TAX POLICY UNCERTAINTY AND THE PERCEIVED RISKINESS OF TAX SAVINGS

Jennifer Brown
Assistant Professor
W.P. Carey School of Business, Arizona State University
P.O. Box 873606, Tempe, AZ 85287-3606
jenny.brown@asu.edu

K.C. Lin
Assistant Professor
College of Business, Oregon State University
200 Bexell Hall, Corvallis, OR 97331-2603
kc.lin@bus.oregonstate.edu

Jared A. Moore*
Associate Professor
College of Business, Oregon State University
200 Bexell Hall, Corvallis, OR 97331-2603
jared.moore@bus.oregonstate.edu

Laura Wellman
Doctoral Candidate
W.P. Carey School of Business, Arizona State University
P.O. Box 873606, Tempe, AZ 85287-3606
laura.wellman@asu.edu

This version: October 2013

* Corresponding author

Jared Moore gratefully acknowledges financial support from the Mary Ellen Phillips professorship.

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Abstract

In this study we examine whether government tax policy uncertainty impacts the perceived riskiness of firms' tax savings. To test our prediction, we examine how tax savings and high tax policy uncertainty interact in a model of firm risk. We predict, and find, that periods of greater tax policy uncertainty increase investors' perceptions of the riskiness of future cash flows stemming from tax avoidance. In cross-sectional tests, we examine situations where we expect that investors will be particularly sensitive to tax policy uncertainty when assessing firms' tax cash savings: high cash ETR volatility, high book-tax-difference (BTD) volatility, and significant foreign operations. We find that our results are stronger, and in some instances isolated to, firms that have greater uncertainty related to tax planning activities. Finally, we decompose our measure of firm risk – stock return volatility – into its idiosyncratic and systematic components, and find that the effect of tax policy uncertainty is generally isolated to idiosyncratic volatility. This finding implies that investors may be able to reduce or minimize the firm-specific effects of tax policy uncertainty through diversification.

Keywords: tax risk, tax avoidance, policy uncertainty, firm risk

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I. INTRODUCTION

Taxpayers and investors face a landscape of increasing policy uncertainty. Partisanship and last minute deals have become the norm. Debate over extending the 2001/2003 Bush tax cuts was not resolved until December 21, 2010. Congress carried debate on the extension of the 2010 payroll cuts up through December of 2011, passed a two-month extension and had to take up debate again in February of 2012. Many of these same temporary tax provisions were set to expire yet again at the end of 2012 when Congress finally came up with a compromise on the fiscal cliff at the eleventh hour. Managers are currently faced with uncertainty over 55 tax breaks set to expire at the end of 2013, making it difficult to forecast operating and investing activities.[1] In this study we examine whether and how tax policy uncertainty arising from the political process impacts investors' perceptions about the riskiness of firms' tax savings and tax planning activities.

Several recent studies examine the concept of tax risk. Neuman et al. (2013) focus on developing a firm-specific measure of tax risk, while Guenther et al. (2013) and Hutchens and Rego (2013) investigate whether measures of "tax risk" are related to measures of firm risk in a predictable manner. In contrast, we examine under what circumstances investors perceive that a firm's tax planning activities and/or tax savings are at risk. In particular, we investigate whether uncertainty surrounding macro-level tax policy impacts the perceived riskiness of firms' tax savings.

[1] See Murphy and Chasan (2013)'s recent *Wall Street Journal* article, "Clock Is Ticking on Some Major Tax Breaks."

We argue that investors are ultimately concerned about the cash flow effect of the firm's tax position, and are not as concerned about "tax risk" per se. Because investors are interested in the future cash flow implications of the firm's tax positions, they will revise their expectations about overall firm fundamentals when they perceive those cash flows to be at risk. Given theory and prior research on policy uncertainty, we posit that periods of greater policy uncertainty represent one circumstance under which investors may perceive the firm's tax cash flows to be at greater risk.

Recent research suggests that policy uncertainty can manifest itself in asset prices and volatility through its impact on investors' expectations about future cash flows. For example, Pástor and Veronesi (2012) analytically model the effects of policy uncertainty on asset prices and indicate that policy uncertainty affects stock volatility through fluctuations in investors' beliefs about both (1) the impact of current policy on firm profitability and cash flows as well as (2) investors' assessments about the probability of future legislative changes. Moreover, empirical studies provide evidence that industries (Boutchkova et al. 2012) and firms (Belo et al. 2012) with greater sensitivity to policy uncertainty exhibit higher volatility in returns and firm performance in periods of high policy uncertainty. Following this theory and evidence, we expect tax policy uncertainty to impact investors' perceptions of the riskiness of tax savings, increasing fundamental uncertainty about future tax cash flows.

To test our prediction, we examine how tax savings and high tax policy uncertainty interact in a model of firm risk. Following prior literature, we rely on stock return volatility as a measure of fundamental uncertainty - uncertainty about future cash flows (e.g. French et al. 1987). To identify firms successful at achieving cash tax savings, we construct $ETR_{LOW,}$ an indicator variable equal one when a firm is in the lowest quintile of cash effective tax rate. We

employ two different measures of high tax policy uncertainty. First we classify periods as uncertain when the Senate (House) majority holds less than a 5% seat margin ($TPU_{POLITICS}$). Second, we employ a measure of tax policy uncertainty (TPU_{POLICY}) constructed as part of an overall measure of economic policy uncertainty by Baker et al. (2013). We posit that tax policy uncertainty will increase investors' perceptions about the riskiness of firms' tax savings.

We find that ETR_{LOW} is negatively associated with stock return volatility, suggesting that on average investors do not view tax avoidance as a source of cash flow uncertainty. This finding is somewhat inconsistent with prior work which has suggested that firms that maintain low cash ETRs over time are engaged in risky tax avoidance (e.g. Dyreng et al. 2008; Hanlon et al. 2013). When we interact ETR_{LOW} with *TPU*, this negative association diminishes. These findings hold after including other previously shown determinants of stock return volatility, as well as firm and year fixed effects. Taken together, these results are consistent with our prediction and imply that tax policy uncertainty revises upward investors' perceptions of the riskiness of tax savings.

Because tax policy outcome are likely to differentially affect firms, we also investigate how cross-sectional variation in firms' pre-existing uncertainty characteristics is related to investors' perceptions of cash flow uncertainty. We expect that investors will be particularly sensitive to time-varying tax policy uncertainty when assessing firms that are already characterized by a certain amount of fundamental uncertainty related to tax planning activities. To test this prediction, we proxy for firms' uncertainty related to tax planning activities using three indicator variables: high cash ETR volatility, high book-tax-difference (BTD) volatility, and significant foreign operations. Consistent with our prediction, we find that our results are stronger, and in some instances isolated to, firms that have greater uncertainty related to tax planning activities.

Overall, these results are consistent with our predictions and suggest that time-varying tax policy uncertainty significantly alters investors' perceptions about the cash flow uncertainty associated with significant tax savings. A natural question then becomes, are investors able to diversify against economic shocks to tax savings? Thus, we replace our dependent variable with measures of idiosyncratic and systematic stock return volatility and estimate our model separately for each. We find that although that our results for ETR_{LOW} are consistent across both measures of volatility, the interaction with *TPU* is consistently significant only for the idiosyncratic risk measure of volatility. This finding implies that investors may be able to reduce or minimize the firm-specific effects of tax policy uncertainty through diversification.

Our study contributes to a recent stream of tax research focused on tax risk. Recent studies develop measures of tax risk (Neuman et al. 2013) and link measures of tax risk directly to firm risk (Guenther et al. 2013) and cost of capital (Hutchens and Rego 2013). Although the research agendas in each of these studies differ, they share a common theme; each acknowledges that the level of tax avoidance as an overall measure of risky tax strategies is incomplete. Our study is consistent with this view in that we posit that investors care about not only the level of the firm's tax cash flows, but also about the riskiness of the firm's tax cash flows. We contribute something new to the discussion of tax risk by examining how differences in macro-level tax policy uncertainty impact investors' perceptions about when firm-level tax cash flows are more at risk.

We also contribute to a stream of research examining the micro-level consequences of policy uncertainty. Julio and Yook (2012) investigate uncertainty surrounding national elections and provide evidence that policy uncertainty has a real effect on firm-level outcomes, leading firms to reduce investment expenditures. Hoopes (2012) examines how uncertainty generated by

temporary tax provisions impacts the ability of analysts to forecast earnings, focusing on policy uncertainty in a financial reporting setting. He finds that investors generally do not consider the liklihood of extensions of temporary previsions, suggesting that tax policy uncertainty creates unintended consequences for market participants. Like these studies, our findings indicate that policy uncertainty has real implications for individual firms and investors.

Section II provides a review of the prior literature and the development of our hypotheses. Section III discusses our research method and data used to test the association between fundamental uncertainty and the interaction of tax savings and tax policy uncertainty. Section IV presents the results of our analyses, and Section V presents our concluding remarks.

II. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

There are two streams of relevant literature related to our research question. The first stream examines corporate tax avoidance and tax risk. The second series of papers investigates policy uncertainty.

Corporate Tax Avoidance and Tax Risk

Most studies of corporate tax behavior focus on some measure of tax avoidance as the outcome variable of interest, and although many studies are focused on the determinants of tax avoidance (e.g., cites here), more recent studies have begun to investigate the potential consequences of tax avoidance behavior. For example, Hanlon and Slemrod (2009) examine how investors react to news that a firm has been involved in a tax shelter. Overall, they find a negative, but relatively small, price reaction on the first press mention of shelter involvement. Hanlon and Slemrod (2009) find the reaction appears to be stronger for retail firms, suggesting a possible reputation effect. However, Gallemore et al. (2013) find little evidence that firms or

their executives bear significant reputational costs as a result of being involved in aggressive tax shelter activity.

Using different measures of tax avoidance, Desai and Dharmapala (2009) and Wilson (2009) both find evidence suggesting the value shareholders associate with tax avoidance varies with cross-sectional differences in corporate governance. Kim et al. (2011) find that tax avoidance is positively related to stock price crash risk. The results in these studies are consistent with ideas put forth in Desai and Dharmapala (2006) and Desai et al. (2007) suggesting that tax avoidance creates an opaque environment related to managerial rent diversion and thus may not be valued by shareholders when agency problems are significant.

Recently, researchers have begun to examine tax risk. However, there is little consensus on exactly what constitutes "risky tax behavior" or how best to measure tax risk. Neuman et al. (2013) develop an *ex-ante* measure of tax risk and find that their measure is negatively related to future tax outcomes, measured by firms' cash ETRs. Hanlon et al. (2013) use low five-year cash ETR and the total tax reserves disclosed under FIN 48 (UTBs) as proxies for tax risk and find that risky tax avoidance is associated with larger cash holdings which they interpret as evidence that firms engage in precautionary cash build-ups for potential future tax assessments.

In two studies more closely related to our research question, Guenther et al. (2013) and Hutchens and Rego (2013) investigate whether tax risk is related to overall firm risk. Hutchens and Rego (2013) posit that greater tax risk increases uncertainty regarding a firm's future after-tax cash flows and thus should impact a firm's implied cost of capital. They utilize several proxies for tax risk; however, they are only able to document a significant relation between the total amount of tax reserves disclosed under FIN 48 and a firm's implied cost of capital. Guenther et al. (2013) proxy for tax risk using the volatility of a firm's cash ETR, arguing that

this measure represents a large dispersion in outcomes with respect employed tax planning strategies. They find that the volatility of cash ETR is related to overall firm risk as measured by stock return volatility.

Below we develop a new hypothesis about how tax avoidance and tax risk are associated with fundamental uncertainty (i.e. stock return volatility). Our study builds on prior literature about tax avoidance and tax risk by examining how investors' perceptions of tax savings change with macro-level tax policy uncertainty.

Policy Uncertainty

Pástor and Veronesi (2012) offer a framework for understanding the potential impact of government policy uncertainty that is useful for considering the effect of tax policy uncertainty on investors' perceptions of fundamental uncertainty. In particular, Pástor and Veronesi (2012) suggest that policy uncertainty has two components: political uncertainty, which relates to whether current government policy will change and, impact uncertainty, which relates to uncertainty about the effect or impact new government policies are likely to have on firm profitability. Under this framework, tax policy uncertainty can influence the market when investors do not know which measures lawmakers will adopt, and tax policy uncertainty can also influence the market when investors are uncertain about how adopted policies will impact corporate cash flows.

Prior research in accounting examines whether investors take into account corporate tax policy changes when forming expectations about future cash flows (Givoly and Hayn 1992; Plumlee 2003; Hoopes 2012). Givoly and Hayn (1992) find evidence of predictable cross-correlation in returns during periods around the passage of TRA86 that were characterized by a

higher or lower probability of its passage. They interpret their results as indicating that investors revised their expectations about firms' future cash flows according to the perceived probability that the tax law would change. Notably, their research design recognizes that different firms may be impacted by policy uncertainty to different degrees. Plumlee (2003) also studies TRA86 and finds that the market impounds the effect of simple tax law changes but cannot understand more complex changes. Hoopes (2012) finds that the magnitude and quantity of analyst forecast revisions increases following R&D credit extensions, suggesting that tax law changes are informative about future cash flows.

Intuitively, increased uncertainty about government policy would tend to increase volatility of various aspects of firm performance. Consistent with this, recent studies provide evidence that policy uncertainty caused by political elections and regular political processes can impact asset prices and volatility (Boutchkova et al. 2012; Belo et al. 2012; Białkowski et al. 2008; Baker et al. 2013). For example, Belo et al. (2012) document the effect of partisan cycles on volatility of firm performance. Specifically, they demonstrate that industries with greater exposure to government spending experience higher cash flows and lower volatility during Democratic presidencies. Similarly, Boutchkova et al. (2012) find that politically sensitive industries exhibit higher stock return volatility around periods of high political uncertainty (i.e. national elections).

We are interested in the impact of tax policy uncertainty on investors' perceptions of the riskiness of tax savings. Similar to Belo et al. (2012), we investigate policy uncertainty in a setting where firms transact with the government. Where Belo et al. (2012) exploit industry variations in sensitivity to government spending, we examine tax policy which could have implications for a broad set of firms within and across industries. While there is evidence that

policy uncertainty affects asset prices and volatility, it is not clear that investors fully process the implications of tax policy changes in assessing the riskiness of firms' future cash flows (Boutchkova et al. 2012; Givoly and Hayn 1992; Chen and Schoderbek 2000; Plumlee 2003). Following Pástor and Veronesi (2012), we expect tax policy uncertainty to influence investors' perceptions of the riskiness of future cash flows through two channels: investors' beliefs about the impact of current policies as well as investors' assessments of the probability of future policy change. Accordingly, we predict:

Hypothesis: The presence of high tax policy uncertainty will increase investors' perceptions of the riskiness of future cash flows stemming from tax avoidance.

III. RESEARCH METHODS

We test our main hypothesis by examining how measures of successful tax planning and high tax policy uncertainty interact as determinants of firm risk. We estimate an OLS regression model containing this interaction along with a set of financial variables designed to control for other factors that might impact firm risk, including firm and year fixed effects, specified as follows (subscripts suppressed for brevity):

$$STKVOL = \alpha + \beta_1 ETR_{LOW} + \beta_2 TPU + \beta_3 ETR_{LOW} * TPU + \beta_4 BTM + \beta_5 INSTOWN + \beta_6 LEV + \beta_7 PTBI + \beta_8 PTBIVOL + \beta_9 SHRS + \beta_{10} SIZE + \beta_{11} STKRET + \varepsilon_{it} \quad (1)$$

where: [2]

STKVOL = the standard deviation of a firm's weekly raw stock returns over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t+1*,

ETR_{LOW} = an indicator variable coded 1 if the long-term cash effective tax rate is in the lowest quintile of the sample distribution, 0 otherwise, where long-term cash effective tax rate is defined as the 5 year sum (from fiscal year *t-4* to year *t*) of

[2] A complete list of variable definitions also appears in the Appendix.

cash taxes paid divided by the 5-year sum of pre-tax income (Compustat annual item: *TXPD* / (*PI – SPI*)),

TPU = an indicator variable representing times of high tax policy uncertainty as measured in two ways: $TPU_{POLITICS}$ is coded 1 if the observation occurs during Senate and House majority split (i.e., Senate (House) majority party holds less than a 5% seat margin), and zero otherwise; and TPU_{POLICY} is coded 1 if the observation is in the highest quintile of the mean of the tax component of Baker et al. (2013) Economic Policy Uncertainty Index over the one-year period from the second quarter of fiscal year *t* to the first quarter of *t+1*, and zero otherwise,

BTM = book-to-market ratio, defined as the book value of equity over market value of common equity (Compustat annual item: *CEQ / (PRCC_F * CSHO)*,

INSTOWN = average percentage of firm's common stock owned by institutions over the fiscal year *t* (set to zero if missing),

LEV = long-term debt scaled by lagged total assets (Compustat annual item: *DLTT* / *AT*),

PTBI = pretax book income divided by lagged total assets (Compustat annual item: *PI* / *AT*),

PTBIVOL = the standard deviation of *PTBI* over the period from fiscal year *t-4* to year *t*,

SHRS = the natural log of outstanding shares (Compustat annual item: *CSHO*) at the end of fiscal year *t*,

SIZE = the natural log of lagged total assets (Compustat annual item: *AT*), and

STKRET = the cumulative weekly stock return over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t+1*.

STKVOL is the dependent variable, representing our measure of uncertainty surrounding future cash flows (e.g., Guenther et al. 2013; French et al. 1987). Our main independent variables of interest are ETR_{LOW} and *TPU*. ETR_{LOW} is meant to capture firms that succeed in achieving significant tax savings over time relative to other firms. *TPU* is intended to capture uncertainty surrounding tax policy, which we measure in two ways. First, $TPU_{POLITICS}$ captures the potential role of partisan politics in policy formation, which may give rise to political uncertainty. Specifically, if neither political party has clear control of the House of Representatives and/or the Senate, there is likely more uncertainty over policy outcomes. Second, TPU_{POLICY}, a tax-policy-specific measure, is constructed from a count of news articles that specifically mention tax

policy-related uncertainty. Interestingly, TPU_{POLICY} may capture political uncertainty before proposed legislation becomes law and impact uncertainty once legislation is passed.[3]

Our main prediction is that the presence of high tax policy uncertainty will increase investors' perceptions of the riskiness of future cash flows stemming from tax savings. The direct relation between tax avoidance and fundamental uncertainty is difficult to predict, in part because it likely depends at some level on the riskiness of the underlying tax avoidance activities (Guenther et al. 2013). Similarly, it not clear *ex ante* that tax policy uncertainty should significantly impact fundamental risk for firms whose tax savings are not a major component of overall cash flows. Accordingly, while we make no predictions about the individual coefficients on ETR_{LOW} or *TPU*, a positive coefficient on ETR_{LOW}*TPU* would be consistent with our hypothesis.

We include control variables based on results from prior studies that examine determinants of stock return volatility (e.g. Guenther et al. 2013). We employ book-to-market ratio (*BTM*) as a control for firms' growth opportunities and expect it to be positively associated with stock return volatility. *INSTOWN* represents institutional ownership and controls for the impact of different investor types on return volatility (Bushee and Noe 2000). We make no prediction about the sign of *INSTOWN*. We include financial leverage (*LEV*) as a control for stock return volatility arising from default risk and capital constraints following Guenther et al. (2013) and Rajgopal and Venkatachalam (2011), and we expect its coefficient to be positive. Earnings (*PTBI*) and earnings volatility (*PTBIVOL*) control for the effects of operating performance and volatility therein, respectively, on stock return variance. Consistent with Guenther et al. (2013), we expect positive coefficients on both variables. *SHRS* and *SIZE*

[3] We thank Baker, Bloom and Davis for generously providing us with monthly data for the tax-related news component of their Economic Policy Uncertainty Index measure (see http://www.policyuncertainty.com/)

represent the number of shares outstanding and overall firm size, respectively. Prior research (e.g., Comprix et al. 2011; Cohen et al. 1976) documents that the number of shares outstanding is significantly associated with variation in returns, although results are mixed. Thus, we make no prediction about the coefficient on *SHRS*. Other studies (e.g., Pástor and Pietro 2003) find that larger firms experience less volatility in stock returns, thus we predict *SIZE* to be negative in the model. Finally, we employ *STKRET* based on prior evidence that annual cumulative stock returns are negatively related with variation in stock returns (e.g.,Guenther et al. 2013; Duffee 1995).

Data and Descriptive Statistics

The empirical tests described above require data on weekly stock market activity, institutional ownership, and financial statement information. The sample selection process, summarized in Table 1, begins with all common observation in the Compustat North America file and the Center for Research in Security Prices (CRSP) databases over the period 2001 to 2012. (61,358 observations for 8,260 firms). We eliminate firm-year observations with non-positive cumulative pretax income over the five-year period from year *t-4* to year *t* (36,985 observations for 4,559 firms). We then eliminate observations with less than 26 weeks of stock return data over the one-year period from the second quarter of year *t* to the first quarter of year *t+1* (1,418 observations for 97 firms). Finally, we eliminate observations lacking sufficient data for the computation of the variables used in our regressions (6,452 observations for 1,477 firms).[4] The final sample consists of 16,503 firm-year observations for 2,127 firms. We

[4] Our *ETR* and *PTIVOL* measures require complete data for the five consecutive years ending in year *t*. Therefore, while our sample period begins in 2001, data for these measures begins in 1997. Firm-year observations are required to have complete data back to 1997 only for the information (including lagged total assets) required to compute the these measures. Firm-year observations are required to have sufficient data (including lagged total assets) to compute all other variables beginning in 2001.

winsorize each of the continuous variables at the 1st and 99th percentiles to minimize the effects of outliers.

-- INSERT TABLE 1 ABOUT HERE --

Table 2 presents summary statistics for the variables in equation (1), plus remaining variables that are incorporated into our additional analyses (discussed later). Focusing first on our main variables of interest, the mean (median) stock return volatility (*STKVOL*) is 4.8 (4.3) and ranges from 3.2 to 5.8 between the 25th and 75th percentiles. The mean (median) firm in our sample has a cumulative cash effective tax rate (*ETR*) of 25.8 (27.3) percent, and the range for *ETR* is from 18.5 to 34.14 percent between the 25th and 75th percentiles. With respect to the tax policy uncertainty variables, neither political party dominates the houses of Congress ($TPU_{POLITICS}$) in about 17 percent of sample observations, while about 11 percent of sample observations score highly on the tax policy uncertainty index (TPU_{POLICY}). Notable statistics among the control variables include a mean (median) value of 0.47 (0.54) for *INSTOWN*, suggesting that roughly half of the outstanding shares of our sample firms are owned by institutions. In addition, the positive mean (median) values of 0.10 (0.08) and 0.003 (0.003) for *PTBI* and *STKRET*, respectively, indicate that (on average) our sample firms are profitable and experience positive annual stock returns.

-- INSERT TABLE 2 ABOUT HERE --

Table 3 presents Pearson (upper diagonal) and Spearman (lower diagonal) correlation coefficients for the variables in equation (1), plus the additional variables for our supplemental analyses mentioned above. Panel A contains the dependent variable and the main independent variables of interest, and Panel B focuses on the control variables. The primary concern is the

potential for harmful collinearity among any of the regressors. In Panel A, the only correlation coefficients above 0.40 are between different versions of the dependent variable, suggesting that multicolinearity is not an issue among the main variables of interest. The different versions of the dependent variable are the main version from equation (1) and two other versions used in supplemental analyses (discussed later). In Panel B, two pairs of control variables show high correlations. Most notably, the correlation coefficient between *SHRS* and *SIZE* is 0.82 on both diagonals, indicating potentially harmful collinearity between the two variables. To ensure that our main results are not driven by this high correlation, we re-estimate our main model omitting *SIZE* in an untabulated sensitivity test, and our inferences are unaffected. *PTBI* and *BTM* are also highly correlated with each other, but the coefficients on both diagonals are below 0.60 and are therefore not high enough to raise concerns. Overall, apart from the high correlation between *SIZE* and *SHRS*, multicollinearity does not appear to be an issue in our data.

-- INSERT TABLE 3 ABOUT HERE --

IV. EMPIRICIAL RESULTS

Regression Results

Main regression results are presented in Table 4, and the significance levels reported are based on Huber-White robust standard errors. Table 4 reports results in four columns, each representing a different version of the main regression model. Specifically, columns (1) and (2) report results of the main regression model without and with control variables, respectively, where $TPU_{POLITICS}$ is used as the tax policy uncertainty variable. Columns (3) and (4) report results of the main regression model without and with control variables, respectively, where

TPU_{POLICY} is used as the tax policy uncertainty variable. Focusing on the models that include control variables (columns (2) and (4)), the overall R-squared value is about 20 percent, and the overall model F-statistic exceeds 120 (i.e., is highly significant).

In both cases, ETR_{LOW} is significantly negative ($p < 0.01$), but the results for tax policy uncertainty are mixed. $TPU_{POLITICS}$ shows a significantly negative coefficient ($p < 0.01$), while TPU_{POLICY} shows a significantly positive coefficient ($p < 0.01$). Our hypothesized variable of interest is the interaction between ETR_{LOW} and *TPU*, which is significantly positive ($p < 0.01$) in both columns, consistent with our prediction. Overall, these results suggest that on average, a firm's ability to achieve significant tax savings over time is associated with less stock return volatility (i.e., less perceived uncertainty surrounding future cash flows). However, although this association remains in the presence of tax policy uncertainty, it is significantly weaker, suggesting that tax policy uncertainty increases investors' assessments of the riskiness of future cash flows arising from tax savings.

-- INSERT TABLE 4 ABOUT HERE --

The results for the control variables are consistent with our expectations overall. The coefficients on *BTM*, *LEV*, *PTBI*, and *PTBIVOL* are all significantly positive ($p < 0.01$) in both models (i.e., columns (2) and (4)) as predicted. Also as expected, *SIZE* and *STKRET* are negatively related with stock return volatility ($p < 0.01$) in both models. *INSTOWN* and *SHRS* are both consistently positive and highly significant ($p < 0.01$). Consistent with prior research, these results indicate (in part) that growth prospects, default risk, and volatility in operating performance are viewed by investors as increasing overall firm risk, whereas larger firms are viewed as being less risky.

Additional Analyses

Pre-existing Fundamental Uncertainty

Our main results provide evidence that investors are sensitive to tax policy uncertainty in their assessments of the riskiness of firms' future cash flows that are related to tax planning. We expect that investors will be particularly sensitive to time-varying uncertainty about tax policy in the context of firms *already* characterized by a certain level of fundamental uncertainty. Thus, we investigate whether *TPU* impacts the association between tax savings and investor-perceived firm risk (i.e., stock return volatility) more strongly for firms that have some pre-existing fundamental uncertainty factor relative to those that do not.

We examine (separately) three fundamental uncertainty factors for this analysis: high volatility of cash ETR, high volatility of BTDs, and the presence of significant foreign operations. Guenther et al. (2013) find that volatility in cash ETRs is positively associated with firm risk. Similarly, McGuire et al. (2013) find that investors reduce their expectations of the persistence of pretax earnings, accruals, and cash flows for firms with more volatile tax planning outcomes over time. We measure high cash ETR volatility as an indicator variable ($ETRVAR_{HIGH}$) coded one if the standard deviation of one-year cash effective tax rates (i.e., cash taxes paid divided by pretax income) over the five-year period from year *t-4* to year *t* is in the highest quintile of sample distribution, and zero otherwise.

Comprix et al. (2011) document that levels of and volatility in total, permanent, and temporary BTDs contribute to divergence of opinion (i.e., uncertainty) in the market surrounding firms' fundamentals. They also find that the effect is strongest for the permanent component of BTDs. Accordingly, we measure high volatility in BTDs as an indicator variable ($BTDVAR_{HIGH}$)

coded one if the standard deviation of permanent book-tax differences over the period from year *t-4* to year *t* is in the highest quintile of the sample distribution, and zero otherwise. Permanent BTDs are defined as the difference between total book-tax differences (Compustat annual item: *BI* - (*TXFED* + *TXFO*) / 35%) and temporary book-tax difference (Compustat annual item: *TXDI* / 35%)), scaled by lagged total assets.

Much of the recent debate on tax reform focuses on moving from a worldwide system to a territorial system, which would largely impact multi-nationals (Baucus and Camp 2013; Ernst & Young 2011). Further, extant literature links the presence of foreign operations with firm complexity and uncertainty. For example, prior studies document that multinational corporations experience more difficulties with inventory management (Alessandria et al. 2010) and are more exposed to political risk, which manifests in increased variability of fundamentals (Desai et al. 2008). We measure significant foreign operations as an indicator variable ($FOREIGN_{DUMMY}$) coded one if foreign sales revenue accounts for at least 10% of total sales revenue over the period from year *t-4* to year *t*.

Each of these indicator variables represents a proxy for firm-level uncertainty, which we expect will exacerbate the impact of tax policy uncertainty on the relation between tax avoidance and perceived firm risk. We test for this effect by adding (separately) each of the three indicator variables to equation (1), along with the applicable interaction terms involving them, ETR_{LOW}, and *TPU*.

The results for these analyses are presented in Tables 5, 6, and 7. The R-square values and overall model significance levels in each case are consistent with the regressions presented in Table 4. Similarly, results for the control variables (untabulated) are consistent with those

reported in Table 4. Results are also generally consistent with those reported in Table 4 with respect to the impact of *TPU* on the association between successful tax avoidance and stock return volatility. Specifically, the coefficient on ETR_{LOW}*TPU remains positive and at least marginally significant in all but one case. The exception is the positive but insignificant coefficient on ETR_{LOW}*TPU_{POLICY} in column (2) of Table 7, where $BTDVAR_{HIGH}$ is the fundamental risk factor examined.

Whereas ETR_{LOW}*TPU applies to the entire sample in the Table 4 regressions, it applies only to firms that are not already characterized by some fundamental uncertainty in Tables 5 through 7. The three-way interaction terms in Tables 5, 6, and 7 incorporating $ETRVAR_{HIGH}$, $FOREIGN_{DUMMY}$, and $BTDVAR_{HIGH}$, respectively, capture the extent to which tax policy uncertainty impacts the association between ETR_{LOW} and return volatility *differently* for firms with one of our three fundamental uncertainty factors. In every case, the three-way interaction term is positive and at least marginally significant, indicating that while tax policy uncertainty increases investors' perceptions of the riskiness of firms' future tax cash flows overall, this effect is *stronger* where the firm already has some fundamental uncertainty related to tax planning activities surrounding it. Interestingly, the presence of a firm-level uncertainty factor alone (i.e., in the absence of tax policy uncertainty) does not increase investors' perceptions of the riskiness of firms' tax savings. The coefficients on $ETRVAR_{HIGH}$*ETR_{LOW}, $FOREIGN_{DUMMY}$*ETR_{LOW}, and $BTDVAR_{HIGH}$*ETR_{LOW} in Tables 5, 6, and 7 are negative across all models and are at least marginally significantly so in all but one (column (1) of Table 7).

-- INSERT TABLES 5, 6, AND 7 ABOUT HERE --

Systematic vs. Idiosyncratic Risk

A natural follow-up question stemming from our main results is whether firms and/or investors can diversify against tax policy uncertainty. Important to addressing this question is understanding the extent to which tax policy uncertainty is a source of idiosyncratic risk versus systematic risk. Pástor and Veronesi (2012) argue that political uncertainty may have a negative effect on asset prices because policy risk is not fully diversifiable. Basic finance theory would suggest that non-diversifiable risk is associated with higher cost of capital, and thus depressed asset prices. Thus, we decompose *STKVOL* into its idiosyncratic and systematic components following Boutchkova et al. (2012) and re-estimate equation (1) twice more replacing *STKVOL* with systematic risk ($STKVOL_{SYSTEM}$) and idiosyncratic risk ($STKVOL_{IDIOSYN}$).

-- INSERT TABLE 8 ABOUT HERE --

Table 8 presents the results for this analysis. The overall R-square values for the $STKVOL_{IDIOSYN}$ models are comparable to those reported in Table 4 (0.23 and 0.22), whereas the values for the $STKVOL_{SYSTEM}$ models are roughly half as large (0.11 and 0.09). All four models reported in Table 8 are highly significant overall, with F-statistics exceeding 100 in every case. Results for the control variables remain consistent with those reported in Table 4 with the one exception of *SIZE* in the $STKVOL_{SYSTEM}$ models, where it is *positive* and significant ($p < 0.05$).

As in Table 4, the coefficient on ETR_{LOW} is negative and highly significant ($p < 0.01$) across all models. However, although $ETR_{LOW}*TPU$ is positive across all models, it is significantly so (at least consistently) only in the $STKVOL_{IDIOSYN}$ models ($p < 0.05$). $ETR_{LOW}*TPU_{POLICY}$ is positive and marginally significant ($p < 0.10$) where $STKVOL_{SYSTEM}$ is the dependent variable, but $ETR_{LOW}*TPU_{POLITICS}$ is not significant. These results suggest that

successful tax avoidance is negatively associated with both the systematic and idiosyncratic components of perceived firm risk. However, the impact of tax policy uncertainty on this association (documented in Table 4) is apparent only in the idiosyncratic risk models, suggesting that investors may be able to diversify against tax policy uncertainty.

V. CONCLUDING REMARKS

This study examines how tax policy uncertainty influences investors' perceptions about the riskiness of firms' tax savings and tax planning activities. Recent research suggests that policy uncertainty is associated with stock return volatility through its effect on investors' beliefs about the impact of current policy on firm cash flows and investors' assessments about the probability of future policy changes. We posit that because investors are interested in the future cash flow implications of a firm's tax positions, they will revise their expectations about overall firm fundamentals when they perceive those cash flows to be at risk. Specifically, we expect investors' perceptions about the riskiness of firms' tax savings to increase during periods of high tax policy uncertainty.

Overall, our results suggest that investors generally do not view firms' tax savings to be at risk, as maintenance of low cash effective tax rates is negatively associated with stock return volatility. However, tax policy uncertainty appears to increase investors' perceptions of the riskiness of firms' future tax cash flows, and this effect is stronger for firms already characterized by some fundamental uncertainty related to tax-planning activities such as volatile cash effective tax rates, volatile BTDs, or significant foreign operations. Further, although successful tax avoidance is negatively related with both systematic and idiosyncratic firm risk,

the impact of tax policy uncertainty on investors' perceptions of the riskiness of firms' future tax planning-related cash flows manifests only in idiosyncratic risk. This finding implies that investors may be able to diversify against tax policy uncertainty.

Our study contributes to a growing stream of research on the real consequences of policy uncertainty to both firms and investors. Moreover, our study contributes a different perspective to an emerging series of studies on tax risk. Neuman et al. (2013) develop an *ex-ante* measure of tax risk, and Guenther et al. (2013) and Hutchens and Rego (2013) investigate whether proxies for tax risk are associated with overall firm risk and cost of capital respectively. Where these studies focus on firm-level tax risk that results when managers pursue strategies with varying degrees of tax risk, we examine the implications of uncertainty surrounding macro-level tax policy. Our results indicate that investors' perceptions about the riskiness of firm-level tax avoidance vary through time with tax policy uncertainty, but our findings also suggest that investors may be able to diversify against this source of perceived risk.

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Appendix
Variable Definitions
(in alphabetical order)

Variable	Definition
BTM	Book-to-market ratio, defined as the book value of equity over market value of common equity (Compustat annual item: ***CEQ*** / (***PRCC_F*** × ***CSHO***)).
BTDVAR	Book-tax difference volatility, defined as the standard deviation of permanent book-tax difference over the fiscal year *t*-4 to year *t*. Permanent book-tax difference is calculated as the difference between total book-tax difference (Compustat annual item: ***BI*** - (***TXFED*** + ***TXFO***) × 35%) and temporary book-tax difference (Compustat annual item: ***TXDI***/35%)), scaled by lagged total assets.
$\boldsymbol{BTDVAR_{HIGH}}$	High book-tax difference volatility indicator, that equals one if the firms' ***BTDVAR*** in the highest quintile of sample distribution, to zero if otherwise.
ETR	Long term cash effective tax rate, defined as the 5 year sum (from fiscal year *t*-4 to year *t*) of cash taxes paid divided by the 5-year sum of pre-tax income (Compustat annual item: ***TXPD*** / (***PI – SPI***)).
$\boldsymbol{ETR_{LOW}}$	Low cash effective tax rate indicator, that equals one if the firms' ***ETR*** in the lowest quintile of sample distribution, to zero if otherwise.
ETRVAR	Cash effective tax rate volatility, defined as the standard deviation of one-year cash effect tax rate over the fiscal year *t*-4 to year *t*. One-year cash effect tax rate is calculated as cash taxes paid divided by pretax income (Compustat annual item: ***TXPD*** / (***PI – SPI***)).
$\boldsymbol{ETRVAR_{HIGH}}$	High cash effective tax rate volatility indicator, that equals one if the firms' ***ETRVAR*** in the highest quintile of sample distribution, to zero if otherwise.
FOREIGN	Forecast sales revenue, defined as the firm's foreign sales in year t, scaled by total sales (Compustat annual item: SALE). Foreign sale is set to zero if missing.
$\boldsymbol{FOREIGN_{DUMMY}}$	Foreign operation indicator, that equals one if the firms' foreign sales revenue accounts for at least 10% of total sales revenue from fiscal year *t*-4 to year *t*.

INSTOWN	Institutional ownership, defined as the firm's average institutional ownership measured over the fiscal year *t*. Institutional ownership is set to zero if missing.
LEV	Financial leverage, defined as long-term debt scaled by lagged total assets (Compustat annual item: ***DLTT*** / ***AT***).
PTBI	Pretax book income, defined as pretax book income divided by lagged total assets (Compustat annual item: ***PI*** / ***AT***).
PTBIVOL	Pretax book income volatility, defined as the standard deviation of the ratio of pretax book income to lagged total assets (Compustat annual item: ***PI*** / ***AT***) over the fiscal year *t*-4 to year *t*.
SHRS	Outstanding shares, defined as natural log of outstanding shares (Compustat annual item: ***CSHO***) at the end of fiscal year *t*.
SIZE	Firm size, defined as natural log of lagged total assets (Compustat annual item: ***AT***).
STKRET	Stock return, defined as the firm's weekly stock returns cumulated over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t*+1.
STKVOL	Overall risk assessment, defined as the standard deviation of firm's weekly stock return over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t*+1.
STKVOL $_{SYSTEM}$	Systematic risk assessment, defined as the standard deviation of firm's weekly predicted stock return over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t*+1. The firm's weekly predicted stock return is the predicted value in the following market model regression: $$r_{j,w} = \alpha_0 + \alpha_1 \times r_{m,w-2} + \alpha_2 \times r_{m,w-1} + \alpha_3 \times r_{m,w} + \alpha_4 \times r_{ind,w-2} + \alpha_5 \times r_{ind,w-1} + \alpha_6 \times r_{ind,w}$$ where $r_{j,w}$ is the firm j's raw stock return in week *w*, *w* = 1…52. $r_{m,w}$ and $r_{ind,w}$ is the market index weekly return and Fama French weekly industry return in week *w*.

STKVOL $_{IDIOSYN}$	Idiosyncratic risk assessment, defined as the standard deviation of firm's weekly residual stock return over the one-year period from the second quarter of fiscal year *t* to the first quarter of year *t*+1. The firm's weekly residual stock return is the residual value in the following market model regression: $$r_{j,w} = \alpha_0 + \alpha_1 \times r_{m,w-2} + \alpha_2 \times r_{m,w-1} + \alpha_3 \times r_{m,w} + \alpha_4 \times r_{ind,w-2} + \alpha_5 \times r_{ind,w-1} + \alpha_6 \times r_{ind,w}$$ where $r_{j,w}$ is the firm j's raw stock return in week *w*, *w* = 1…52. $r_{m,w}$ and $r_{ind,w}$ is the market index weekly return and Fama French weekly industry return in week *w*.
TPU $_{POLITICS}$	High political environment uncertainty indicator, that equals one if the observation occurs during Senate and House majority split, and zero otherwise. We determine Senate (House) majority split if Senate (House) majority party lead by less than 5% seat margin.
TPU $_{POLICY}$	High tax policy uncertainty indicator, that equals one if the observation is in the highest quintile of the mean of tax policy uncertainty index over the one-year period from the second quarter of fiscal year *t* to the first quarter of *t*+1, and zero otherwise.

Table 1
Sample Selection

Sample Selection Procedure	Firm-Year Observations	Distinct Firms
Initial Sample	61,358	8,260
Exclude: Firm-years with non-positive pretax income over fiscal year *t*-4 to year *t*	(36,985)	(4,559)
Exclude: Firm-years with less than 26 weekly stock return data over the one-year period from the second quarter of fiscal year *t* to the first quarter of *t*+1	(1,418)	(97)
Exclude: Firm-years with missing data to calculate control variables	(6,452)	(1,477)
Final Sample	16,503	2,127

Table 2
Descriptive

Variables	Mean	PCLT 25	PCLT 50	PCLT 75	STD. DEV
A) Main Variables:					
STKVOL	4.7842	3.2051	4.3143	5.7972	2.1979
$\boldsymbol{STKVOL_{SYSTEM}}$	2.3286	1.2543	1.9583	2.9506	1.5494
$\boldsymbol{STKVOL_{IDIOSYN}}$	4.0268	2.6547	3.6139	4.9590	1.8782
ETR	0.2577	0.1850	0.2734	0.3414	0.1238
$\boldsymbol{ETR_{LOW}}$	0.2000	0.0000	0.0000	0.0000	0.4000
ETRVAR	0.1626	0.0509	0.0894	0.1572	0.2970
$\boldsymbol{ETRVAR_{HIGH}}$	0.2000	0.0000	0.0000	0.0000	0.4000
FOREIGN	0.1141	0.0000	0.0000	0.1599	0.2022
$\boldsymbol{FOREIGN_{DUMMY}}$	0.1742	0.0000	0.0000	0.0000	0.3793
BTDVAR	0.0006	0.0000	0.0000	0.0002	0.0039
$\boldsymbol{BTDVAR_{HIGH}}$	0.2000	0.0000	0.0000	0.0000	0.4000
$\boldsymbol{TPU_{POLITICS}}$	0.1681	0.0000	0.0000	0.0000	0.3740
$\boldsymbol{TPU_{POLICY}}$	0.1137	0.0000	0.0000	0.0000	0.3174
B) Control Variables:					
BTM	0.5574	0.3249	0.4971	0.7096	0.3309
INSTOWN	0.4728	0.0873	0.5350	0.7783	0.3444
LEV	0.1783	0.0339	0.1474	0.2819	0.1620
PTBI	0.0978	0.0302	0.0778	0.1427	0.0879
PTBIVOL	0.0375	0.0112	0.0272	0.0514	0.0364
SHRS	3.8085	2.6758	3.7116	4.7898	1.5643
SIZE	7.4201	6.1106	7.3563	8.6713	1.8895
STKRET	0.0027	-0.0010	0.0027	0.0064	0.0063

Note to Table 2: Table 2 presents summary statistics for the variables used in the later regression analyses. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. $\boldsymbol{STKVOL_{SYSTEM}}$ = Systematic risk assessment. $\boldsymbol{STKVOL_{IDIOSYN}}$ = Idiosyncratic risk assessment. ***ETR*** = Long term cash effective tax rate. $\boldsymbol{ETR_{LOW}}$ = Low cash effective tax rate indicator. ***ETRVAR*** = Cash effective tax rate volatility. $\boldsymbol{ETRVAR_{HIGH}}$ = High cash effective tax rate volatility indicator. ***FOREIGN*** = Foreign sales revenue. $\boldsymbol{FOREIGN_{DUMMY}}$ = Foreign operation indicator. ***BTDVAR*** = Book-tax difference volatility. $\boldsymbol{BTDVAR_{HIGH}}$ = High book-tax difference volatility indicator. $\boldsymbol{TPU_{POLITICS}}$ = High political environment uncertainty indicator. $\boldsymbol{TPU_{POLICY}}$ = High tax policy uncertainty indicator. ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. See Appendix for detail variable definition. All continuous variables are winsorized at the 1st and 99th Percentiles.

Table 3
Correlation Analysis

Panel A. Correlation Coefficient between main variables

	$STKVOL$	$STKVOL_{SYSTEM}$	$STKVOL_{IDIOSYN}$	ETR_{LOW}	$ETRVAR_{HIGH}$	$FOREIGN_{DUMMY}$	$BTDVAR_{HIGH}$	$TPU_{POLITICS}$	TPU_{POLICY}
$STKVOL$	1.00	**0.76**	**0.94**	**-0.07**	**0.11**	**0.06**	**0.20**	0.01	**0.08**
$STKVOL_{SYSTEM}$	**0.69**	1.00	**0.50**	**-0.02**	**0.06**	**0.24**	**0.18**	**0.17**	**0.05**
$STKVOL_{IDIOSYN}$	**0.93**	**0.44**	1.00	**-0.08**	**0.11**	**-0.05**	**0.17**	**-0.09**	**0.09**
ETR_{LOW}	**-0.09**	-0.00	**-0.10**	1.00	**-0.05**	**-0.02**	0.00	**0.02**	**0.05**
$ETRVAR_{HIGH}$	**0.07**	**0.05**	**0.10**	**-0.05**	1.00	0.00	**0.11**	**0.02**	**0.00**
$FOREIGN_{DUMMY}$	**0.19**	**0.25**	**-0.05**	-0.02	0.00	1.00	**0.23**	**0.15**	**-0.11**
$BTDVAR_{HIGH}$	**0.04**	**0.17**	**0.17**	0.00	**0.11**	**0.23**	1.00	**0.03**	**-0.02**
$TPU_{POLITICS}$	**0.03**	**0.21**	**-0.09**	0.02	**0.02**	**0.15**	**0.03**	1.00	**0.18**
TPU_{POLICY}	**0.10**	**0.08**	**0.10**	**0.05**	-0.00	**-0.11**	**-0.02**	**0.18**	1.00

Panel B. Correlation Coefficient between stock return volatility, systematic risk, idiosyncratic risk, and control variables

	STKVOL	***BTM***	***INSTOWN***	***LEV***	***PTBI***	***PTBIVOL***	***SHRS***	***SIZE***	***STKRET***
STKVOL	1.00	**0.20**	**0.14**	**-0.03**	**0.04**	**0.37**	**-0.09**	**-0.23**	**-0.08**
BTM	**0.10**	1.00	**-0.06**	**0.03**	**-0.48**	**-0.10**	**-0.38**	**-0.17**	**-0.25**
INSTOWN	**0.16**	**-0.06**	1.00	**0.04**	**0.05**	**0.13**	**0.31**	**0.24**	**-0.08**
LEV	**-0.09**	**0.06**	**0.03**	1.00	**-0.17**	**-0.06**	**0.12**	**0.17**	**-0.05**
PTBI	**0.05**	**-0.54**	**0.08**	**-0.16**	1.00	**0.29**	**0.11**	**-0.21**	**0.15**
PTBIVOL	**0.39**	**-0.19**	**0.18**	**-0.07**	**0.39**	1.00	**0.03**	**-0.25**	**0.03**
SHRS	**-0.11**	**-0.41**	**0.30**	**0.17**	**0.12**	**0.03**	1.00	**0.82**	**-0.04**
SIZE	**-0.26**	**-0.17**	**0.21**	**0.24**	**-0.21**	**-0.30**	**0.82**	1.00	**-0.06**
STKRET	**-0.07**	**-0.22**	**-0.08**	**-0.04**	**0.14**	**0.03**	**-0.03**	**-0.05**	1.00

Note to Table 3: Table 3 Panel A and Panel B report Pearson (upper-diagonal) and Spearman (lower-diagonal) correlation between the variables used in the later regression analyses. Values set in **bold** face indicate significance at the 5% level or better. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. $\boldsymbol{STKVOL_{SYSTEM}}$ = Systematic risk assessment. $\boldsymbol{STKVOL_{IDIOSYN}}$ = Idiosyncratic risk assessment. $\boldsymbol{ETR_{LOW}}$ = Low cash effective tax rate indicator. $\boldsymbol{ETRVAR_{HIGH}}$ = High cash effective tax rate volatility indicator. $\boldsymbol{FOREIGN_{DUMMY}}$ = Foreign operation indicator. $\boldsymbol{BTDVAR_{HIGH}}$ = High book-tax difference volatility indicator. $\boldsymbol{TPU_{POLITICS}}$ = High political environment uncertainty indicator. $\boldsymbol{TPU_{POLICY}}$ = High tax policy uncertainty indicator. ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. See Appendix for detail variable definition. All continuous variables are winsorized at the 1st and 99th Percentiles.

Table 4
Regression Analysis I:
Incremental Effect of Uncertainty on Risk Assessment of Tax Avoidance

	Dependent Variable = ***STKVOL***			
	(1)	(2)	(3)	(4)
ETR_{LOW}	-0.6303***	-0.5038***	-0.6315***	-0.5010***
$TPU_{POLITICS}$	-0.0850**	-0.3425***		
TPU_{POLICY}			0.5973***	0.2392***
$ETR_{LOW} \times TPU_{POLITICS}$	0.2931***	0.3324***		
$ETR_{LOW} \times TPU_{POLICY}$			0.1719	0.2911***
Control Variables:				
BTM		2.4365***		2.3840***
INSTOWN		1.0177***		0.9144***
LEV		2.1994***		2.1918***
PTBI		1.2068***		1.2818***
PTBIVOL		14.6928***		14.1297***
SHRS		0.7173***		0.7275***
SIZE		-0.8895***		-0.8904***
STKRET		-16.9064***		-15.1372***
Intercept	4.9139***	5.9445***	4.8377***	5.9187***
N	16,503	16,503	16,503	16,503
R^2 Within	0.0085	0.1623	0.0213	0.1621
R^2 Overall	0.0045	0.2041	0.0113	0.2041
R^2 Between	0.0095	0.2969	0.0094	0.2959
Overall F-Statistic	18.5419	125.0302	95.2348	143.3798

*$p<0.10$, **$p<0.05$, ***$p<0.01$

Note to Table 4: Table 4 reports the regression results of a model examining the effect of uncertainty on market assessment of tax avoidance. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. ETR_{LOW} = Low cash effective tax rate indicator. $TPU_{POLITICS}$ = High political environment uncertainty indicator. TPU_{POLICY} = High tax policy uncertainty indicator. ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. See Appendix for detail variable definition. All continuous variables are winsorized at the 1st and 99th Percentiles. We estimate the coefficient in each specification with two-way (firm and year) fixed effects regression specification. Standard errors are based on Huber-White robust estimates.

Table 5
Regression Analysis II:
Risk Assessment of Tax Avoidance and Tax Strategy Risk

	Dependent Variable = ***STKVOL***	
	(1)	**(2)**
ETR_{LOW}	-0.4466***	-0.4615***
$TPU_{POLITICS}$	-0.3285***	
TPU_{POLICY}		0.2315***
$ETR_{LOW} \times TPU_{POLITICS}$	0.2286***	
$ETR_{LOW} \times TPU_{POLICY}$		0.2129**
$ETRVAR_{HIGH}$	-0.1029	-0.1157*
$ETRVAR_{HIGH} \times ETR_{LOW}$	-0.3306**	-0.2270*
$ETRVAR_{HIGH} \times TPU_{POLITICS}$	-0.0532	
$ETRVAR_{HIGH} \times TPU_{POLICY}$		0.0121
$ETRVAR_{HIGH} \times ETR_{LOW} \times TPU_{POLITICS}$	0.5914**	
$ETRVAR_{HIGH} \times ETR_{LOW} \times TPU_{POLICY}$		0.6878*
Intercept and Control Variables	*Included*	*Included*
N	16,503	16,503
R^2 Within	0.1636	0.1632
R^2 Overall	0.2046	0.2043
R^2 Between	0.2964	0.2951
Overall F-Statistic	93.2495	106.3754

* *p<0.10,* ** *p<0.05,* *** *p<0.01*

Note to Table 5: Table 5 reports the regression results of a model examining the relation between tax strategy sustainability and market assessment of tax avoidance. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. ETR_{LOW} = Low cash effective tax rate indicator. $TPU_{POLITICS}$ = High political environment uncertainty indicator. TPU_{POLICY} = High tax policy uncertainty indicator. $ETRVAR_{HIGH}$ = High cash effective tax rate volatility indicator. The control variables include: ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. See Appendix for detail variable definition. All continuous variables are winsorized at the 1st and 99th Percentiles. We estimate the coefficient in each specification with two-way (firm and year) fixed effects regression specification. Standard errors are based on Huber-White robust estimates.

Table 6
Regression Analysis III:
Risk Assessment of Tax Avoidance and Foreign Operation

	Dependent Variable = ***STKVOL***	
	(1)	(2)
ETR_{LOW}	-0.4152***	-0.4269***
$TPU_{POLITICS}$	-0.3746***	
TPU_{POLICY}		0.2037***
$ETR_{LOW} \times TPU_{POLITICS}$	0.2634***	
$ETR_{LOW} \times TPU_{POLICY}$		0.1798*
$FOREIGN_{DUMMY}$	-0.2309**	-0.2094**
$FOREIGN_{DUMMY}$ × Low ETR	-0.4513**	-0.3372**
$FOREIGN_{DUMMY} \times TPU_{POLITICS}$	0.1218	
$FOREIGN_{DUMMY} \times TPU_{POLICY}$		0.1687
$FOREIGN_{DUMMY}$ × Low $ETR \times TPU_{POLITICS}$	0.4377**	
$FOREIGN_{DUMMY}$ × Low $ETR \times TPU_{POLICY}$		1.8113***
Intercept and Control Variables	*Included*	*Included*
N	16,503	16,503
R^2 Within	0.1645	0.1651
R^2 Overall	0.2058	0.2065
R^2 Between	0.2952	0.2945
Overall F-Statistic	95.8259	109.3297

* p<0.10, ** p<0.05, *** p<0.01

Note to Table 6: Table 6 reports the regression results of a model examining the relation between firm's foreign operation and market assessment of tax avoidance. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. ETR_{LOW} = Low cash effective tax rate indicator. $TPU_{POLITICS}$ = High political environment uncertainty indicator. TPU_{POLICY} = High tax policy uncertainty indicator. $FOREIGN_{DUMMY}$ = Foreign operation indicator. The control variables include: ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. All continuous variables are winsorized at the 1st and 99th Percentiles. We estimate the coefficient in each specification with two-way (firm and year) fixed effects regression specification. Standard errors are based on Huber-White robust estimates.

Table 7
Regression Analysis IV:
Risk Assessment of Tax Avoidance and Book-Tax Difference Volatility

	Dependent Variable = ***STKVOL***	
	(1)	(2)
ETR_{LOW}	-0.4556***	-0.4502***
$TPU_{POLITICS}$	-0.2944***	
TPU_{POLICY}		0.2601***
$ETR_{LOW} \times TPU_{POLITICS}$	0.2430***	
$ETR_{LOW} \times TPU_{POLICY}$		0.1130
$BTDVAR_{HIGH}$	0.2703***	0.2487***
$BTDVAR_{HIGH} \times ETR_{LOW}$	-0.2604	-0.2705*
$BTDVAR_{HIGH} \times TPU_{POLITICS}$	-0.2387**	
$BTDVAR_{HIGH} \times TPU_{POLICY}$		-0.0541
$BTDVAR_{HIGH} \times ETR_{LOW} \times TPU_{POLITICS}$	0.4293*	
$BTDVAR_{HIGH} \times ETR_{LOW} \times TPU_{POLICY}$		1.2150***
Intercept and Control Variables	*Included*	*Included*
N	16,503	16,503
R^2 Within	0.1638	0.1646
R^2 Overall	0.2060	0.2062
R^2 Between	0.2998	0.2982
Overall F-Statistic	91.8030	107.9684

* *p<0.10,* ** *p<0.05,* *** *p<0.01*

Note to Table 7: Table 7 reports the regression results of a model examining the relation between firm's foreign operation and market assessment of tax avoidance. Variables are defined as follows: ***STKVOL*** = Overall risk assessment. ETR_{LOW} = Low cash effective tax rate indicator. $TPU_{POLITICS}$ = High political environment uncertainty indicator. TPU_{POLICY} = High tax policy uncertainty indicator. $BTDVAR_{HIGH}$ = High book-tax difference volatility indicator. The control variables include: ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. All continuous variables are winsorized at the 1st and 99th Percentiles. We estimate the coefficient in each specification with two-way (firm and year) fixed effects regression specification. Standard errors are based on Huber-White robust estimates.

Table 8
Regression Analysis V:
Incremental Effect of Uncertainty on Systematic and Idiosyncratic Risk Assessment of Tax Avoidance

	Dependent Variable			
	$STKVOL_{SYSTEM}$		$STKVOL_{IDIOSYN}$	
ETR_{LOW}	-0.2738***	-0.2775***	-0.4109***	-0.4105***
$TPU_{POLITICS}$	0.2008***		-0.5749***	
TPU_{POLICY}		0.1811***		0.2059***
$ETR_{LOW} \times TPU_{POLITICS}$	0.0593		0.3209***	
$ETR_{LOW} \times TPU_{POLICY}$		0.1293*		0.2218**
Control Variables:				
BTM	1.0879***	1.1123***	2.0441***	1.9572***
INSTOWN	0.5424***	0.4921***	0.8281***	0.7260***
LEV	0.3915**	0.2998*	2.3050***	2.3560***
PTBI	0.3736	0.4945*	1.0591***	1.0751***
PTBIVOL	8.9767***	8.9505***	11.2572***	10.5370***
SHRS	0.4304***	0.4150***	0.5789***	0.6029***
SIZE	0.1522**	0.2459***	-1.1532***	-1.2179***
STKRET	-24.8435***	-24.9253***	-2.9228	-0.5447
Intercept	-1.6595***	-2.2679***	8.0864***	8.4669***
N	16,503	16,503	16,503	16,503
R^2 Within	0.1737	0.1730	0.1672	0.1549
R^2 Overall	0.1134	0.0935	0.2325	0.2227
R^2 Between	0.1714	0.1370	0.3492	0.3409
Overall F-Statistic	154.2362	161.1419	127.8515	117.7898

$^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$

Note to Table 8: Table 8 reports the regression results of a model examining the association between uncertainty and systematic and idiosyncratic risk assessment. Variables are defined as follows: $STKVOL_{SYSTEM}$ = Systematic risk assessment. $STKVOL_{IDIOSYN}$ = Idiosyncratic risk assessment. ETR_{LOW} = Low cash effective tax rate indicator. $TPU_{POLITICS}$ = High political environment uncertainty indicator. TPU_{POLICY} = High tax policy uncertainty indicator. ***BTM*** = Book-to-market ratio. ***INSTOWN*** = Institutional ownership. ***LEV*** = Financial leverage. ***PTBI*** = Pretax book income. ***PTBIVOL*** = Pretax book income volatility. ***SHRS*** = Outstanding shares. ***SIZE*** = Firm size. ***STKRET*** = Stock return. See Appendix for detail variable definition. All continuous variables are winsorized at the 1st and 99th Percentiles. We estimate the coefficient in each specification with two-way (firm and year) fixed effects regression specification. Standard errors are based on Huber-White robust estimates.