Tax Risk and Dividend Payouts

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Abstract

I examine whether and to what extent tax risk affects a firm's decision to distribute dividends as well as the amount of dividend payouts. Tax risk increases cash-flow uncertainty and impairs the persistence and predictability of after-tax cash flow available for distribution. Based on this argument, I hypothesize and find that firms with greater tax risk exhibit a lower probability of dividend payouts. This effect of tax risk is weaker for firms that distribute dividends based on agency motives and for firms with a lower likelihood of unexpected tax payments. Moreover, I find a negative effect of tax risk on the amount of dividend payouts which is moderated by the costs of dividend reductions. The effect of tax risk is economically meaningful where a one standard deviation higher tax risk is associated with a 3.6% lower probability and a 6.8% lower amount of dividend payouts. Overall, my findings provide evidence for a real effect of tax avoidance and contribute to the understanding of interactions between risky tax avoidance and a firm's financial ecosystem.

1. Introduction

Dividend payouts to shareholders are an integral part of a firm's financial ecosystem (Farre-Mensa, Michaely, and Schmalz 2014). In this study, I examine whether and to what extent tax risk affects a firm's decision to distribute dividends as well as the amount of dividend payouts. Goh, Lee, Lim, and Shevlin (2016) argue that shareholders benefit from tax avoidance as lower tax payments reduce the cost of equity. Tax avoidance, however, may not only affect the level but also the riskiness of tax payments (Neuman 2016, Neuman, Omer, and Schmidt 2016) leading to higher firm risk (Guenther, Matsunaga, and Williams 2016, Hutchens and Rego 2015), lower firm value (Drake, Lusch, and Stekelberg 2016), higher cash holdings (Hanlon, Maydew, and Saavedra 2016), and a delay in large capital investments (Jacob, Wentland, and Wentland 2016). These effects of tax risk, which is the second dimension of a firm's tax-avoidance strategies, cast doubt on the argument that shareholders benefit from tax avoidance.

Recent anecdotes provide further evidence that tax risk might adversely affect shareholders. An analysis by the Financial Times indicates that the number of U.S. firms that alert their investors to the negative effects of tax risk has increased (Houlder 2016). 136 U.S. firms issued an alert in their 2015 annual reports and cautioned that tax risk might diminish after-tax earnings and raise the uncertainty of after-tax cash flow available for dividend distributions. Based on the argument that tax risk impairs the persistence and predictability of after-tax cash flow available for distribution, I hypothesize that tax risk negatively affects dividend payouts.

I define tax risk as uncertainty in a firm's tax positions that leads to volatile tax payments over time.[1] Uncertainty in this regard stems from risky tax-avoidance strategies with ex-ante uncertainty and a high likelihood of being overturned in a tax audit (Dyreng, Hanlon, and

[1] This definition of tax risk resembles the symmetric concept of tax risk in Guenther et al. (2016) or Hutchens and Rego (2015) but deviates from the hazard view of tax risk in Bauer and Klassen (2014) or Saavedra (2015).

Maydew 2014). Such “grey area” tax-avoidance strategies, for instance, exploit ambiguous tax rules and discretion in setting intra-group transfer prices. Although resulting in cash savings (Mills 1998, Edwards, Schwab, and Shevlin 2016), “grey area” tax avoidance raises IRS audit risk and the chance of future tax repayments, interest charges, and fines. The likelihood of tax audits and the predictability of audit outcomes differ between countries. Thus, that tax risk is not exclusively driven by a firm’s tax-avoidance strategies but also depends on country-specific factors that are not directly under a firm’s control (e.g., tax enforcement, the rule of law, etc.).

My prediction that tax risk negatively affects dividend payouts rests on two arguments. First, cash-flow uncertainty induced by tax risk impairs the persistence and predictability of cash flow and increases the likelihood of liquidity shortfalls. Financing liquidity shortfalls in external capital markets is costly for a firm (Myers and Majluf 1984). Thus, managers consider cash-flow uncertainty in a dividend payout decision resulting in a lower probability and a lower amount of dividend payouts (Lintner 1956, Brav, Graham, Harvey, and Michaely 2005). Second, managers aim to distribute persistent dividend levels over time as dividend reductions cause negative capital market reactions (Healy and Palepu 1988, Michaely, Thaler, and Womack 1995). In this regard, tax risk reduces the likelihood of achieving persistent dividend levels over time (Chay and Suh 2009) having a negative effect on dividend payouts.

Notwithstanding these hypotheses, several arguments suggest that I might not find an effect of tax risk on dividend payouts. First, Jacob et al. (2016) document that firms delay major capital investments due to tax risk. Instead of adjusting dividend payouts, managers might delay investments to avoid liquidity shortfalls and to achieve persistent dividend levels over time. Second, volatility in tax payments might mainly result from benign tax avoidance as part of firm-level investment (e.g., R&D tax credits, accelerated depreciation; see Guenther et al. 2016). In such cases, managers anticipate tax payments and are not required to adjust dividend payouts. Third, operating risk might be the main driver of cash-flow uncertainty which impedes an incremental effect of tax risk. Based on these arguments, I contend that it is an empirical question whether tax risk negatively affects the probability and the amount of dividend payouts.

To test my predictions, I use two samples of U.S. public firms with financial statement data for the years 1993-2014. I model a firm's decision to distribute dividends and the amount of dividend payouts (Allen and Michaely 2003, Farre-Mensa et al. 2014). Consistent with prior research (McGuire, Neuman, and Omer 2013, Hutchens and Rego 2015, Guenther et al. 2016), I calculate cash ETR volatility over five prior years as a proxy for tax risk. This measure is appropriate as cash ETRs are to a lesser extent affected by managerial discretion and tax accruals management than ex-ante measures of tax risk (e.g., UTBs; see Robinson, Stomberg, and Towery 2015). Moreover, the cash effects captured by cash ETRs provide a direct conceptual link to dividends being distributed out of a firm's after-tax cash flow. To segregate the level and the riskiness of tax payments as the two dimensions of a firm's tax-avoidance strategies, I include long-run cash ETRs in all regressions (Dyreng Hanlon, and Maydew 2008).

The first set of tests examines the association between tax risk and the probability of dividend payouts for a sample of dividend-paying and non-dividend-paying firms. Results support my hypothesis of a negative effect of tax risk on the probability of dividend payouts. Tax risk has an economically meaningful effect where a one standard deviation higher tax risk is associated with a 3.6% lower probability of dividend payouts. The effect of tax risk is comparable to other determinants of dividend payouts (e.g., cash-flow uncertainty induced by operating risk). These results provide initial evidence that firms with greater tax risk are less likely to distribute dividends. Tax risk is an economically important determinant of this decision.

In two cross-sectional tests, I examine whether institutional ownership and the likelihood of unexpected tax payments moderate the effect of tax risk on the probability of dividend payouts. I expect a weaker effect of tax risk for firms with high institutional ownership as these firms distribute dividends based on agency aspects. Moreover, I expect that the relation between tax risk and the probability of dividend payouts is weaker for firms with low cash ETRs. Low cash ETRs are more persistent over time with a lower likelihood of unexpected tax payments (DeSimone, Mills, and Stomberg 2015, Guenther et al. 2016). Results are consistent with these predictions. The negative effect of tax risk on the probability of dividend payouts varies with alternative motives for dividend payouts and the likelihood of unexpected tax payments.

The second set of tests examines the relation between tax risk and the amount of dividend payouts for a subsample of dividend-paying firms. I find a negative effect of tax risk on the amount of dividend payouts. The effect of tax risk is again economically meaningful as a one standard deviation higher tax risk is associated with 6.8% lower dividend payouts. In all tests, the effect of tax risk is somewhat larger than the effect of cash-flow uncertainty induced by operating risk. These results suggest that firms with greater tax risk adjust the present dividend level to consider cash-flow uncertainty and to ensure persistent dividend levels over time.

In a cross-sectional test, I examine whether a firm's financial life-cycle stage moderates the negative association between tax risk and the amount of dividend payouts. I expect a weaker effect of tax risk for young firms at the capital-infusion stage (DeAngelo, DeAngelo, and Stulz 2006) as these firms exhibit the lowest costs of dividend reductions (Leary and Michaely 2011). Results are consistent with this prediction and suggest that the negative association between tax risk and the amount of dividend payouts varies with the costs of dividend reductions.

I conduct several tests to further examine the effect of tax risk on dividend payouts. First, I demonstrate that the effect of tax risk is independent of a firm's operating risk which suggests that uncertainty in a firm's tax positions that leads to volatile tax payments over time has distinct economic effects on dividend payouts. Second, I conduct a time-series test and examine whether tax risk is associated with changes in dividend payouts. Results provide some evidence that tax risk has an effect on a firm's decision to alter dividend payouts. Third, I investigate the association between tax risk and share repurchases as an alternative distribution channel (Grullon and Michaely 2002, Skinner 2008). Consistent with the argument that share repurchases are more flexible than dividend payouts (Jagannathan, Stephens, and Weisbach 2000), I predict and find a negative but weaker effect of tax risk on share repurchases.

In additional robustness tests, I demonstrate that my baseline results are robust to alternative measures for tax risk, extending the sample to loss years, and adding firm-fixed effects to the regression model. Firm-fixed effects allow a within firm analysis and alleviate concerns that time-invariant omitted variables are correlated with tax risk and dividend payouts.

In examining tax risk as the second dimension of a firm's tax-avoidance strategies, my study contributes to several streams of research and to the understanding of potential interactions between risky tax avoidance and a firm's financial ecosystem. First, the negative effect of tax risk on dividend payouts provides evidence for a real effect of tax avoidance and answers the call for research in Hanlon and Heitzman (2010). Together with the finding in Jacob et al. (2016) that tax risk delays large capital investments, my results suggest that risky tax-avoidance strategies induce non-tax costs on shareholders. As investors select firms based on their dividend payouts (Desai and Jin 2011), risky tax avoidance might distort such decisions.

Second, my findings add to a growing stream of research that examines determinants and consequences of tax risk. My results corroborate research by Guenther et al. (2016), Saavedra (2015), and DeSimone et al. (2015), who find that tax-avoidance strategies do not follow a strict risk-return trade-off. My results suggest that equating the level of tax avoidance with the level of tax risk does not allow disentangling whether real effects of tax avoidance are driven by tax payments or tax risk. Analyses of real effects of tax avoidance should segregate the level and the riskiness of tax payments as the two dimensions of a firm's tax-avoidance strategies. Thus, the finding that tax avoidance reduces the cost of equity in Goh et al. (2016) might not exclusively result from lower tax payments but also from a lacking riskiness of these tax payments.

Third, my findings add to a stream of research that examines determinants of dividend payouts. Extending prior research on cash-flow uncertainty induced by operating risk (Chay and Suh 2009) and product market threats (Hoberg, Philipps, and Prabhala 2014), my results suggest that tax risk is a relevant determinant of cross-sectional variation in dividend payouts. This finding should interest managers and shareholders as tax risk to some extent depends on country-specific factors that are not directly under a firm's control (e.g., tax enforcement, the rule of law). In the light of recent anecdotes from the U.S. (Houlder 2016), my results suggest that adverse effects of tax risk on after-tax earnings likely result in lower dividend payouts.

The remainder of the paper is organized as follows: Section 2 discusses prior research and develops testable hypotheses. Section 3 presents the sample selection and the research design. Section 4 discusses the baseline results. Section 5 presents results for supplemental analyses and robustness tests. Section 6 summarizes my main findings and concludes.

2. Theoretical Background and Hypothesis Development

2.1. Determinants of Dividend Payouts

Payouts to shareholders are a strategic tool in capital market economies. In 2014, firms listed on the S&P 500 distributed more than $900 billion to their shareholders. The economic reasons behind dividend payouts likely differ between firms. Thus, starting with the seminal paper of Miller and Modigliani (1961), who demonstrate that dividend distributions do not affect a firm's investment and market value, an extensive stream of research has identified multiple motives for dividend payouts (see Allen and Michaely (2003) and Farre-Mensa et al. (2014) for reviews).[2] First, firms distribute dividends to alleviate agency conflicts between managers and shareholders. Excess cash holdings induce incentives for managers to privately divert funds (Jensen and Meckling 1976) and to engage in suboptimal investment (Jensen 1986). In this regard, dividend payouts offer a disciplining device as managers are forced to raise funds under external scrutiny (Easterbrook 1984). Consistent with this argument, Officer (2011) finds that firms with greater agency conflicts exhibit higher dividend-initiation-announcement returns.

Second, firms distribute dividends to convey privately-held information to the capital market (Bhattacharya 1979, John and Williams 1985, Miller and Rock 1985). As a result of information asymmetries between managers and shareholders, dividend payouts reveal private information providing a signal for managers' earnings expectations. Consistent with this argument, Grullon, Michaely, and Swaminathan (2002) find positive abnormal returns for dividend increases while capital markets react negatively to dividend reductions.

[2] Miller and Modigliani (1961) assume complete and perfect markets resting on the following assumptions: (i) no taxes, (ii) symmetric information among market participants, (iii) complete contracting, (iv) no transaction costs, (v) competitive product and financial markets, and (vi) rational investors and managers (Farre-Mensa et al. 2014).

Third, firms distribute dividends due to lacking investment opportunities. A small set of investment opportunities reduces cash needs and simultaneously raises the distribution potential (Smith and Watts 1992). Consistent with this argument, DeAngelo et al. (2006) study the financial life-cycle theory of dividend payouts and find that the likelihood of dividend payouts increases in the amount of retained earnings. Along the same lines, Chay and Suh (2009) document a negative association between cash-flow uncertainty and dividend payouts. Thus, firms with greater cash-flow uncertainty are less likely to distribute dividends in order to avoid costly external financing and dividend reductions (Lintner 1956).

Fourth, firms distribute dividends as a result of the investor-level tax on dividend payouts relative to capital gains (Poterba 2004). Desai and Jin (2011) show that (i) dividend payouts and investors' tax preferences determine investment decisions and (ii) managers adjust dividend payouts to cater investors' tax preferences. Along the same lines, several studies examine the Jobs and Growth Tax Relief Reconciliation Act of 2003 which lowered the dividend tax rate for individual investors and find that firms dominated by this investor group experienced the largest increase in dividend payouts (Chetty and Saez 2005, Blouin, Ready, and Shackelford 2004).

2.2. Tax Risk as the Second Dimension of a Firm's Tax-Avoidance Strategies

Lowering the level of tax payments is the main incentive for firms to engage in tax avoidance (Dyreng, Hanlon, and Maydew 2008). Although tax-avoidance strategies generate cash savings (Edwards et al. 2016) they may simultaneously raise the riskiness of tax payments (Neuman 2016). Thus, tax risk represents the second dimension of a firm's tax-avoidance strategies. Consistent with this argument, I define tax risk as uncertainty in a firm's tax positions that leads to volatile tax payments over time. This definition of tax risk is based on the symmetric risk concept of Markowitz (1952) who defines risk as the dispersion of expected or realized outcomes (Sunder 2015). I limit the definition of tax risk to cash effects providing a conceptual link to dividends being distributed out of after-tax cash flow.[3]

Uncertainty in a firm's tax positions mainly stems from "grey area" tax avoidance. This form of tax avoidance denotes tax positions with ex-ante uncertainty and a high likelihood of being challenged in a tax audit (Dyreng et al. 2014). Common strategies exploit ambiguous tax rules and discretion in setting intra-group transfer prices. Although initially reducing tax payments, "grey area" tax avoidance raises IRS scrutiny and audit risk (Mills 1998, DeSimone et al. 2015). In case the IRS challenges a tax position, the firm might become liable for tax repayments, interest charges, and fines resulting in higher and more volatile tax payments.

Several public cases suggest that the disputed amounts and the resulting cash effects of "grey area" tax avoidance could be economically significant. In 2006, GlaxoSmithKline Inc. settled a transfer-pricing dispute with the IRS. For the years 1989-2005, this settlement resulted in tax repayments of $3.4 billion and an abandoned claim of $1.8 billion representing the largest dispute in the history of the IRS (IRS 2006). In a similar case, the Canadian tax authorities accused Cameco Corp. for having engaged in "grey area" tax avoidance via intra-group transfer pricing and claimed tax repayments of $2.1 billion (Livesey 2016).[4]

The likelihood of tax audits and the predictability of audit outcomes differ between countries. Thus, tax risk is not exclusively driven by a firm's tax-avoidance strategies but

[3] This definition excludes risk aspects that do not affect tax payments (e.g., reputational risk; Guenther et al. 2016). The definition of tax risk in this paper therefore differs from the definition in Neuman et al. (2016) who define tax risk as the result of economic risk and legal uncertainty. While legal uncertainty affects tax payments, economic risk mainly contributes to uncertainty in operating cash flows.

[4] GlaxoSmithKline Inc. engaged in tax-deductable intra-group payments on intangible assets and trademarks held by the U.K. parent firm and utilized by its U.S. subsidiaries. These payments reduced the U.S. corporate income tax base and reduced tax payments in the U.S. (IRS 2006). Cameco Corp. used a similar strategy by setting a low intra-group transfer price for uranium sold by a Canadian subsidiary to a Swiss letter-box company. The transfer price diminished the Canadian tax base and increased profits in the low-tax Swiss Canton of Zug (Livesey 2016).

additionally depends on country-specific factors that are not directly under a firm's control (e.g., tax enforcement, the rule of law, etc.). This argument is illustrated by current initiatives taken by the EU Commission to counter "grey area" tax avoidance. The EU Commission has recently started to tackle tax-avoidance schemes through state aid regulation, which prohibits EU member states to grant selective economic benefits to firms.[5] The investigations led to two tax rulings in Luxembourg and the Netherlands being qualified as illegal state aid with tax repayments of $20-30 million (EU Commission 2015a). In a subsequent decision, the EU Commission accused Apple Inc. of having avoided $13 billion in tax through illegal tax rulings in Ireland (EU Commission 2016).[6] These actions increase uncertainty in a firm's tax positions and result in volatile tax payments over time (Saavedra 2015).

Prior research has examined the concept of tax risk and provides some evidence for potential economic effects. Hanlon et al. (2016), for instance, study cash holdings and find that firms with uncertain tax positions report higher precautionary cash holdings. Hasan, Hoi, Wu, and Zhang (2014) and Shevlin, Urcan, and Vasvari (2013) analyze debt contracts and document that the cost of debt increases in the level of tax avoidance. Consistent with Hanlon et al. (2016), these studies assume a strict risk-return trade-off for tax-avoidance strategies and argue that tax risk increases in the level of tax avoidance. Thus, measures for the level of tax avoidance (e.g., cash or GAAP ETRs, UTBs, BTDs, etc.) serve as adequate proxies for tax risk.[7]

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[5] The EU Commission initiates an investigation procedure to examine whether tax benefits constitute a *selective advantage* resulting in illegal state aid. In case the EU Commission qualifies a tax benefit as state aid, tax authorities have to recover the benefit. Tax authorities and countries may appeal against the decision of the EU Commission at the European Court of Justice (see Lang, Pistone, Schuch, and Staringer (2015) for further details).

[6] Apple discussed potential effects of this decision on after-tax cash flows in its 2015 annual report by stating that in case "… the European Commission were to conclude against Ireland, it could require Ireland to recover from the Company past taxes covering a period of up to 10 years reflective of the disallowed state aid, and such amount could be material." A pending case concerns tax positions of McDonald's Corp. in Luxembourg (EU Commission 2015b).

[7] A risk-return trade-off is consistent with the asset pricing literature which assumes a positive correlation between the conditional mean and the conditional variance of realized or expected returns (Merton 1973, Drake et al. 2015).

Several recent studies, however, challenge this assumption and suggest that tax risk is to some extent unrelated to the level of tax avoidance. Thus, benefits of tax avoidance, for instance in the form of cash savings (Mills 1998, Edwards et al. 2016), lower GAAP ETRs, or reduced debt ratios (Graham and Tucker 2006), do not necessarily induce greater tax risk. This finding is based on the argument that firms engage in tax-avoidance strategies that reduce tax payments without inducing incremental tax risk. DeSimone et al. (2015), for instance, study cross-sectional differences in the riskiness of tax-avoidance strategies. Their findings suggest that income-mobile firms that engage in income shifting have fewer tax benefits challenged in a tax audit than less income mobile firms. Similarly, benign tax-avoidance strategies (e.g., R&D tax credits, accelerated depreciation, etc.) reduce tax payments without inducing tax risk.

In line with this result, Guenther et al. (2016) find that low cash ETRs are more persistent over time than high cash ETRs. Furthermore, the level of tax avoidance is unrelated to future volatility in tax payments and overall firm risk. Hutchens and Rego (2015) study the association between tax risk and overall firm risk more closely and show that overall firm risk is unrelated to the level of tax avoidance but increases in cash ETR volatility as a measure for tax risk.[8] Drake et al. (2016) analyze the valuation of tax avoidance and find that tax risk mitigates the positive valuation of tax avoidance. With regard to firm-level investment, Jacob et al. (2016) show that firms with high tax risk delay large capital investments and exhibit lower capital expenditures.

2.3. Hypothesis Development

The discussion in the previous section indicates that tax risk as the second dimension of a firm's tax-avoidance strategies has distinct economic effects on firms and their operations. Firms with greater tax risk exhibit more volatile tax payments over time and a higher likelihood of

[8] Neuman et al. (2016), in contrast, provide evidence that tax risk increases in the level of tax avoidance. This result, however, is based on a broad measure for tax risk which includes economic risk.

unexpected tax payments. This impairs the persistence and predictability of after-tax cash flow (Hanlon et al. 2016, Jacob et al. 2016) and increases cash-flow uncertainty. The effect of tax risk on cash-flow uncertainty is incremental to other sources of risk (e.g., operating risk) as tax risk affects tax payments rather than operating cash flow.

Anecdotal evidence suggests that managers are aware of the outlined relation between tax risk and cash-flow uncertainty. An analysis by the Financial Times, for instance, indicates that the number of U.S. firms that alert their investors to the risk of higher and more volatile tax payments has significantly increased. In 2015, 136 U.S. firms issued an alert in their annual reports including prominent examples like LinkedIn Corp. or Yahoo Inc. (Houlder 2016). These firms expect that tax risk adversely affects after-tax earnings and increases the uncertainty of after-tax cash flow available for dividend distributions.

On a theoretical level, two arguments suggest that tax risk, through the channel of cash-flow uncertainty, affects a firm's decision to distribute dividends. First, information asymmetries between managers and investors imply differences in the cost of internal and external financing. Internal financing, for instance through retained earnings, is less costly than raising external capital in financial markets (Myers and Majluf 1984). In a dividend payout decision, managers forecast future liquidity requirements to avoid liquidity shortfalls and costly external financing (Chay and Suh 2009). As cash-flow uncertainty increases the likelihood of liquidity shortfalls (Lintner 1956, Brav et al. 2005), firms with greater tax risk are expected to be less likely to distribute dividends.

Second, dividend payouts convey signals to capital markets and enable investors to form earnings expectations. Changes in dividend payouts alter these expectations and the assessment of past earnings changes (Healy and Palepu 1988, Koch and Sun 2004). Thus, a reduction in dividend payouts, for instance due to earnings decreases or liquidity shortfalls, provides new information to investors and implies negative capital markets reactions (Michaely, Thaler, and Womack 1995, Grullon et al. 2002). Managers are therefore reluctant to reduce dividend payouts and aim to distribute persistent dividend levels over time. Moreover, managers initiate dividend payouts only if they are confident to maintain the dividend level. As cash-flow uncertainty impairs the persistence and predictability of after-tax cash flow, the likelihood of achieving persistent dividend levels is lower in the presence of high tax risk. Thus, firms with greater tax risk are expected to be less likely to distribute dividends.

Taken together, tax risk through its effect on cash-flow uncertainty increases the likelihood of liquidity shortfalls and dividend reductions. Both effects impose costs in the form of external financing and negative capital market reactions. Thus, managers consider cash-flow uncertainty in a dividend payout decision reducing the likelihood of dividend payouts. Based on these arguments, I state the following hypothesis for the association between tax risk and a firm's decision to distribute dividends (stated in the alternative):

H1: *Tax risk is negatively associated with the probability of dividend payouts.*

The relation between tax risk and the probability of dividend payouts assumes that managers, on average, consider the costs of liquidity shortfalls and dividend reductions. Given the diverse determinants of a dividend payout decision, the association hypothesized under H1 might differ in case firms prioritize alternative motives for dividend payouts. Institutional investors, for instance, act as an external governance mechanism that allows investors to closely monitor managers and to adopt a payout policy that alleviates agency conflicts between managers and shareholders. For firms with high institutional ownership, the benefit of alleviating agency conflicts outweighs the potential costs induced by cash-flow uncertainty (e.g., future liquidity shortfalls, dividend reductions; Allen, Bernardo, and Welch 2000, Leary and Michaely 2011, Farre-Mensa et al. 2015).[9] These firms distribute dividends predominantly based on agency aspects where cash-flow uncertainty becomes less relevant. Thus, the effect of tax risk on the decision to distribute dividends is expected to be weaker for firms with high institutional ownership. Based on this argument, I state the following cross-sectional hypothesis for the association between tax risk and a firm's decision to distribute dividends:

H1a: The association between tax risk and the probability of dividend payouts is weaker for firms with high institutional ownership.

The relation between tax risk and the probability of dividend payouts assumes that volatile tax payments contribute to cash-flow uncertainty in the form of unexpected tax payments. Prior research suggests that ex-ante uncertainty in tax positions and the likelihood of unexpected tax payments varies with a firm's cash ETR. Low-risk tax avoidance enables firms to achieve persistently low cash ETRs (DeSimone et al. 2015, Guenther et al. 2016). Thus, volatility in tax payments mainly stems from benign tax avoidance (e.g., R&D tax credits, accelerated depreciation; see Saavedra 2015, Guenther et al. 2016) where managers anticipate future tax payments. High cash ETRs, in contrast, tend to be less persistent over time and volatility in tax payments is mainly driven by "grey area" tax avoidance. As a result, volatile tax payments associated with low cash ETRs contribute to a lesser extent to cash-flow uncertainty than volatility in tax payments associated with high cash ETRs. The latter is more likely to result in unexpected tax payments (i.e. tax spikes; Saavedra 2015) and increases cash-flow uncertainty as

[9] The question whether dividend payouts and institutional ownership are complements or substitutes is still unsettled in theoretical and empirical research (Farre-Mensa et al. 2014). Institutional ownership as an external governance mechanism increases the relevance of agency aspects for dividend payouts. In either case, cash-flow uncertainty induced by tax risk is expected to be less relevant for firms with high institutional ownership as agency motives dominate the trade-off between retaining and distributing after-tax cash flows.

well as overall firm risk (Guenther et al. 2016). These differences in the likelihood of unexpected tax payments suggest that the effect of tax risk on the decision to distribute dividends is weaker for firms with low cash ETRs. Based on this argument, I state the following cross-sectional hypothesis for the association between tax risk and a firm's decision to distribute dividends:

H1b: The association between tax risk and the probability of dividend payouts is weaker for firms with low cash ETRs.

Tax risk may not only affect the decision to distribute dividends but also the amount of dividend payouts. Consistent with the above arguments, tax risk contributes to cash-flow uncertainty and raises the likelihood of liquidity shortfalls and dividend reductions. To accommodate cash-flow uncertainty, managers adjust the present dividend level and reduce dividend payouts (Grullon et al. 2002, Chay and Suh 2009). This adjustment ensures persistent dividend levels over time and managers avoid costly external financing or negative capital market reactions.[10] Based on these arguments, I state the following hypothesis for the association between tax risk and the amount of dividend payouts (stated in the alternative):

H2: Tax risk is negatively associated with the amount of dividend payouts.

The hypothesized relation between tax risk and the amount of dividend payouts assumes that dividend reductions cause negative capital market reactions. Leary and Michaely (2011) examine the financial life-cycle theory that predicts variation in the costs of distributing impersistent dividend levels over time. Their results suggest that mature firms susceptible to agency conflicts (Jensen 1986) exhibit high costs of dividend reductions and thus incentives to distribute persistent dividend levels over time. Young firms at the capital-infusion stage, in

[10] Survey evidence by Brav et al. (2005) suggests that managers forego positive NPV projects or raise external capital to ensure persistent dividend levels over time. This finding suggests that managers prioritize dividend payouts over investment opportunities.

contrast, exhibit low costs of dividend reductions. These firms are therefore more flexible in adjusting dividend payouts to unexpected tax payments. This difference in the costs of dividend reductions suggests that cash-flow uncertainty as result of tax risk appears less relevant for firms at the capital-infusion stage. Based on this argument, I state the following cross-sectional hypothesis for the association between tax risk and the amount of dividend payouts:

H2a: *The association between tax risk and the amount of dividend payouts is weaker for firms at the capital-infusion stage.*

Notwithstanding these hypotheses, several arguments suggest that I might not find an association between tax risk and dividend payouts. Jacob et al. (2016), for instance, show that firms with high tax risk delay large capital investments. Instead of adjusting dividend payouts, firms could postpone investments to ensure persistent dividend levels over time (Brav et al. 2005). Moreover, volatility in tax payments could mainly result from benign tax avoidance as part of firm-level investment (Guenther et al. 2016). This source of tax risk might not require managers to adjust dividend payouts beyond cash-flow uncertainty induced by operating risk. Finally, tax risk could be immaterial as compared to operating risk. If operating risk mainly drives cash-flow uncertainty, I might not find large sample evidence for an incremental effect of tax risk. Based on these arguments, I contend that the association between tax risk and dividend payouts is an empirical question.

3. Data and Research Design

3.1. Sample Selection

I obtain a sample of firm-year observations for fiscal years 1993-2014 with data available in COMPUSTAT Industrial. I start in 1993 as ASC 740 (former SFAS No. 109), which changed the accounting for income taxes, became effective for fiscal years starting after December 15, 1992. Thus, starting in 1993 ensures consistent accounting rules for income taxes during the sample period (McGuire et al. 2013).[11] As the measure for tax risk and several control variables require up to five prior years of data, the sample period effectively covers fiscal years 1998-2014. I drop non-U.S. firms to avoid effects of differences in legal systems and financial reporting standards. Moreover, I eliminate financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) as these industries exhibit distinct financial accounting rules (McGuire et al. 2013), tax-avoidance incentives (Hanlon et al. 2016), and dividend payout patterns (Fama and French 2001, Hoberg and Prabhala 2009). I additionally eliminate firms with “LP” or “TRUST” in their name to exclude flow-through entities which are not subject to firm-level taxes (Dyreng et al. 2008). These restrictions leave 125,817 firm-year observations (13,526 firms).

I drop observations with dividends greater than sales, negative dividends, negative sales, and equity below $250,000 or total assets below $500,000 to be consistent with prior research (Chay and Suh 2009, Hoberg and Prabhala 2009, Hoberg et al. 2014). I require five consecutive years of data for cash taxes paid as well as positive pre-tax book income in each year to compute the measure for tax risk (McGuire et al. 2013, Hutchens and Rego 2015, Guenther et al. 2016). Finally, I drop observations with missing control variables. These restrictions yield a full sample of 19,069 firm-year observations (3,404 firms). In a second step, I drop observations without dividend payouts to obtain a subsample of dividend-paying firms. This leaves a subsample of 10,179 firm-year observations (1,522 firms). Table 1 summarizes the sample selection procedure.

INSERT TABLE 1 HERE

[11] Although ASC 740 did not alter the calculation of cash taxes paid, prior research suggests that firms strategically respond to tax law changes (e.g., firms could engage in intertemporal income shifting; see Scholes, Wilson, and Wolfson 1992, Guenther 1994, Maydew 1997). This behavior could affect ETRs as the primary measure for tax risk where changes in pre-tax book income are not exclusively driven by changes in taxable income.

3.2. Variable Measurement

I follow prior research (DeAngelo et al. 2006, Chay and Suh 2009, Hail, Tahoun, and Wang 2014, Hoberg et al. 2014) and apply two measures for dividend payouts (*DIV*). First, to examine a firm's probability of dividend payouts, *DIV* is an indicator variable with the value of one if a firm declares dividends on common stock in year *t*, and zero otherwise. This measure distinguishes between dividend-paying and non-dividend-paying firms. Second, for a subsample of dividend-paying firms, *DIV* is the logarithm of dividends declared on common stock in year *t* and scaled by total assets at the end of year *t* (Desai and Jin 2011, Hoberg et al. 2014).[12] In additional tests, I scale dividends declared in year *t* by the market value of equity and total sales.

To measure tax risk, I calculate cash ETR volatility (*TAX_RISK*) as the standard deviation of annual cash ETRs over the five-year period *t-4* to *t* (McGuire et al. 2013, Hutchens and Rego 2015, Guenther et al. 2016). Annual cash ETRs are cash taxes paid divided by pre-tax book income less special items.[13] Cash ETR volatility is a suitable measure for tax risk as firms with risky tax-avoidance strategies exhibit unexpected and thus more volatile tax payments (Neuman 2016). Firms with persistent tax payments, in contrast, exhibit a narrow range of cash ETRs. The positive relation between firm risk and cash ETR volatility found in Guenther et al. (2016) and Hutchens and Rego (2015) suggests that *TAX_RISK* captures risk associated with tax-avoidance strategies and supports the construct validity of this measure. To measure the level of tax avoidance, I follow Dyreng et al. (2008) and compute long-run cash ETRs (*CASH_ETR*).[14] I multiply *CASH_ETR* by negative one in all regressions so that larger values indicate higher

[12] I take the logarithm as the variable is highly skewed. My inferences are unchanged without taking the logarithm.
[13] I winsorize annual cash ETRs to values between 0 and 1 to allow a meaningful interpretation (Dyreng et al. 2008, Guenther et al. 2016). The requirement of five consecutive years of positive pre-tax book income limits the sample to profitable firms. I address a potential data truncation bias (Henry and Sansing 2014) in my supplemental tests.
[14] I again winsorize *CASH_ETR* to values between 0 and 1 to allow a meaningful interpretation.

levels of tax avoidance. Including *TAX_RISK* and *CASH_ETR* in the regression models segregates risk and return as the two dimensions of a firm's tax avoidance strategies.

Several arguments suggest that cash ETRs form an appropriate basis to measure tax risk and the level of tax avoidance. First, cash ETRs capture tax-avoidance strategies that result in cash savings (Dyreng et al. 2008, Edwards et al. 2016) as well as (unexpected) tax payments. Second, cash ETRs are to a lesser extent affected by managerial discretion than ex-ante measures of tax risk (e.g., UTBs; see Robinson et al. 2015). Thus, tax accruals management to achieve financial reporting objectives does not affect cash ETRs (Dyreng et al. 2008). Third, a cash-based measure seems suitable for my research question. As dividends are distributed out of after-tax cash flow, the cash effects captured by cash ETRs provide a more direct conceptual link to dividend payouts than income-based measures (e.g., GAAP ETRs).

3.3. Research Design

To test my hypotheses, I estimate the following firm-level regression model:

$$\begin{aligned} DIV_{it} = \alpha &+ \beta_1 TAX\_RISK_{it-4;t} + \beta_2 CASH\_ETR_{it-4;t} + \beta_3 ROA_{it} + \beta_4 SD\_ROA_{it-4;t} + \\ &\beta_5 MTB_{it} + \beta_6 SALES\_GROWTH_{it-2;t} + \beta_7 ASSET\_GROWTH_{it} + \beta_8 RE\_TA_{it} + \\ &\beta_9 INST\_INV_{it} + \beta_{10} AGE_{it} + \beta_{11} SIZE_{it} + \beta_{12} CASH_{it} + \beta_{13} R\&D_{it} + \\ &\beta_{14} SGA_{it} + INDUSTRY\_FE + YEAR\_FE + \varepsilon_{it} \end{aligned} \quad (1)$$

I estimate Equation (1) using (i) logit regressions to examine a firm's decision to distribute dividends and (ii) OLS regressions to examine the amount of dividend payouts.[15] The dependent variable, *DIV*, is one of the two measures for dividend payouts. β_1 is the coefficient of interest and captures the incremental effect of *TAX_RISK* on a firm's decision to distribute

[15] Consistent with prior research (Chay and Suh 2009, Hoberg et al. 2014), I use the same set of control variables for tests that examine (i) a firm's decision to distribute dividends and (ii) the amount of dividend payouts.

dividends (H1) and on the amount of dividend payouts (H2). In line with H1 and H2, I expect $\beta_1 < 0$ in both specifications. I add *CASH_ETR* to control for a firm's level of tax avoidance.

Aside from measures for tax risk and the level of tax avoidance, I include several variables to control for determinants of dividend payouts. First, I add return-on-assets (*ROA*) to control for profitability as profitable firms exhibit a larger distribution potential (Fama and French 2001). Second, I add the volatility of *ROA* over the five-year period *t-4* to *t* (*SD_ROA*) to control for cash-flow uncertainty induced by operating risk. Simultaneously, *SD_ROA* captures economic risk as a dimension of tax risk that does not result in volatile tax payments but likely contributes to volatility in operating cash flow (Neuman et al. 2016).[16] Firms with more volatile cash flow exhibit lower dividend payouts (Chay and Suh 2009).[17] Third, I control for investment opportunities. Growing firms exhibit larger cash requirements which reduces the distribution potential (Fama and French 2001, DeAngelo et al. 2006). To this end, I include *MTB* as the market-to-book ratio (Desai and Jin 2011), *SALES_GROWTH* as the three-year sales growth from year *t-2* to year *t* (Jacob and Jacob 2013), and *ASSET_GROWTH* as the growth in total assets from year *t-1* to year *t* (Hoberg et al. 2014). These variables additionally capture potential interactions between tax risk and investment (Jacob et al. 2016). Fourth, I add *RE_TA* as retained earnings divided by total assets to control for the financial life-cycle theory of dividend payouts (DeAngelo et al. 2006). Mature firms with retained earnings distribute more dividends than young firms at the capital-infusion stage.

Sixth, I include *INST_INV* as the fraction of shares held by institutional investors to capture agency aspects of dividend payouts (Easterbrook 1984). Seventh, I follow Chay and Suh

[16] In additional analysis, I show that the effect of *TAX_RISK* is independent from cash-flow uncertainty induced by operating risk and economic risk (see Section 5.1.).
[17] I use the standard deviation of net operating cash flow adjusted for cash taxes paid as an alternative measure for cash-flow uncertainty induced by operating risk (see columns 3 and 6 in Table 9).

(2009), Jacob and Jacob (2013), and Hoberg et al. (2014) and include the logarithm of firm age (*AGE*) and total assets (*SIZE*) as well as cash holdings scaled by total assets in year *t* (*CASH*) as additional determinants of dividend payouts.[18] Finally, I control for research and development expenditures (*R&D*) and selling, general, and administrative expenses (*SGA*) scaled by total assets in year *t*, to capture benign tax-avoidance strategies that might induce volatility in tax payments aside from uncertainty in a firm's tax positions (Hutchens and Rego 2015).

Unless indicated otherwise, I winsorize all continuous variables at the 1st and 99th percentile to mitigate the effect of outliers. Logit regressions include year-fixed effects and OLS regressions year and industry-fixed effects.[19] I estimate heteroscedasticity-robust standard errors clustered by firm to account for serial correlation in the data (Petersen 2009). To facilitate a meaningful comparison of variables, I standardize independent variables to have a mean of zero and a standard deviation of one prior to fitting regressions.

4. Results

4.1. Descriptive Statistics

Table 2 presents descriptive statistics. Columns 1-6 include information for the full sample of dividend-paying and non-dividend-paying firms. 53.4 % of the firm years in the full sample exhibit dividend payouts. This proportion is large as compared to prior studies (e.g., Hoberg et al. 2014) since the data requirements to calculate *TAX_RISK* limit the sample to profitable firms which are more likely to distribute dividends. The mean of *TAX_RISK* is 10.3%

[18] I use the natural logarithm of the market value of equity and total sales as alternative measures for *SIZE* (see columns 4 and 5 in Table 7).

[19] Industry-fixed effects are based on the Fama and French 48 industry classification, available on Kenneth French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_48_ind_port.html). I do not include industry-fixed effects in the logit regressions as the dependent variable lacks variation in some industries. Thus, industry-fixed effects would result in a perfect prediction and a smaller sample size. My overall inferences are unchanged when including industry-fixed effects.

and comparable to the values reported in Guenther et al. (2016) but lower than those in Hutchens and Rego (2015). The mean of *CASH_ETR* is 26.5% is in line with prior research (Hutchens and Rego 2015). The remaining variables exhibit reasonable magnitudes.

Columns 7-8 in Table 2 present means separately for dividend-paying and non-dividend-paying firms. The mean of *DIV* for dividend-paying firms is -4.1. Thus, the average firm in this subsample distributes dividends amounting to 2.8% of total assets. Dividend-paying firms exhibit lower tax risk than non-dividend-paying firms. Firms that distribute dividends are older and larger in size, engage in lower levels of tax avoidance, have lower cash-flow uncertainty induced by operating risk, a lower market-to-book ratio, lower sales growth, lower asset growth, higher retained earnings, lower cash holdings, and lower research and development as well as selling, general, and administrative expenses.

INSERT TABLE 2 HERE

Table 3 presents univariate correlations. *TAX_RISK* is negatively correlated with *DIV* which supports the hypothesis that firms with greater tax risk are less likely to distribute dividends. Moreover, *DIV* is negatively correlated with *SD_ROA*, *SALES_GROWTH*, *ASSET_GROWTH*, *CASH*, *R&D*, and *SGA* and positively associated with *CASH_ETR*, *MTB*, *RE_TA*, *AGE*, and *SIZE*. These correlations are generally consistent with prior research. *TAX_RISK*, as the main variable of interest, exhibits a weak correlation with *SD_ROA* which suggests that tax risk is largely unrelated to cash-flow uncertainty induced by operating risk.

INSERT TABLE 3 HERE

4.2. Tests of H1: Tax Risk and the Probability of Dividend Payouts

H1 predicts that tax risk is negatively associated with a firm's probability of dividend payouts. Table 4 displays results for logit regressions based on Equation (1) that examine the association between tax risk and a firm's decision to distribute dividends. All specifications involve the full sample that consists of dividend-paying and non-dividend-paying firms. In column 1, the coefficient on *TAX_RISK* is negative and significant. This result suggests that tax risk is negatively associated with the probability of dividend payouts, which is consistent with H1. In column 3, the inclusion of control variables yields qualitatively similar results.

In terms of control variables, I find that the level of tax avoidance is negatively associated with the probability of dividend payouts. In column 3, *TAX_RISK* and *CASH_ETR* are jointly significant and excluding *TAX_RISK* in column 5 does not affect the result for *CASH_ETR*. Thus, tax risk and the level of tax avoidance are distinct determinants of the decision to distribute dividends. Remaining control variables are fairly in line with prior research (Fama and French 2001, DeAngelo et al. 2006, Chay and Suh 2009, Hoberg et al. 2014). Profitability, the market-to-book ratio, retained earnings, firm age, and size are positively associated with the probability of dividend payouts while cash-flow uncertainty, sales growth, asset growth, the share of institutional investors, cash holdings, research and development, as well as selling, general, and administrative expenses exhibit a negative effect.

In columns 2, 4, and 6, I calculate marginal effects to assess the economic significance of my results. In column 4, the marginal effect of *TAX_RISK* indicates that a one standard deviation higher tax risk is associated with a 3.6% lower probability of dividend payouts. A one standard deviation higher *SD_ROA*, in comparison, is associated with a 3.3% lower probability of dividend payouts. These results suggest that tax risk and operating risk have comparable effects on a firm's the decision to distribute dividends. A likelihood ratio test that compares the model fit of the regressions in column 3 and 5 indicates that including *TAX_RISK* as an independent variable improves the model fit (χ^2= 50.57, $p < 0.001$). Taken together, these results support H1 and suggest that firms with greater tax risk are less likely to distribute dividends. Moreover, tax risk is an economically relevant determinant of this decision.

Several arguments suggest that the similarity in the effect of tax risk and operating risk seems reasonable. First, due to a statutory U.S. corporate income tax rate of 35%, tax payments represent a major proportion of after-tax cash flow for U.S. firms (Dyreng et al. 2008). Thus, tax risk might induce cash-flow uncertainty that results in sizable tax payments. Second, while firms may hedge operating, tax risk to some extent depends on country-specific factors that are not directly under a firm's control (e.g., tax enforcement, the rule of law, etc.).

INSERT TABLE 4 HERE

4.3. Tests of H1a and H1b: Cross-Sectional Variation in the Effect of Tax Risk

The first cross-sectional hypothesis predicts that the negative association between tax risk and the probability of dividend payouts is weaker for firms with high institutional ownership. To formally test H1a, I split the full sample into two subsamples based on the fraction of shares held by institutional investors. I classify an observation with institutional ownership in the highest annual quartile as a firm having high institutional ownership (*HIGH_INST=1*). For each subsample, I estimate separate logit regressions based on Equation (1).

Table 5, columns 1 and 2 present results for firms with *HIGH_INST=0* and columns 3 and 4 for firms with *HIGH_INST=1*. Regression results in column 1 indicate a negative and significant coefficient on *TAX_RISK* for firms with low institutional ownership. In contrast, the coefficient on *TAX_RISK* for firms with high institutional ownership is negative but insignificant (column 3). Moreover, I test and find that the effect of *TAX_RISK* in column 3 is significantly weaker than the effect in column 1 (p = 0.075).[20] [21] Taken together, these results support H1a and suggest that tax risk is less relevant for firms that distribute dividends mainly based on agency aspects. Moreover, the relation between tax risk and the probability of dividend payouts varies for firms that prioritize alternative motives for dividend payouts.

INSERT TABLE 5 HERE

The second cross-sectional hypothesis predicts that the negative relation between tax risk and the probability of dividend payouts is weaker for firms with low cash ETRs. To test H1b, I split the sample into two subsamples based on a firm's long-run cash ETR (Dyreng et al. 2008). I assign an observation with a long-run cash ETR in the bottom quartile to the subsample of firms having a low cash ETR (*LOW_ETR=1*). In line with the previous test, I estimate separate logit regressions based on Equation (1) for each subsample.

Table 6, columns 1 and 2 present results for firms with *LOW_ETR=0* and columns 3 and 4 for firms with *LOW_ETR=1*. Regression results in column 1 show a negative and significant coefficient on *TAX_RISK* for firms with relatively high cash ETRs. In contrast, the coefficient on *TAX_RISK* for the subsample of firms with low cash ETRs is positive but insignificant (column 3). I test and find that the effect of *TAX_RISK* in column 3 is significantly weaker than the effect

[20] I use a fully-interacted regression model to assess whether coefficients differ between subsamples. I interact all independent variables with an indicator variable that identifies the two subsamples (*HIGH_INST*) and test whether the coefficient on the interaction between *TAX_RISK* and *HIGH_INST* is statistically different from zero. This approach allows different coefficients on independent variables in each subsample and accounts for heteroscedasticity. In contrast to OLS regressions, comparing coefficients of logit regressions across subsamples could be biased in case the residual variance differs in the subsamples (Allison 1999).

[21] As I test the directional prediction that the association between tax risk and the probability of dividend payouts is weaker for firms with *HIGH_INST=1* than for firms with *HIGH_INST=0,* I use one-tailed p-values to assess whether coefficients differ between subsamples.

in column 1 ($p < 0.001$). Overall, these results support H1b and suggest that the relation between tax risk and the probability of dividend payouts varies with a firm's cash ETR and the associated likelihood of unexpected tax payments.

INSERT TABLE 6 HERE

4.4. Tests of H2: Tax Risk and the Amount of Dividend Payouts

H2 predicts that tax risk is negatively associated with the amount of dividend payouts. Table 7 presents results for OLS regressions based on Equation (1) that examine the association between tax risk and the amount of dividend payouts. All specifications include the subsample of dividend-paying firms. In column 1, the coefficient on *TAX_RISK* is negative and significant, which is consistent with H2. The inclusion of control variables in column 2 yields qualitatively similar results for *TAX_RISK*. To rule out that total assets as a scalar for dividend payouts drive the negative association between tax risk and dividend payouts, I re-estimate Equation (1) but scale the amount of dividend payouts by the market value of equity and total sales, respectively. The coefficients on *TAX_RISK* in columns 4 and 5 remain negative and significant.

Results for control variables are generally consistent with the previous tests. In column 2, the coefficient on *CASH_ETR* is negative and significant and the exclusion of *TAX_RISK* in column 3 does not alter this result. Moreover, dividend payouts increase in profitability, the market-to-book ratio, and firm age while they decrease in sales and asset growth. In contrast to the results in Table 4 but consistent with Hoberg et al. (2014), smaller firms and firms with greater cash holdings and selling, general, and administrative expenses distribute more dividends.

In terms of economic significance, the coefficient on *TAX_RISK* in column 2 indicates that a one standard deviation higher tax risk is associated with 6.8% lower dividend payouts.[22] In all specifications, *TAX_RISK* exhibits somewhat larger effects on dividend payouts than *SD_ROA*. An incremental f-test that compares the model fit of the regression in column 2 to that of the regression in column 3 indicates that adding *TAX_RISK* as an independent variable improves the model fit ($F = 31.65$, $p < 0.001$). Taken together, these results support H2 and suggest that tax risk is negatively associated with the amount of dividend payouts. Firms with greater tax risk adjust the present dividend level to ensure persistent dividend levels over time. Moreover, tax risk is an economically important determinant of the amount of dividend payouts.

INSERT TABLE 7 HERE

4.5. Tests of H2a: Cross-Sectional Variation in the Effect of Tax Risk

The third cross-sectional hypothesis predicts that the negative association between tax risk and the amount of dividend payouts is weaker for firms at the capital-infusion stage. To test H2a, I further divide the subsample of dividend-paying firms into two subsamples based on a firm's financial life-cycle stage. Consistent with DeAngelo et al. (2006), I use the ratio of retained earnings divided by total assets as a proxy for the financial life-cycle stage and classify an observation with a ratio in the lowest annual quartile as a firm at the capital-infusion stage (*GROWING=1*). For each subsample, I estimate separate OLS regressions based on Equation (1).

Table 8, column 1 presents results for firms with *GROWING=1* and column 2 for firms with *GROWING=0*. Regression results in column 1 indicate a negative but insignificant coefficient on *TAX_RISK* for firms at the capital-infusion stage. In contrast, the coefficient on

[22] $e^{-0.070} - 1 = -6.8\%$.

TAX_RISK for more mature firms is negative and significant (column 2). I test and find that the effect of *TAX_RISK* in column 1 is significantly weaker than the effect in column 2 (p = 0.017).[23] Overall, these results support H2a and suggest that cash-flow uncertainty as result of tax risk appears less relevant for firms at the capital-infusion stage. Moreover, the relation between tax risk and amount of dividend payouts varies with the costs of dividend reductions.

INSERT TABLE 8 HERE

5. Additional Analyses

5.1. Tax Risk and Dividend Payouts per Quartile of Operating Risk

To address the concern that a spurious positive correlation between tax risk and operating risk might drive the negative association between tax risk and dividend payouts (Jacob et al. 2016), I examine whether the effect of tax risk is independent of the level of operating risk. To this end, I sort observations into quartiles of *SD_ROA* and re-estimate Equation (1) separately for each quartile. Table 9, Panel A shows results for the full sample and Panel B for the subsample of dividend-paying firms. Regression results indicate a fairly consistent negative association between *TAX_RISK* and dividend payouts. Most importantly, the effect of tax risk does not increase across quartiles of operating risk. In both panels, the effect of tax risk for firms with high operating risk (column 4) is comparable to the effect for firms with low operating risk (column 1). These results suggest that the relation between tax risk and dividend payouts is generally unaffected by a firm's operating risk. Moreover, economic risk as one dimension of tax risk that does not result in volatile tax payments but may mainly contribute to volatility in operating cash flow (Neuman et al. 2016) does not drive my baseline results. This indicates that

[23] I use a Chow (1960) test to assess the equality of OLS coefficients across subsamples. Consistent with the logit regressions above, I apply one-tailed p-values to assess whether coefficients differ between subsamples.

uncertainty in a firm's tax positions that results in volatile tax payments over time has distinct economic effects on dividend payouts.

INSERT TABLE 9 HERE

5.2. Tax Risk and Changes in Dividend Payouts over Time

The analysis thus far has been mainly cross-sectional. In this section, I conduct time-series tests and examine whether tax risk is associated with changes in a firm's dividend payouts over time. Table 10 reports results for logit regressions based on Equation (1). The first test examines the decision to initiate dividends in year *t* if a firm does not distribute dividends in year *t-1*. The dependent variable, *INITIATE*, is an indicator variable with the value of one if a firm initiates dividends in year *t*, and zero if a firm distributes dividends in neither year. Based on the argument that managers consider cash-flow uncertainty to avoid liquidity shortfalls and dividend reductions, I predict a negative association between tax risk and *INITIATE*. The coefficient on *TAX_RISK* in column 1 is negative but insignificant. In line with prior research (DeAngelo et al. 2006, Hoberg et al. 2014), dividend-initiating firms are more profitable, older, larger, have lower sales and asset growth, a smaller share of institutional investors, higher cash holdings, and lower research and development expenditures than firms that do not initiate dividend payouts.

The second test examines the decision to omit dividends in year *t* if a firm distributes dividends in year *t-1*. The dependent variable, *OMIT*, is an indicator variable with the value of one if a firm omits dividends in year *t*, and zero if a firm distributes dividends in both years. In contrast to dividend initiations, I predict a positive relation between tax risk and *OMIT*. In line with my prediction, the coefficient on *TAX_RISK* in column 3 is positive and significant. A one standard deviation higher tax risk is associated with a 0.2% higher probability of dividend omissions (column 4). The effect size of tax risk is similar to cash-flow uncertainty induced by operating risk. Coefficients on control variables have generally opposite signs as in column 1.

Lastly, I study the decision to increase (decrease) dividends in year *t* if a firm distributes dividends in year *t-1*. The dependent variable, *INCREASE (DECREASE)*, is an indicator variable with the value of one if a firm increases (decreases) dividends in year *t*, and zero if a firm does not increase (decrease) dividends in year *t*. Based on the arguments above, I expect tax risk to be negatively associated with dividend increases and positively associated with dividend decreases. Consistent with the first prediction, the coefficient on *TAX_RISK* in column 5 is negative and significant. A one standard deviation higher tax risk is associated with a 3.1% lower probability of dividend increases (column 6). The coefficient on *TAX_RISK* in column 7 is insignificant. Coefficients on control variables resemble the results in columns 1 and 3. Taken together, these tests provide some evidence that tax risk affects the decision to alter dividend payouts over time. Firms with greater tax risk are more likely to omit and less likely to increase dividend payouts.

INSERT TABLE 10 HERE

5.3. Tax Risk and Share Repurchases

The analysis thus far has examined dividend payouts as one channel to distribute profits to shareholders. As share repurchases have become increasingly relevant for U.S. firms (Grullon and Michaely 2002, Skinner 2008), I test whether tax risk has an effect on this distribution channel. Although firms use share repurchases as a substitute for dividend payouts (Grullon and Michaely 2002), the two distribution channels are not economically equivalent (Farre-Mensa et al. 2014). Most importantly, share repurchases offer more flexibility than dividend payouts. Firms could repurchase shares without creating expectations for similar repurchases in subsequent years or omit repurchases without causing negative capital market reactions (Jagannathan et al. 2000). As adjusting share repurchases is less costly for firms than adjusting dividend payouts, cash-flow uncertainty induced by tax risk seems less relevant for this distribution channel. Thus, I predict a negative but weaker association between tax risk and (i) the probability of share repurchases and (ii) the amount of share repurchases.

To test these predictions, I apply the sample selection procedure outlined in section 3.1. I collect a sample of repurchasing and non-repurchasing firms (18,295 firm-year observations) and a subsample that includes repurchasing firms only (11,682 firm-year observations). I follow Grullon and Michaely (2002) and calculate share repurchases as purchases of common and preferred stock less the change in redemption value of preferred stock. Based on equation (1), I estimate a logit regression that examines the association between tax risk and the probability of share repurchases and an OLS regression for the effect of tax risk on the amount of share repurchases. The dependent variable for the logit regression, *REPU*, is an indicator variable with the value of one if a firm repurchases shares in year *t*, and zero otherwise. The dependent variable for the OLS regression, *REPU*, is the logarithm of share repurchases in year *t* and scaled by total assets at the end of year *t*.

Table 11, columns 1-2 present results for the full sample and column 3 for the subsample of repurchasing firms. In column 1, the coefficient on *TAX_RISK* is negative and significant. A one standard deviation higher tax risk is associated with a 1.2% lower probability of share repurchases (column 2). Consistent with my expectation, the effect of tax risk in this sample is weaker than the effect of tax risk on dividend payouts (Table 4, column 4). Results for control variables are fairly consistent with prior research (Hoberg et al. 2014). The coefficient on *TAX_RISK* in column 3 is negative but insignificant. Taken together, these results suggest that tax risk is a determinant of a firm's decision to repurchase shares while tax risk is unrelated to the amount of share repurchases. These results are consistent with the argument that share repurchases offer more flexibility than dividend payouts.

INSERT TABLE 11 HERE

5.4. Alternative Measures for Tax Risk

In the tests thus far, I measure tax risk as the standard deviation of annual cash ETRs. In this section, I modify *TAX_RISK* to assess whether the measure for tax risk and the associated sample selection procedure affect my baseline results. Table 12, columns 1-3 show results for modified full samples and columns 4-6 for modified subsamples of dividend-paying firms.[24] I follow McGuire et al. (2013) and calculate *CV_TAX_RISK* as the coefficient of variation of annual cash ETRs over the five-year period *t-4* to *t*. This measure is unaffected by the level of tax avoidance as cash ETR volatility is normalized by the underlying mean ETR. Moreover, *CV_TAX_RISK* does not affect the sample selection procedure. In line with my baseline results, the coefficient on *CV_TAX_RISK* is negative and significant in both tests (columns 1 and 4).

I also examine whether requiring five consecutive years of positive pre-tax book income to calculate *TAX_RISK* may lead to an overrepresentation of profitable firms (Henry and Sansing 2014) and affect my baseline results. I follow Jacob et al. (2016) and compute *CV_TAX_RISK2* as the coefficient of variation of annual cash ETRs. In contrast to the previous measure, I set annual cash ETRs to 1 if the firm pays taxes in a loss year and to 0 if the firm receives a tax refund in a loss year. This approach explicitly considers loss years. In line with my baseline results, *CV_TAX_RISK2* is negative and significant in both tests (columns 2 and 5).

[24] For brevity, I report marginal effects instead of logit coefficients in Tables 12 and 13.

Lastly, I calculate *CV_CASH_ASSETS* as the coefficient of variation of the ratio of cash taxes paid divided by total assets over the five-year period *t-4* to *t*. In contrast to measures based on pre-tax book income, I do not winsorize annual ratios but exploit the full distribution of annual tax payments. Consistent with my baseline results, *CV_CASH_ASSETS* is negative and significant in both tests (columns 3 and 6). Taken together, these tests suggest that my baseline results are robust to alternative measures for tax risk. Moreover, extending the sample selection to loss years does not affect my baseline results.

INSERT TABLE 12 HERE

5.5. Additional Robustness Tests

Finally, I conduct several additional tests to further assess the robustness of my baseline results. Table 13, columns 1-3 show results for robustness tests based on the initial full sample and columns 4-6 for tests including the initial subsample of dividend-paying firms. First, I add firm-fixed effects and perform a within firm analysis to alleviate concerns that time-invariant omitted variables are correlated with tax risk and dividend payouts. Although firm-fixed effects reduce the sample size for the logit regression, the coefficient on *TAX_RISK* is negative and significant (column 1).[25] A one standard deviation higher tax risk is associated with a 3.1% lower probability of dividend payouts, which is comparable to my baseline results. Firm-fixed effects in the OLS regression lead to qualitatively similar results. The effect size of tax risk, however, is somewhat smaller in magnitude (column 4).

Second, I exclude fixed effects from the logit regression to address econometric concerns raised by Greene (2004) for adding fixed effects to nonlinear models. Results in column 2 are

[25] Firm-fixed effects require within-firm variation over time. To this end, I drop firms that neither initiate nor omit dividend payouts throughout the sample period. This requirement limits the sample to 4,843 firm-year observations.

consistent with my baseline results. For completeness, I also exclude fixed effects from the OLS regression. Results in column 5 remain unchanged. Taken together, these tests suggest that neither omitted correlated variables at the firm or industry level nor a general trend in dividend payouts over time drive the negative association between tax risk and dividend payouts.

Third, I substitute *ROA* with *CF* as net operating cash flow adjusted for cash taxes paid in year *t*. I also include the standard deviation of *CF* over the five-year period *t-4* to *t* (*SD_CF*) as an alternative measure for cash-flow uncertainty induced by operating risk and the logarithm of the market value of equity as an alternative measure for firm size. Consistent with my baseline results, *TAX_RISK* remains negative and significant in both tests (columns 3 and 6). The likelihood and the amount of dividend payouts increase in *CF* but decrease in *SD_CF*.

INSERT TABLE 13 HERE

6. Conclusions

In this study, I examine whether and to what extent tax risk affects a firm's decision to distribute dividends as well as the amount of dividend payouts. As tax risk increases cash-flow uncertainty and impairs the persistence and predictability of after-tax cash flow available for distribution, managers consider cash-flow uncertainty when deciding on dividend payouts. Based on this argument, I predict and find that tax risk has a negative effect on the likelihood of dividend payouts. The effect of tax risk is weaker for firms that distribute dividends based on agency aspects and for firms with a lower likelihood of unexpected tax payments. Furthermore, I find that tax risk is negatively related to the amount of dividend payouts with a weaker effect for firms that exhibit low costs of dividend reductions.

The effect of tax risk on dividend payouts is economically meaningful. Marginal effects suggest that a one standard deviation higher tax risk is associated with a 3.6% lower probability and a 6.8% lower amount of dividend payouts. Across several specifications, the effect of tax risk is comparable to other determinants of dividend payouts (e.g., cash-flow uncertainty induced by operating risk). Thus, tax risk is an economically important determinant of the decision to distribute dividends as well as the amount of dividend payouts.

Taken together, these results contribute to several streams of research. First, the negative effect of tax risk on dividend payouts provides evidence for a real effect of tax avoidance (Hanlon and Heitzman 2010). Together with the finding in Jacob et al. (2016) that tax risk delays large capital investments, my results suggest that risky tax-avoidance strategies induce non-tax costs on shareholders. Second, my findings extend research on the determinants and consequences of tax risk (Guenther et al. 2016, Saavedra 2015, DeSimone et al. 2015). Examining implications of tax avoidance requires separate tests for the level and the riskiness of tax payments to disentangle the distinct drivers of a real effect. Third, the incremental effect of tax risk extends research on the determinants of dividend payouts (Chay and Suh 2009, Hoberg et al. 2014). This finding should interest managers and shareholders as tax risk to some extent depends on country-specific factors that are not directly under a firm's control (e.g., tax enforcement, the rule of law). Moreover, my results suggest that adverse effects of tax risk on after-tax earnings likely result in lower dividend payouts. Overall, my findings contribute to the understanding of interactions between risky tax avoidance and a firm's financial ecosystem.

References

Allen, F., A. E. Bernardo, and I. Welch. 2000. A Theory of Dividends Based on Tax Clienteles. *The Journal of Finance* 55 (6): 2499–2536.

Allen, F., and R. Michaely. 2003. Payout policy. In *Handbook of the Economics of Finance*, edited by G. M., Constantinides, M. Harris, and R. M. Stulz. Amsterdam, Netherlands: Elsevier.

Allison, P. D. 1999. Comparing Logit and Probit Coefficients across Groups. *Sociological Methods & Research* 28 (2): 186–208.

Bauer, A. M., and K. J. Klassen. 2014. Tax Risk as the Likelihood of an Unfavorable Settlement with Tax Authorities. *Working Paper*.

Bhattacharya, S. 1979. Imperfect information, dividend policy, and 'the bird in the hand' fallacy. *Bell Journal of Economics* 10 (1): 259–270.

Blouin, J. L., J. S. Ready, and D. A. Shackelford. 2004. The initial impact of the 2003 reduction in the dividend tax rate. *Working Paper*.

Brav, A., J. R. Graham, C. R. Harvey, and R. Michaely. 2005. Payout policy in the 21st century. *Journal of Financial Economics* 77 (3): 483–527.

Chay, J. B., and J. Suh. 2009. Payout policy and cash-flow uncertainty. *Journal of Financial Economics* 93 (1): 88–107.

Chetty, R., and E. Saez. 2005. Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut. *Quarterly Journal of Economics* 120 (3): 791–833.

Chow, G. 1960. Tests of equality between sets of coefficients in two linear regressions. *Econometrica* 28 (3): 591–605.

Cook, K., W. J. Moser, and T. C. Omer. 2015. Tax avoidance and ex-ante cost of capital. *Working paper*.

DeAngelo, H., L. DeAngelo, and R. M. Stulz. 2006. Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics* 81 (2): 227–254.

Desai, M. A., and L. Jin. 2011. Institutional tax clienteles and payout policy. *Journal of Financial Economics* 100 (1): 68–84.

DeSimone, L., L. F. Mills, and B. Stomberg. 2015. Examining IRS Audit Outcomes of Income Mobile Firms. *Working Paper*.

Drake, K. D., S. J. Lusch, and J. Stekelberg. 2015. Investor Valuation of Tax Avoidance and Tax Risk. *Working Paper.*

Dyreng, S. D., M. Hanlon, and E. L. Maydew. 2008. Long-run corporate tax avoidance. *The Accounting Review* 83 (1): 61–82.

Dyreng, S. D., M. Hanlon, and E. L. Maydew. 2014. Rolling the Dice: When Does Tax Avoidance Result in Tax Uncertainty? *Working Paper*.

Easterbrook, F. H. 1984. Two agency-cost explanations of dividends. *The American Economic Review* 74 (4): 650–659.

Edwards, A., C. Schwab, and T. J. Shevlin. 2016. Financial Constraints and Cash Tax Savings. *The Accounting Review* 91 (3): 859–881.

EU Commission. 2015a. *Commission decides selective tax advantages for Fiat in Luxembourg and Starbucks in the Netherlands are illegal under EU state aid rules*. Available at: http://europa.eu/rapid/press-release_IP-15-5880_en.htm (last access September 21, 2016).

EU Commission. 2015b. *State aid: Commission opens formal investigation into Luxembourg's tax treatment of McDonald's.* Available at: http://europa.eu/rapid/press-release_IP-15-6221_en.htm (last access September 21, 2016).

EU Commission. 2016. *State aid: Ireland gave illegal tax benefits to Apple worth up to €13 billion.* Available at: http://europa.eu/rapid/press-release_IP-16-2923_en.htm (last access September 21, 2016).

Fama, E. F., and K. R. French. 2001. Disappearing dividends: changing firm characteristics or lower propensity to pay? *Journal of Financial Economics* 60 (1): 3–43.

Farre-Mensa, J., R. Michaely, and M. Schmalz. 2014. Payout Policy. *Annual Review of Financial Economics* 6: 75–134.

Goh, B.W., J. Lee, C.Y. Lim, and T. J. Shevlin. 2016. The effect of corporate tax avoidance on the cost of equity. *The Accounting Review*: forthcoming.

Graham, J. R., and A. L. Tucker. 2006. Tax shelters and corporate debt policy. *Journal of Financial Economics* 81 (3): 563–594.

Greene, W. 2004. The behavior of the maximum likelihood estimator of limited dependent variable models in the presence of fixed effects. *Econometrics Journal* 7 (1): 98–119.

Grullon, G., and R. Michaely. 2002. Dividends, share repurchases, and the substitution hypothesis. *The Journal of Finance* 57 (4): 1649–1684.

Grullon, G., R. Michaely, and B. Swaminathan. 2002. Are Dividend Changes a Sign of Maturity? *The Journal of Business* 75 (3): 387–424.

Guenther, D. A. 1994. Earnings Management in Response to Corporate Tax Rate Changes: Evidence from the 1986 Tax Reform Act. *The Accounting Review* 69 (1): 230–243.

Guenther, D. A., S. R. Matsunaga, and B. M. Williams. 2016. Is Tax Avoidance related to Firm Risk? *The Accounting Review*: forthcoming.

Hadlock, C. J., and J. R. Pierce. 2010. New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. *Review of Financial Studies* 23 (5): 1909–1940.

Hail, L., A. Tahoun, and C. Wang. 2014. Dividend Payouts and Information Shocks. *Journal of Accounting Research* 52 (2): 403–456.

Hanlon, M., S. Laplante, and T. J. Shevlin. 2005. Evidence for the possible information loss of conforming book income and taxable income. *Journal of Law and Economics* 48 (2): 407–442.

Hanlon, M., and S. Heitzman. 2010. A review of tax research. *Journal of Accounting and Economics* 50 (2–3): 127–178.

Hanlon, M., E. Maydew, and D. Saavedra 2016. The Taxman Cometh: Does Tax Uncertainty Affect Corporate Cash Holdings? *Working Paper*.

Hasan, I., C. K. S. 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.

Healy, P. M., and K. G. Palepu. 1988. Earnings information conveyed by dividend initiations and omissions. *Journal of Financial Economics* 21 (2): 149–175.

Henry, E., and R. Sansing. 2014. Data Truncation Bias and the Mismeasurement of Corporate Tax Avoidance. *Working Paper*.

Hoberg, G., and N. R. Prabhala. 2009. Disappearing Dividends, Catering, and Risk. *Review of Financial Studies* 22 (1): 79–116.

Hoberg, G., G. Philipps, and N. R. Prabhala. 2014. Product Market Threats, Payouts, and Financial Flexibility. *The Journal of Finance* 69 (1): 293–324.

Houlder, V. 2016. US companies warn tax avoidance crackdown will hit earnings. *Financial Times*. Available at: https://www.ft.com/content/b6f04f72-f12c-11e5-aff5-19b4e253664a (last access January 15, 2017)

Hutchens, M., and S. O. Rego. 2015. Does Greater Tax Risk Lead to Increased Firm Risk? *Working Paper*.

IRS. 2006. *IRS Accepts Settlement Offer in Largest Transfer Pricing Dispute*. IR-2006-142. Available at: https://www.irs.gov/uac/irs-accepts-settlement-offer-in-largest-transfer-pricing-dispute (last access September 21, 2016).

Jacob, M., and M. Jacob. 2013. Taxation, Dividends, and Share Repurchases: Taking Evidence Global. *Journal of Financial and Quantitative Analysis* 48 (4): 1241–1269.

Jacob, M., K. Wentland, and S. Wentland. 2016. Firm Tax Uncertainty, Cash Holdings, and the Timing of Large Investments. *Working Paper*.

Jagannathan, M., C. P. Stephens, and M. S. Weisbach. 2000. Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics* 57 (3): 355–384.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305–360.

Jensen, M. C. 1986. Agency Cost of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review* 76 (2): 323–329.

John, K., and J. Williams. 1985. Dividends, dilution, and taxes: A signalling equilibrium. *The Journal of Finance* 40 (4): 1053–1070.

Kim, K., S. T. McGuire, S. Savoy, and R. Wilson. 2015. How quickly do firms adjust to target levels of tax avoidance? *Working Paper*.

Koch A. S., and A. X. Sun. 2004. Dividend changes and the persistence of past earnings changes. *The Journal of Finance* 59 (5): 2093–2116.

Lang, M., P. Pistone, J. Schuch, and C. Staringer. 2015. *Introduction to European Tax Law on Direct Taxation*. Vienna, Austria: Linde Verlag.

Leary, M. T., and R. Michaely. 2011. Determinants of Dividend Smoothing: Empirical Evidence. *Review of Financial Studies* 24 (10): 3197–3249.

Lev, B. and D. Nissim. 2004. Taxable income, future earnings, and equity values. *The Accounting Review* 79 (4): 1039–1074.

Lintner, J. 1956. Distribution of incomes of operations among dividends, retained earnings, and taxes. *The American Economic Review* 46 (2): 97–113.

Livesey, B. 2016. Did this company engineer the largest tax dodge in Canadian history? *National Observer*. Available at: http://www.nationalobserver.com/2016/04/25/news/did-company-engineer-largest-tax-dodge-canadian-history (last access September 21, 2016).

Markowitz, H. 1952. Portfolio Selection, *The Journal of Finance* 7 (1): 77–91.

Maydew, E. L. 1997. Tax-Induced Earnings Management by Firms with Net Operating Losses. *Journal of Accounting Research* 35 (1): 83–96.

McGuire, S. T., S. S. Neuman, and T. C. Omer. 2013. Sustainable tax strategies and earnings persistence. *Working Paper*.

Merton, R. C. 1973. An intertemporal capital asset pricing model. *Econometrica: Journal of the Econometric Society* 41 (5): 867–887.

Michaely, R., R. H. Thaler, and K. L. Womack. 1995. Price reactions to dividend initiations and omissions: Overreaction or drift? *The Journal of Finance* 50 (2): 573–608.

Miller, M. H., and F. Modigliani. 1961. Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business* 34 (4): 411–433.

Miller, M. H., and K. Rock. 1985. Dividend Policy under Asymmetric Information. *The Journal of Finance* 40 (4): 1031–1051.

Mills, L. F. 1998. Book-tax differences and Internal Revenue Service adjustments. *Journal of Accounting Research* 36 (2): 343–356.

Myers, S. C., and N. C. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13 (2): 187–221.

Neuman, S. S. 2016. Tax Strategies: It's not just about minimization. *Working Paper*.

Neuman, S. S., T. C. Omer, and A. P. Schmidt. 2016. Assessing Tax Risk: Practitioner Perspectives: *Working Paper*.

Officer, M. S. 2011. Overinvestment, corporate governance, and dividend initiations. *Journal of Corporate Finance* 17 (3): 710–724.

Petersen, M. A. 2009. Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *Review of Financial Studies* 22 (1): 435–480.

Poterba, J. 2004. Taxation and Corporate Payout Policy. *The American Economic Review* 94 (2): 171–175.

Robinson, L., A., B. Stomberg, and E. M. Towery. 2015. One Size Does Not Fit All: How the Uniform Rules of FIN 48 Affect the Relevance of Income Tax Accounting. *The Accounting Review* 91 (4): 1195–1217.

Saavedra, D. 2015. Tax Spike Firms. *Working Paper*.

Scholes, M. S., P. G. Wilson, and M. A. Wolfson. 1992. Firms' Responses to Anticipated Reductions in Tax Rates: The Tax Reform Act of 1986. *Journal of Accounting Research* 30 (1): 161–185.

Shevlin, T. J., O. Urcan, and F. Vasvari. 2013. Corporate tax avoidance and public debt costs. *Working Paper*.

Skinner, D. J. 2008. The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics* 87 (3): 582–609.

Smith, C. W., and R. L. Watts. 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32 (3): 263–292.

Sunder, S. 2015. Risk in Accounting. *Abacus: A Journal of Accounting, Finance and Business Studies* 51 (4): 536–548.

Appendix – Variables

Dependent Variables

DIV	First, *DIV* is an indicator variable with the value of one if a firm declares dividends on common stock in year *t* (DVC > 0), and zero otherwise (DVC = 0). Second, *DIV* is the natural logarithm of dividends declared on common stock in year *t* (DVC) and scaled by total assets in year *t* (AT). I set negative values to zero. Alternatively, I scale DVC by the market value of equity (PRCC_F*SCHO) and total sales (SALE).
INITIATE	Indicator variable with the value of one if a firm declares dividends in year *t* (DVC > 0) and did not declare dividends in year *t-1* (DVC = 0). The variable is zero if a firm declares dividends in neither years (DVC = 0).
OMIT	Indicator variable with the value of one if a firm does not declare dividends in year *t* (DVC = 0) and declared dividends in year *t-1* (DVC > 0). The variable is zero if a firm declares dividends in both years (DVC > 0).
INCREASE	Indicator variable with the value of one if a firm declares larger dividends per share in year *t* than in year *t-1* ($\text{DVPSP\_F}_t > \text{DVPSP\_F}_{t-1}$). The variable is zero if a firm does not increase dividends in year *t*.
DECREASE	Indicator variable with the value of one if a firm declares lower dividends per share in year *t* than in year *t-1* ($\text{DVPSP\_F}_t < \text{DVPSP\_F}_{t-1}$). The variable is zero if a firm does not decrease dividends in year *t*.
REPU	First, *REPU* is an indicator variable with the value of one if a firm repurchases shares in year *t*, and zero otherwise. Following Grullon and Michaely (2002), I calculate share repurchases as purchases of common and preferred stock (PRSTKC) less the change in the redemption value of preferred stock (PSTKRV_{t-1}–PSTRKV_t). Second, *REPU* is the natural logarithm of share repurchases in year *t* and scaled by total assets in year *t* (AT).

Measures for Tax Risk

TAX_RISK	Standard deviation of annual cash ETRs over the five-year period *t-4* to *t*. Annual cash ETRs are calculated as cash taxes paid (TXPD) divided by pre-tax income (PI) adjusted for special items (SPI). I set missing values for SPI to zero. Following Dyreng et al. (2008), I require a positive denominator and non-missing values in each year. I winsorize annual cash ETRs at 1 and 0.
CV_TAX_RISK	Coefficient of variation of annual cash ETRs as *TAX_RISK* divided by the mean of annual cash ETRs over the five-year period *t-4* to *t* (McGuire et al. 2013).
CV_TAX_RISK2	Coefficient of variation of annual cash ETRs as *TAX_RISK* divided by the mean of annual cash ETRs over the five-year period *t-4* to *t* (McGuire et al. 2013). Following Jacob et al. (2016), I set annual cash ETRs to 1 in case of a positive numerator and a negative denominator. Moreover, I set annual cash ETRs to 0 in case of a negative numerator and a negative denominator. I winsorize annual cash ETRs at 1 and 0.
CV_TAX_ASSETS	Coefficient of variation of the ratio of annual cash taxes paid (TXPD) over total assets (AT) as the standard deviation of the ratio over the five-year period *t-4* to *t* divided by the mean ratio over the same period. I drop observations with a negative denominator (TXPD < 0).

Control Variables

CASH_ETR	Long-run cash ETR as the sum of cash taxes paid over the five-year period *t-4* to *t* (TXPD) divided by the sum of pre-tax income over the five-year period *t-4* to *t* (PI) adjusted for special items (SPI). I set missing values for SPI to zero. Following Dyreng et al. (2008), I require firms to have a positive denominator. I winsorize *CASH_ETR* at 1 and 0.
ROA	Earnings before interest and taxes in year *t* (EBIT) scaled by total assets in year *t-1* (AT).
SD_ROA	Standard deviation of *ROA* over the five-year period *t-4* to *t*.
MTB	Market value of equity in year *t* (PRCC_F*CSHO) divided by the book value of equity in year *t* (CEQ).
SALES_GROWTH	Sales in year *t* (SALE) divided by sales in year *t-2* (SALE) less 1.
ASSET_GROWTH	Total assets in year *t* (AT) divided by total assets in year *t-1* (AT) less 1.
RE_TA	Retained earnings in year *t* (RE) scaled by total assets in year *t* (AT).
INST_INV	Average institutional ownership in year *t* as a fraction of common shares outstanding. I collect ownership data from the Thomson Reuters Institutional (13f) Holdings Database (INSTOWN_PERC). I set missing values to zero.
AGE	Natural logarithm of 1 plus firm age in year *t*. Following Hadlock and Pierce (2010), I compute firm age as year *t* (FYEAR) less the first year in which a firm reports a non-missing stock price (PRCC_F) in COMPUSTAT. I set negative values to zero.
SIZE *LN(MV)*	Natural logarithm of total assets in year *t* (AT). Alternatively, I measure *SIZE* as the natural logarithm of the market value of equity (PRCC_F*SCHO) and the natural logarithm of total sales (SALE).
CASH	Cash and short-term investments in year *t* (CHE) scaled by total assets in year *t* (AT).
R&D	Research and development expense in year *t* (XRD) scaled by total assets in year *t-1* (AT). I set missing values to zero.
SGA	Selling, general, and administrative expense in year *t* (XSGA) scaled by total assets in year *t-1* (AT). I set missing values to zero.

Alternative Control Variables

CF	Net operating cash flow in year *t* (OANCF) adjusted for cash taxes paid in year *t* (TXPD) scaled by total assets in year *t-1* (AT).
SD_CF	Standard deviation of *CF* over the five-year period *t-4* to *t*.
LN(MV)	Natural logarithm of the market value of equity in year *t* (PRCC_F*SCHO).

Partitioning Variables

HIGH_INST	Indicator variable with the value of one if the average institutional ownership in year *t* (*INST_INV)* is in highest annual quartile, and zero otherwise.
LOW_ETR	Indicator variable with the value of one if the long-run cash ETR in year *t* (*CASH_ETR*) is in the lowest quartile, and zero otherwise.
GROWING	Indicator variable with the value of one if retained earnings scaled by total assets in year *t* (*RE_TA)* are in the lowest annual quartile, and zero otherwise.

Note: I provide COMPUSTAT variable names in parentheses. Variables from other sources are noted accordingly. Unless indicated otherwise, I winsorize all continuous variables at the 1^{st} and 99^{th} percentile.

Table 1
Sample Section Procedure

Data Restrictions	**Firm Years**	**Firms**
Observations in COMPUSTAT Industrial for fiscal years 1993-2014	251,611	28,170
Less observations of firms incorporated outside the U.S.	(65,326)	(7,627)
Less observations of financial institutions (SIC codes: 6000-6999) and utilities (SIC codes: 4900-4949)	(59,170)	(6,872)
Less observations of firms with "LP" or "TRUST" in their name	(1,298)	(145)
Less observations with dividends greater than sales (DVC > SALE)	(1,659)	(469)
Less observations with negative dividends (DVC < 0) or negative sales (SALE < 0)	(5)	–
Less observations of firms with book equity below $250,000 (CEQ < 0.25) or total assets below $500,000 (AT < 0.5)	(20,035)	(615)
Less observations with insufficient data to compute *TAX_RISK*	(82,746)	(8,924)
Less observations with insufficient data to compute control variables	(2,303)	(404)
Full Sample: Dividend-paying firms and non-dividend-paying firms (sample period: 1998-2014)	**19,069**	**3,114**
Less observations with zero dividends (DVC = 0)	(8,890)	(1,589)
Subsample: Dividend-paying firms (sample period: 1998-2014)	**10,179**	**1,525**

Note: This table presents the sample selection procedure for tests of the association between tax risk and (i) the probability of dividend payouts and (ii) the level of dividend payouts. The full sample includes dividend-paying and non-dividend-paying firms. The subsample is limited to dividend-paying firms.

Table 2
Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Std Dev	25%	Median	75%	Mean DIV > 0	Mean DIV = 0
DIV	19,069	0.534	0.499	0.000	1.000	1.000	-4.057	0.000
TAX_RISK	19,069	0.103	0.080	0.048	0.080	0.129	0.095	0.112
CASH_ETR	19,069	0.265	0.121	0.194	0.276	0.340	0.281	0.247
ROA	19,069	0.140	0.086	0.081	0.122	0.179	0.140	0.141
SD_ROA	19,069	0.046	0.043	0.019	0.033	0.058	0.037	0.057
MTB	19,069	3.049	2.845	1.415	2.207	3.575	3.234	2.845
SALES_GROWTH	19,069	0.260	0.369	0.043	0.182	0.377	0.185	0.347
ASSET_GROWTH	19,069	0.134	0.233	0.013	0.081	0.180	0.099	0.174
RE_TA	19,069	0.358	0.275	0.192	0.343	0.520	0.412	0.294
INST_INV	19,069	0.435	0.367	0.000	0.490	0.772	0.433	0.436
AGE	19,069	2.919	0.677	2.398	2.944	3.526	3.191	2.610
SIZE	19,069	6.670	1.954	5.377	6.646	7.927	7.204	6.057
CASH	19,069	0.144	0.159	0.025	0.081	0.209	0.120	0.170
R&D	19,069	0.022	0.041	0.000	0.000	0.027	0.017	0.029
SGA	19,069	0.281	0.224	0.115	0.231	0.392	0.256	0.309

Note: This table presents descriptive statistics for the full sample of dividend-paying firms and non-dividend-paying firms (Columns 1-6). Column 7 presents means for dividend-paying firms and Column 8 for non-dividend-paying firms. In Columns 2-6 and 8 (7), *DIV* is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise (the natural logarithm of dividends declared in year *t* and scaled by total assets in year *t*). I define variables in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile.

Table 3
Correlation Table

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) DIV	1.000														
(2) TAX_RISK	**-0.106**	1.000													
(3) CASH_ETR	**0.140**	**0.306**	1.000												
(4) ROA	-0.005	**-0.255**	**0.048**	1.000											
(5) SD_ROA	**-0.212**	**0.134**	0.015	**0.289**	1.000										
(6) MTB	**0.063**	**-0.170**	**-0.082**	**0.485**	**0.074**	1.000									
(7) SALES_GROWTH	**-0.206**	**-0.027**	**-0.127**	**0.332**	**0.200**	**0.101**	1.000								
(8) ASSET_GROWTH	**-0.152**	**-0.041**	**-0.084**	**0.342**	**0.150**	**0.101**	**0.473**	1.000							
(9) RE_TA	**0.202**	**-0.125**	**0.281**	**0.229**	0.011	**0.034**	**-0.173**	**-0.143**	1.000						
(10) INST_INV	-0.003	**-0.113**	**-0.136**	**0.033**	**-0.067**	**0.115**	0.018	0.010	-0.015	1.000					
(11) AGE	**0.426**	**-0.062**	**0.042**	**-0.087**	**-0.260**	0.000	**-0.224**	**-0.151**	**0.216**	0.008	1.000				
(12) SIZE	**0.288**	**-0.213**	**-0.120**	**-0.040**	**-0.272**	**0.193**	-0.008	**0.026**	-0.015	**0.309**	**0.279**	1.000			
(13) CASH	**-0.153**	**0.020**	**-0.031**	**0.205**	**0.298**	**0.152**	-0.001	**0.033**	**0.155**	-0.012	**-0.130**	**-0.223**	1.000		
(14) R&D	**-0.136**	0.005	**-0.172**	**0.113**	**0.149**	**0.189**	**0.067**	**0.107**	-0.007	**0.107**	**-0.048**	**-0.043**	**0.389**	1.000	
(15) SGA	**-0.116**	**0.026**	**0.157**	**0.266**	**0.131**	**0.154**	**0.049**	**0.098**	**0.069**	**-0.185**	**-0.093**	**-0.276**	**0.147**	**0.179**	1.000

Note: This table presents Pearson correlation coefficients. I calculate correlation coefficients for the full sample of dividend-paying firms and non-dividend-paying firms. *DIV* is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise. I define variables in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile. Bold coefficients denote significance at the 1% level.

Table 4
Tests of H1: Tax Risk and the Probability of Dividend Payouts

	(1)	(2)	(3)	(4)	(5)	(6)
	Coef. (SE)	ME	Coef. (SE)	ME	Coef. (SE)	ME
Variables	*DIV*		*DIV*		*DIV*	
TAX_RISK	-0.204***	-0.051	-0.146***	-0.036		
	(0.030)		(0.038)			
CASH_ETR			-0.337***	-0.084	-0.285***	-0.071
			(0.045)		(0.042)	
ROA			0.218***	0.054	0.268***	0.067
			(0.050)		(0.049)	
SD_ROA			-0.133***	-0.033	-0.159***	-0.040
			(0.041)		(0.041)	
MTB			0.133***	0.033	0.128**	0.032
			(0.051)		(0.051)	
SALES_GROWTH			-0.340***	-0.084	-0.347***	-0.086
			(0.033)		(0.033)	
ASSET_GROWTH			-0.174***	-0.043	-0.178***	-0.044
			(0.024)		(0.024)	
RE_TA			0.183***	0.045	0.206***	0.051
			(0.055)		(0.055)	
INST_INV			-0.177***	-0.044	-0.172***	-0.043
			(0.049)		(0.049)	
AGE			0.781***	0.194	0.774***	0.192
			(0.049)		(0.049)	
SIZE			0.507***	0.126	0.528***	0.131
			(0.056)		(0.056)	
CASH			-0.169***	-0.042	-0.171***	-0.043
			(0.048)		(0.049)	
R&D			-0.149***	-0.037	-0.158***	-0.039
			(0.053)		(0.053)	
SGA			-0.189***	-0.047	-0.186***	-0.046
			(0.051)		(0.051)	
Intercept	0.158**		0.433***		0.457***	
	(0.063)		(0.084)		(0.083)	
Year FE	Y		Y		Y	
Observations	19,069		19,069		19,069	
Likelihood Ratio	-13,005		-10,014		-10,040	
Pseudo R^2	0.013		0.240		0.238	

Note: This table presents regression results for the relation between tax risk and the probability of dividend payouts for the full sample of dividend-paying and non-dividend-paying firms. Columns 1, 3, and 5 (2, 4, and 6) report coefficients (marginal effects) for a logit regression based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In all regression models, the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise. All regressions are estimated with year-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 5

Tests of H1a: Tax Risk and the Probability of Dividend Payouts by Institutional Ownership

	(1)	(2)	(3)	(4)
	Coef. (SE)	ME	Coef. (SE)	ME
Subsample	*HIGH_INST = 0*		*HIGH_INST =1*	
Variables	*DIV*		*DIV*	
TAX_RISK	-0.166*** (0.043)	-0.041	-0.045 (0.075)	-0.011
Additional Controls	Y		Y	
Year FE	Y		Y	
Observations	14,309		4,760	
Likelihood Ratio	-7,318		-2,544	
Pseudo R^2	0.255		0.225	
Equality of *TAX_RISK* p-value	0.075*			

Note: This table presents regression results for the relation between tax risk and the probability of dividend payouts for subsamples based on a firm's institutional ownership. Columns 1 and 2 (3 and 4) include firms with *HIGH_INST=0* (*HIGH_INST=1*). Columns 1 and 3 (2 and 4) report coefficients (marginal effects) for a logit regression based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In all regression models, the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise. All regressions are estimated with year-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed). I estimate the p-value (one-tailed) for the equality of coefficients on *TAX_RISK* across the two subsamples using on a t-test.

Table 6
Tests of H1b: Tax Risk and Probability of Dividend Payouts by cash ETR

	(1) Coef. (SE)	(2) ME	(3) Coef. (SE)	(4) ME
Subsamples	*LOW_ETR = 0*		*LOW_ETR = 1*	
Variables	*DIV*		*DIV*	
TAX_RISK	-0.203***	-0.049	0.104	0.024
	(0.043)		(0.065)	
Additional Controls	Y		Y	
Year FE	Y		Y	
Observations	14,302		4,767	
Likelihood Ratio	-7,487		-2,453	
Pseudo R^2	0.231		0.235	
Equality of *TAX_RISK* p-value	< 0.001***			

Note: This table presents regression results for the relation between tax risk and the probability of dividend payouts for subsamples based on a firm's cash ETR. Columns 1 and 2 (3 and 4) include firms with *LOW_ETR=0* (*LOW_ETR=1*). Columns 1 and 3 (2 and 4) report coefficients (marginal effects) for a logit regression based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In all regression models, the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise. All regressions are estimated with year-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed). I estimate the p-value (one-tailed) for the equality of coefficients on *TAX_RISK* across the two subsamples using on a t-test.

Table 7
Tests of H2: Tax Risk and the Amount of Dividend Payouts

	(1)	(2)	(3)	(4)	(5)
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Variables	*DIV*	*DIV*	*DIV*	*DIV*	*DIV*
TAX_RISK	-0.105***	-0.070***		-0.036**	-0.067***
	(0.019)	(0.016)		(0.018)	(0.016)
CASH_ETR		-0.060***	-0.035*	-0.044**	0.013
		(0.019)	(0.018)	(0.021)	(0.020)
ROA		0.268***	0.294***	0.009	0.148***
		(0.021)	(0.021)	(0.023)	(0.022)
SD_ROA		-0.001	-0.012	0.003	-0.015
		(0.017)	(0.017)	(0.019)	(0.017)
MTB		0.187***	0.184***	-0.007	0.192***
		(0.019)	(0.019)	(0.021)	(0.020)
SALES_GROWTH		-0.162***	-0.165***	-0.193***	-0.175***
		(0.013)	(0.013)	(0.014)	(0.013)
ASSET_GROWTH		-0.202***	-0.203***	-0.144***	-0.084***
		(0.011)	(0.011)	(0.012)	(0.011)
RE_TA		-0.006	0.005	-0.133***	-0.010
		(0.022)	(0.021)	(0.023)	(0.022)
INST_INV		-0.023	-0.021	-0.045*	0.013
		(0.022)	(0.022)	(0.024)	(0.021)
AGE		0.115***	0.113***	0.157***	0.112***
		(0.020)	(0.020)	(0.021)	(0.021)
SIZE		-0.140***	-0.131***	-0.233***	-0.176***
		(0.027)	(0.028)	(0.030)	(0.028)
CASH		0.150***	0.149***	0.050**	0.164***
		(0.020)	(0.020)	(0.021)	(0.020)
R&D		0.046*	0.041	0.010	0.080***
		(0.026)	(0.026)	(0.027)	(0.025)
SGA		0.058**	0.058**	-0.005	-0.157***
		(0.027)	(0.027)	(0.029)	(0.027)
Intercept	-0.504***	-0.211	-0.187	-0.027	0.128
	(0.191)	(0.169)	(0.169)	(0.184)	(0.219)
Year FE	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y
Observations	10,179	10,179	10,179	10,179	10,179
Likelihood Ratio	-13,713	-11,817	-11,848	-12,911	-11,776
Adjusted R^2	0.129	0.399	0.395	0.255	0.404

Note: This table presents regression results for the relation between tax risk and the amount of dividend payouts for the subsample of dividend-paying firms. Columns 1-5 report coefficients for an OLS regression based on Equation (1). All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In columns 1-3 (4 and 5), the dependent variable, *DIV*, is the natural logarithm of dividends in year *t* and scaled by total assets in year *t* (the natural logarithm of dividends in year *t* and scaled by the market value of equity and total sales in year *t*, respectively). In columns 1-3 (4 and 5), *SIZE* is the natural logarithm of total assets in year *t* (the natural logarithm of the market value of equity and total sales in year *t*, respectively). All regressions are estimated with year and industry-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 8

Tests of H2a: Tax Risk and the Amount of Dividend Payouts by a Firm's Life-Cycle Stage

	(1) Coef. (SE)	(2) Coef. (SE)
Subsamples	*GROWING = 1*	*GROWING = 0*
Variables	*DIV*	*DIV*
TAX_RISK	-0.019	-0.083***
	(0.025)	(0.019)
Additional Controls	Y	Y
Year FE	Y	Y
Industry FE	Y	Y
Observations	2,537	7,642
Likelihood Ratio	-3,033	-8,518
Adjusted R^2	0.478	0.385
Equality of *TAX_RISK* p-value	0.017**	

Note: This table presents regression results for the relation between tax risk and the amount of dividend payouts for subsamples based on a firm's life-cycle stage. Column 1 (2) includes firms with *GROWING=1* (*GROWING=0*). All columns report coefficients for an OLS regression based on Equation (1). All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. The dependent variable, *DIV*, is the natural logarithm of dividends in year *t* and scaled by total assets in year *t.* All regressions are estimated with year and industry-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed). I estimate the p-value (one-tailed) for the equality of coefficients on *TAX_RISK* across the two subsamples using on a Chow (1960) test.

Table 9

Additional Analyses: Tax Risk and Dividend Payouts by Quartiles of *SD_ROA*

Panel A: Tax Risk and the Probability of Dividend Payouts

	(1) ME (SE)	(2) ME (SE)	(3) ME (SE)	(4) ME (SE)
Subsample	*Quartile 1*	*Quartile 2*	*Quartile 3*	*Quartile 4*
Variables	*DIV*	*DIV*	*DIV*	*DIV*
TAX_RISK	-0.042***	-0.015	-0.051***	-0.037***
	(0.078)	(0.067)	(0.060)	(0.056)
Additional Controls	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	4,768	4,767	4,767	4,767
Likelihood Ratio	-2,332	-2,510	-2,582	-2,481
Pseudo R^2	0.229	0.226	0.218	0.216

Panel B: Tax Risk and the Amount of Dividend Payouts

	(1) Coef. (SE)	(2) Coef. (SE)	(3) Coef. (SE)	(4) Coef. (SE)
Subsample	*Quartile 1*	*Quartile 2*	*Quartile 3*	*Quartile 4*
Variables	*DIV*	*DIV*	*DIV*	*DIV*
TAX_RISK	-0.084**	-0.051**	-0.021	-0.076***
	(0.036)	(0.026)	(0.025)	(0.024)
Additional Controls	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	2,545	2,545	2,545	2,544
Likelihood Ratio	-2,607	-2,775	-2,961	-3,080
Adjusted R^2	0.437	0.396	0.394	0.447

Note: This table presents regression results for the relation between tax risk and the probability of dividend payouts (Panel A) as well as the amount of dividend payouts (Panel B). I estimate regressions by quartiles of *SD_ROA*. Panel A (B) involves the full sample of dividend-paying and non-dividend-paying firms (the subsample of dividend-paying firms). Panel A (B) reports marginal effects for a logit regression (coefficients for an OLS regression) based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In Panel A (B), the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise (the natural logarithm of dividends in year *t* and scaled by total assets in year *t*). Regressions in Panel A (B) are estimated with year-fixed effects (year and industry-fixed effects). I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 10
Additional Analyses: Tax Risk and Changes in Dividend Payouts over Time

	(1) Coef. (SE)	(2) ME	(3) Coef. (SE)	(4) ME	(5) Coef. (SE)	(6) ME	(7) Coef. (SE)	(8) ME
Variables	*INITIATE*		*OMIT*		*INCREASE*		*DECREASE*	
TAX_RISK	-0.028	-0.001	0.181**	0.002	-0.130***	-0.031	-0.015	-0.002
	(0.059)		(0.071)		(0.035)		(0.037)	
CASH_ETR	-0.064	-0.002	0.161*	0.002	-0.059	-0.014	-0.038	-0.004
	(0.058)		(0.091)		(0.038)		(0.038)	
ROA	0.409***	0.016	-0.306***	-0.003	0.391***	0.094	0.070	0.008
	(0.074)		(0.103)		(0.043)		(0.047)	
SD_ROA	-0.085	-0.003	0.186***	0.002	-0.231***	-0.055	0.110***	0.012
	(0.060)		(0.066)		(0.035)		(0.033)	
MTB	-0.094	-0.004	0.035	0.000	-0.075**	-0.018	0.164***	0.018
	(0.060)		(0.105)		(0.036)		(0.035)	
SALES_GROWTH	-0.217***	-0.008	0.063	0.001	-0.037	-0.009	0.054	0.006
	(0.074)		(0.080)		(0.031)		(0.039)	
ASSET_GROWTH	-0.510***	-0.020	0.355***	0.003	-0.101***	-0.024	0.080***	0.009
	(0.109)		(0.054)		(0.025)		(0.031)	
RE_TA	-0.090*	-0.003	-0.215**	-0.002	0.145***	0.035	-0.083**	-0.009
	(0.051)		(0.094)		(0.042)		(0.038)	
INST_INV	-0.140***	-0.005	0.058	0.001	-0.004	-0.001	-0.118***	-0.013
	(0.052)		(0.100)		(0.040)		(0.035)	
AGE	0.144***	0.006	-0.432***	-0.004	0.032	0.008	0.088**	0.009
	(0.053)		(0.080)		(0.039)		(0.035)	
SIZE	0.158***	0.006	-0.627***	-0.006	0.323***	0.077	-0.271***	-0.029
	(0.059)		(0.110)		(0.041)		(0.041)	
CASH	0.169***	0.007	0.175**	0.002	0.031	0.007	0.043	0.005
	(0.053)		(0.070)		(0.035)		(0.034)	
R&D	-0.160**	-0.006	-0.006	0.000	0.020	0.005	-0.087**	-0.009
	(0.069)		(0.077)		(0.040)		(0.035)	
SGA	-0.091	-0.004	0.124	0.001	0.000	0.000	-0.137***	-0.015
	(0.059)		(0.080)		(0.040)		(0.038)	
Intercept	-3.459***		-5.629***		0.151		-1.715***	
	(0.271)		(0.524)		(0.096)		(0.120)	
Year FE	Y		Y		Y		Y	
Observations	9,211		9,852		9,646		9,646	
Likelihood Ratio	-1,848		-831		-5,988		-3,649	
Pseudo R^2	0.086		0.170		0.081		0.047	

Note: This table presents regression results for the relation between tax risk and changes in a firm's dividend payouts over time. Columns 1 and 2 include firms that do not distribute dividends in years *t-1* and *t* and firms that initiate dividends in year *t*. Columns 3-8 include firms that distribute dividends in years *t-1* and *t*. Columns 3 and 4 (5 and 6) [7 and 8] additionally include firms that omit (increase) [decrease] dividends in year *t*. Columns 1, 3, 5, and, 7 (2, 4, 6, and 8) report coefficients (marginal effects) for a logit regression based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. The dependent variable in column 1, *INITIATE*, is an indicator variable with the value of one if a firm initiates dividends in year *t*, and zero otherwise. The dependent variable in column 3, *OMIT*, is an indicator variable with the value of one if a firm omits dividends in year *t*, and zero otherwise. The dependent variable in column 5 (7), *INCREASE (DECREASE)*, is an indicator variable with the value of one if a firm increases (decreases) dividends in year *t*, and zero otherwise. All regressions are estimated with year-fixed effects. I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 11
Additional Analyses: Tax Risk and Share Repurchases

	(1)	(2)	(3)
	Coef. (SE)	ME	Coef. (SE)
Variables	*REPU*		*REPU*
TAX_RISK	-0.055*	-0.012	-0.011
	(0.028)		(0.012)
CASH_ETR	0.010	0.002	0.017
	(0.031)		(0.015)
ROA	0.286***	0.064	0.288***
	(0.038)		(0.016)
SD_ROA	-0.083***	-0.019	0.005
	(0.027)		(0.012)
MTB	0.027	0.006	0.087***
	(0.037)		(0.012)
SALES_GROWTH	-0.255***	-0.057	-0.094***
	(0.025)		(0.012)
ASSET_GROWTH	-0.327***	-0.074	-0.262***
	(0.022)		(0.011)
RE_TA	0.188***	0.042	0.065***
	(0.034)		(0.014)
INST_INV	0.048	0.011	0.040***
	(0.033)		(0.013)
AGE	0.022	0.005	-0.044***
	(0.032)		(0.014)
SIZE	0.588***	0.132	0.142***
	(0.040)		(0.016)
CASH	0.105***	0.024	0.045***
	(0.035)		(0.014)
R&D	0.068**	0.015	0.117***
	(0.032)		(0.014)
SGA	0.173***	0.039	0.068***
	(0.035)		(0.016)
Intercept	0.963***		0.105
	(0.078)		(0.107)
Year FE	Y		Y
Industry FE	N		Y
Observations	18,295		11,682
Likelihood Ratio	-10,677		-14,554
Pseudo/Adjusted R^2	0.108		0.288

Note: This table presents regression results for the relation between tax risk and share repurchases. Columns 1-2 (3) include a full sample (subsample) of share-repurchasing and non-share-repurchasing firms (share-repurchasing firms). Column 1 (2) [3] reports coefficients (marginal effects) for a logit regression [coefficients for an OLS regression] based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In columns 1-2 (3), the dependent variable, *REPU*, is an indicator variable with the value of one if a firm repurchases shares in year *t*, and zero otherwise (the natural logarithm of share repurchases in year *t* and scaled by total assets in year *t*). Columns 1-2 (3) are estimated with year-fixed effects (year and industry-fixed effects). I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 12
Additional Analyses: Alternative Measures for Tax Risk

	(1)	(2)	(3)	(4)	(5)	(6)
	ME (SE)	ME (SE)	ME (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Variables	*DIV*	*DIV*	*DIV*	*DIV*	*DIV*	*DIV*
CV_TAX_RISK	-0.033***			-0.051***		
	(0.041)			(0.019)		
CV_TAX_RISK2		-0.067***			-0.093***	
		(0.036)			(0.017)	
CV_TAX_ASSETS			-0.049***			-0.047***
			(0.035)			(0.017)
Additional Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	N	N	Y	Y	Y
Observations	19,069	32,942	26,591	10,179	13,668	11,438
Likelihood Ratio	-10,022	-16,221	-13,003	-11,833	-16,220	-13,505
Pseudo/Adjusted R^2	0.239	0.274	0.284	0.397	0.368	0.375

Note: This table presents regression results for alternative measures for tax risk. Columns 1-3 (4-6) include alternative samples of dividend-paying and non-dividend-paying firms (alternative subsamples of dividend-paying firms). Columns 1-3 (4-6) report marginal effects for a logit regression (coefficients for an OLS regression) based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In columns 1-3 (4-6), the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise (the natural logarithm of dividends in year *t* and scaled by total assets in year *t*). Columns 1-3 (4-6) are estimated with year-fixed effects (year and industry-fixed effects). I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).

Table 13
Additional Analyses: Additional Robustness Tests

	(1) ME (SE)	(2) ME (SE)	(3) ME (SE)	(4) Coef. (SE)	(5) Coef. (SE)	(6) Coef. (SE)
Variables	*DIV*	*DIV*	*DIV*	*DIV*	*DIV*	*DIV*
TAX_RISK	-0.031**	-0.035***	-0.038***	-0.038***	-0.062***	-0.082***
	(0.067)	(0.038)	(0.038)	(0.011)	(0.016)	(0.017)
ROA	0.064***	0.053***		0.115***	0.280***	
	(0.082)	(0.049)		(0.017)	(0.022)	
SD_ROA	-0.035**	-0.037***		0.005	0.015	
	(0.073)	(0.041)		(0.013)	(0.018)	
SIZE	0.353***	0.122***		-0.537***	-0.110***	
	(0.350)	(0.055)		(0.101)	(0.026)	
CF			0.032***			0.242***
			(0.043)			(0.021)
SD_CF			-0.032***			-0.014
			(0.040)			(0.018)
LN(MV)			0.128***			-0.077***
			(0.059)			(0.028)
Additional Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	N	Y	Y	N	Y
Industry FE	N	N	N	N	N	Y
Firm FE	Y	N	N	Y	N	N
Observations	4,843	19,069	19,069	10,179	10,179	10,179
Likelihood Ratio	-1,296	-10,078	-10,018	-5,058	-12,382	-11,924
Pseudo/Adjusted R^2	0.363	0.235	0.240	0.185	0.332	0.386

Note: This table presents regression results for robustness tests. Columns 1-3 (4-6) include the full sample (the subsample of dividend-paying firms). Columns 1-3 (4-6) report marginal effects for a logit regression (coefficients for an OLS regression) based on Equation (1). I calculate marginal effects while holding continuous variables at their means. All variables are standardized to have a mean of zero and a standard deviation of one prior to fitting regressions. In columns 1-3 (4-6), the dependent variable, *DIV*, is an indicator variable with the value of one if a firm declares dividends in year *t*, and zero otherwise (the natural logarithm of dividends in year *t* and scaled by total assets in year *t)*. Columns 3 and 6 include alternative control variables. Columns 1 and 4 (2 and 5) are estimated with year and firm-fixed effects (without fixed effects) and column 3 (6) with year-fixed effects (year and industry-fixed effects). I report heteroscedasticity-robust standard errors clustered by firm in parentheses. I define variables in the Appendix. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively (two-tailed).