particular, among firms with more exposure to the consequences of a change in fiscal policy.

Throughout the study, we control for firm-specific tax planning activity. Our results largely confirm recent evidence that, in contrast to industry tax planning, firm-specific tax planning reduces the firm's cost of capital. While both effects are present, the impact of industry tax planning is roughly eight times as large. In contrast to the pricing of industry tax planning that does not depend on firm-level decisions, the pricing of firm tax planning does depend on the industry. The cost of capital benefits to firm-level tax planning disappear when the firm competes in an industry with higher regulatory scrutiny of tax planning: industries with low median cash tax rates, easier detectability of aggressive tax planning, and high tax lobbying efforts.

The potential for tax planning to have an economically significant impact on asset prices is an item of growing importance on the agendas of corporate decision makers, investors, and regulators. The evidence documented in this paper suggests that firms are, to some extent, constrained by the industry in which they operate, facing higher costs of capital in high tax planning industries. They are able to reduce some of this systematic risk through more aggressive tax planning at the firm level, but the achieved offset is comparatively small and only kicks in when the propensity for tax planning is low to begin with.

## REFERENCES


Armstrong, C., J. Blouin, and D. Larcker. 2012. The incentives for tax planning. *Journal of Accounting and Economics* 53 (1/2): 391–411. https://doi.org/10.1016/j.jacceco.2011.04.001

Armstrong, C., S. Glaeser, and J. Kepler. 2018. *Strategic Reactions in Corporate Tax Avoidance*. Working paper, University of Pennsylvania.

Bagchi, S. 2016. The political economy of tax enforcement: A look at the Internal Revenue Service from 1978–2010. *Journal of Public Policy* 36: 335–380. https://doi.org/10.1017/S0143814X1500029X

Baker, S., N. Bloom, and S. Davis. 2016. Measuring economic policy uncertainty. *Quarterly Journal of Economics* 131 (4): 1593–1636. https://doi.org/10.1093/qje/qjw024

Beaver, W. H. 1968. The information content of annual earnings announcements. *Journal of Accounting Research* 6: 67–92. https://doi.org/10.2307/2490070

Belo, F., V. Gala, and J. Li. 2013. Government spending, political cycles and the cross-section of stock returns. *Journal of Financial Economics* 107 (2): 305–324. https://doi.org/10.1016/j.jfineco.2012.08.016

Bird, A., A. Edwards, and T. Ruchti. 2018. Taxes and peer effects. *The Accounting Review* 93 (5): 97–117. https://doi.org/10.2308/accr-52004

Boutchkova, M., H. Doshi, A. Durnev, and A. Molchanov. 2012. Precarious politics and return volatility. *Review of Financial Studies* 25 (4): 1111–1154. https://doi.org/10.1093/rfs/hhr100

Brennan, T., L. Epstein, and N. Staudt. 2009. Economic trends and judicial outcomes: A macrotheory of the court. *Duke Law Journal* 58: 1191–1230.

Brogaard, J., and A. Detzel. 2015. The asset-pricing implications of government economic policy uncertainty. *Management Science* 61 (1): 3–18. https://doi.org/10.1287/mnsc.2014.2044

Brown, J., K. Drake, and L. Wellman. 2015. The benefits of a relational approach to corporate political activity: Evidence from political contributions to tax policymakers. *Journal of the American Taxation Association* 37 (1): 69–102. https://doi.org/10.2308/atax-50908

Brown, J., K. C. Lin, J. Moore, and L. Wellman 2017. *Tax Policy Uncertainty and Stock Return Volatility*. Working paper, Arizona State University.

Carhart, M. 1997. On persistence in mutual fund performance. *Journal of Finance* 52 (1): 57–82. https://doi.org/10.1111/j.1540-6261.1997.tb03808.x

Chi, S., M. Pincus, and S. H. Teoh. 2014. Mispricing of book-tax differences and the trading behavior of short sellers and insiders. *The Accounting Review* 89 (2): 511–543. https://doi.org/10.2308/accr-50644

Croce, M., H. Kung, T. Nguyen, and L. Schmid. 2012. Fiscal policies and asset prices. *Review of Financial Studies* 25 (9): 2635–2672. https://doi.org/10.1093/rfs/hhs060

Desai, M., and D. Dharmapala. 2009. Corporate tax avoidance and firm value. *Review of Economics and Statistics* 91 (3): 537–546. https://doi.org/10.1162/rest.91.3.537

Desai, M., and J. Hines. 2002. Expectations and expatriations: Tracing the causes and consequences of corporate inversions. *National Tax Journal* 55 (3): 409–440. https://doi.org/10.17310/ntj.2002.3.03

Desai, M., A. Dyck, and L. Zingales. 2007. Theft and taxes. *Journal of Financial Economics* 84 (3): 591–623. https://doi.org/10.1016/j.jfineco.2006.05.005

Dhaliwal, D., S. Heitzman, and O. Z. Li. 2006. Taxes, leverage, and the cost of equity capital. *Journal of Accounting Research* 44 (4): 691–723. https://doi.org/10.1111/j.1475-679X.2006.00214.x

Dyreng, S., M. Hanlon, and E. Maydew. 2008. Long-run corporate tax avoidance. *The Accounting Review* 83 (1): 61–82. https://doi.org/10.2308/accr.2008.83.1.61

Dyreng, S., M. Hanlon, and E. Maydew. 2019. When does tax avoidance result in tax uncertainty? *The Accounting Review* 94 (2): 179–203. https://doi.org/10.2308/accr-52198

Easton, P. 2004. PE Ratios, PEG ratios, and estimating the implied expected rate of return on equity capital. *The Accounting Review* 79 (1): 73–95. https://doi.org/10.2308/accr.2004.79.1.73

Ernst & Young (EY). 2014. *Bridging the Divide: Highlights from the 2014 Tax Risk and Controversy Survey*. Available at: https://www.eytax.jp/tax-library/thought-leadership/pdf/Tax-Risk-and-Controversy-Survey-2014_E.pdf

Fama, E., and K. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33 (1): 3–56. https://doi.org/10.1016/0304-405X(93)90023-5

Fama, E., and K. French. 1997. Industry costs of equity. *Journal of Financial Economics* 43 (2): 153–193. https://doi.org/10.1016/S0304-405X(96)00896-3

Fama, E., and K. French. 2015. A five-factor asset pricing model. *Journal of Financial Economics* 116 (1): 1–22. https://doi.org/10.1016/j.jfineco.2014.10.010

Fama, E., and J. MacBeth. 1973. Risk, return, and equilibrium: Empirical tests. *Journal of Political Economy* 81 (3): 607–636. https://doi.org/10.1086/260061

Gallemore, J., and E. Labro. 2015. The importance of the internal information environment for tax avoidance. *Journal of Accounting and Economics* 60 (1): 149–167. https://doi.org/10.1016/j.jacceco.2014.09.005

Gallemore, J., E. Maydew, and J. Thornock. 2014. The reputational costs of tax avoidance. *Contemporary Accounting Research* 31 (4): 1103–1133. https://doi.org/10.1111/1911-3846.12055

Goh, B., J. Lee, C. Lim, and T. Shevlin. 2016. The effect of corporate tax avoidance on the cost of equity. *The Accounting Review* 91 (6): 1647–1670. https://doi.org/10.2308/accr-51432

Goldberg, F. T. 2010. *The Role of Executives, Counsel and Boards of Directors in Tax Risk Oversight* (May 18). Skadden, Arps, Slate, Meagher & Flom LLP. Available at: https://www.skadden.com/insights/publications/2010/05/the-role-of-executives-counsel-and-boards-of-di2__

Guenther, D., S. Matsunaga, and B. Williams. 2017. Is tax avoidance related to firm risk? *The Accounting Review* 92 (1): 115–136. https://doi.org/10.2308/accr-51408

Gupta, S., and C. Swenson. 2003. Rent seeking by agents of the firm. *Journal of Law and Economics* 46 (1): 253–268. https://doi.org/10.1086/345579

Hanlon, M., and S. Heitzman. 2010. A review of tax research. *Journal of Accounting and Economics* 50 (2/3): 127–178. https://doi.org/10.1016/j.jacceco.2010.09.002

Hanlon, M., and J. Slemrod. 2009. What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics* 93 (1/2): 126–141. https://doi.org/10.1016/j.jpubeco.2008.09.004

Harvey, C., Y. Liu, and H. Zhu. 2016. . . .And the cross-section of expected returns. *Review of Financial Studies* 29 (1): 5–68. https://doi.org/10.1093/rfs/hhv059

Hasan, I., C. K. Hoi, Q. Wu, and H. Zhang. 2014. Beauty is in the eye of the beholder: The effect of corporate tax avoidance on the cost of bank loans. *Journal of Financial Economics* 113 (1): 109–130. https://doi.org/10.1016/j.jfineco.2014.03.004

Hassan, T., S. Hollander, L. van Lent, and A. Tahoun. 2017. *Firm-Level Political Risk: Measurement and Effects*. Working paper, The University of Chicago.

Henry, E., and R. Sansing. 2018. Corporate tax avoidance: Data truncation and loss firms. *Review of Accounting Studies* 23 (3): 1042–1070. https://doi.org/10.1007/s11142-018-9448-0

Hou, K., C. Xue, and L. Zhang. 2015. Digesting anomalies: An investment approach. *Review of Financial Studies* 28 (3): 650–705. https://doi.org/10.1093/rfs/hhu068

Hutchens, M., and S. Rego. 2015. *Tax Risk and the Cost of Equity Capital*. Working paper, Indiana University.

Internal Revenue Service (IRS). 2009. *Prepared Remarks of IRS Commissioner Doug Shulman before the 2009 NACD Corporate Governance Conference in Washington, DC*. News Release IR-2009-95. Available at: https://www.irs.gov/newsroom/irs-commissioner-doug-shulman-addressed-the-national-association-of-corporate-directors-governance-conference

Kelly, B., L. Pastor, and P. Veronesi. 2016. The price of political uncertainty: Theory and evidence from the option market. *Journal of Finance* 71 (5): 2417–2480. https://doi.org/10.1111/jofi.12406

Kubick, T., D. Lynch, M. Mayberry, and T. Omer. 2015. Product market power and tax avoidance: Market leaders, mimicking strategies, and stock returns. *The Accounting Review* 90 (2): 675–702. https://doi.org/10.2308/accr-50883

Lambert, R., C. Leuz, and R. Verrecchia. 2007. Accounting information, disclosure and the cost of capital. *Journal of Accounting Research* 45 (2): 385–420. https://doi.org/10.1111/j.1475-679X.2007.00238.x

Larsen, R. 2011. Communicating with the board of directors on taxes. *Tax Executive* (July/August): 241–245.

Lev, B., and D. Nissim. 2004. Taxable income, future earnings, and equity values. *The Accounting Review* 79 (4): 1039–1074. https://doi.org/10.2308/accr.2004.79.4.1039

Levin, J., K. Petrini, L. Smith, and T. White. 2006. The view from above—Reactions of audit committees to tax risks. *Taxes, the Tax Magazine* 84: 95–105.

Li, Q., E. Maydew, R. Willis, and L. Xu. 2018. *Corporate Tax Behavior and Political Uncertainty: Evidence from National Elections Around the World*. Working paper, Vanderbilt University.

Liu, L., H. Shu, and K. Wei. 2017. The impacts of political uncertainty on asset prices: Evidence from the Bo scandal in China. *Journal of Financial Economics* 125 (2): 286–310. https://doi.org/10.1016/j.jfineco.2017.05.011

McGuire, S., T. Omer, and D. Wang. 2012. Tax avoidance: Does tax-specific industry expertise make a difference? *The Accounting Review* 87 (3): 975–1003. https://doi.org/10.2308/accr-10215

Mills, L., S. Nutter, and C. Schwab. 2013. The effect of political sensitivity and bargaining power on taxes: Evidence from federal contractors. *The Accounting Review* 88 (3): 977–1005. https://doi.org/10.2308/accr-50368

Neubig, T., and B. Sangha. 2004. Tax risk and strong corporate governance. *Tax Executive* 56: 114–119.

Newey, K., and K. D. West. 1987. Hypothesis testing with efficient method of moments estimation. *International Economic Review* 28 (3): 777–787. https://doi.org/10.2307/2526578

Ogneva, M. 2012. Accrual quality, realized returns, and expected returns: The importance of controlling for cash flow shocks. *The Accounting Review* 87 (4): 1415–1444. https://doi.org/10.2308/accr-10276

Pastor, L., and P. Veronesi. 2013. Political uncertainty and risk premia. *Journal of Financial Economics* 110 (3): 520–545. https://doi.org/10.1016/j.jfineco.2013.08.007

Romer, C., and D. Romer. 2010. The macroeconomic effects of tax changes: Estimates based on a new measure of fiscal shocks. *American Economic Review* 100 (3): 763–801. https://doi.org/10.1257/aer.100.3.763

Shevlin, T., O. Urcan, and F. Vasvari. 2019. Corporate tax avoidance and debt costs. *Journal of the American Taxation Association* (forthcoming).

Shumway, T. 1997. The delisting bias in CRSP data. *Journal of Finance* 52 (1): 327–340. https://doi.org/10.1111/j.1540-6261.1997.tb03818.x

Shumway, T., and V. A. Warther. 1999. The delisting bias in CRSP's NASDAQ data and its implications for the size effect. *Journal of Finance* 54 (6): 2361–2379. https://doi.org/10.1111/0022-1082.00192

Sikes, S., and R. Verrecchia. 2016. *Aggregate Corporate Tax Avoidance and Cost of Capital*. Working paper, University of Pennsylvania.

Snyder, W., 2017. *Investors' Valuation of Tax Certainty: Evidence from Tax Policy Guidance*. Working paper, University of Illinois.

Staudt, N., L. Epstein, and P. Wiedenbeck. 2006. The ideological component of judging in the taxation context. *Washington University Law Review* 84: 1797–1821.

Thomas, J., and F. X. Zhang. 2011. Tax expense momentum. *Journal of Accounting Research* 49 (3): 791–821. https://doi.org/10.1111/j.1475-679X.2011.00409.x

U.S. Senate. 2014. *Caterpillar's Offshore Tax Strategy*. U.S. Senate Permanent Subcommittee on Investigations, Committee on Homeland Security, and Governmental Affairs (April 1). Available at: https://tinyurl.com/y6c6qzd8

Weber, D. 2009. Do analysts and investors fully appreciate the implications of book-tax differences for future earnings? *Contemporary Accounting Research* 26 (4): 1175–1206. https://doi.org/10.1506/car.26.4.7

## APPENDIX A

### Variable Definitions[a]

| Variable | Definition |
|---|---|
| *Cash Tax Rate* | The sum of taxes paid over three years divided by the sum of pretax income before special items over three years. |
| *Effective Tax Rate* (*ETR*) | The sum of total tax expense over three years divided by the sum of pretax income before special items over three years. |
| −[*Book − Tax*] | The negative of a firm's book-to-tax difference, which is a three-year average difference between pretax income before special items and grossed-up (divided by 0.35) current tax expense, scaled by three-year average total assets. |
| *Industry Cash Tax Rate* | The median three-year cash tax rate in the firm's industry. |
| *Industry Effective Tax Rate* (*ETR*) | The median three-year effective tax rate in the firm's industry. |
| *Industry* −[*Book − Tax*] | The negative of industry-median book-tax difference. |
| *Assets* | Total book assets, in year 1984 $billions. |
| *MVE* | Market value of equity at the end of the fiscal year, in year 1984 $billions. |
| *BM* | The book value of equity (shareholders' equity less book value of preferred stock plus deferred taxes) divided by the market value of equity at the end of the fiscal year. |
| *OP* | Operating profit, defined as revenues minus cost of goods sold, minus selling, general, and administrative expenses, minus interest expense, all divided by lagged book value of equity. |
| *INV* | Total investment, defined as the change in total assets over the previous fiscal year, scaled by lagged total assets. |
| *Debt/MV Assets* | Market leverage, calculated as total debt divided by the market value of assets (total assets less book value of equity plus market value of equity). |
| *PPE/Assets* | Net property, plant, and equipment scaled by lagged total assets. |
| *Intangibles/Assets* | The total intangibles on the balance sheet scaled by lagged total assets. |
| *R&D/Assets* | Research and development expense scaled by lagged total assets. |
| *Advertising/Assets* | Advertising expense scaled by lagged total assets. |
| *Foreign Income* (0,1) | An indicator variable equal to 1 when the firm reports foreign pretax earnings. |
| *UTB Reserve/Assets* | The reserve for uncertain tax benefits scaled by (lagged) total assets. |
| $\sigma$(*Ret*) | The standard deviation of stock returns estimated over the 60-month period ending in December of the calendar year in which the fiscal year ends. |
| *Lag*(*Ret*) | Twelve-month return for a period ending one month before the fiscal year-end. |
| *Tax Lobby* | Tax lobby intensity, measured as the number of firms in the industry involved in tax lobbying from Brown, Drake, and Wellman (2015) scaled by the total number of firms in the industry. |
| *Tax Planning Detectability* | $R^2$ from industry-specific regressions of firm cash tax rates on a set of economic determinants of tax planning, including firm size (market value of equity), growth (measured by book-to-market and growth in total assets), operating profitability, past returns, leverage, fixed asset and intangible intensity, research and development activity, advertising activity, the presence of foreign operations, and the presence of NOL carryforward. |
| *Miss* | An indicator variable equal to 1 if a firm-specific tax measure is missing. |

[a] Industry classification follows the Fama and French (1997) definition of 48 industries.