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Abstract

While prior studies have examined how investors perceive extreme forms of tax avoidance behavior such as tax sheltering and uncertain tax position (e.g., Hanlon and Slemrod 2009; Wilson 2009; Koester 2011; Hutchens and Rego 2012), there is little evidence on how investors perceive less extreme forms of tax avoidance. This study fills this void by examining the relation between firm's cost of equity and corporate tax avoidance using three measures that capture less extreme forms of corporate tax avoidance: book-tax differences, permanent book-tax differences, and long-run cash effective tax rates. We find that less aggressive forms of corporate tax avoidance significantly reduces a firm's cost of equity. Further analyses reveal that this effect is stronger for (i) firms with better outside monitoring, (ii) firms that likely realize higher marginal benefits from tax savings, and (iii) firms with better information quality. Our study presents large-sample results on how investors perceive less aggressive corporate tax avoidance and shows that tax planning is a value-enhancing activity for shareholders.

1. Introduction

How investors perceive tax avoidance behavior has been an area of emerging interest. For instance, Hanlon and Slemrod (2009) study how investors react to tax sheltering activities and find that a company's stock price declines when there is news about its involvement in tax shelters. In contrast, Wilson (2009) finds that tax shelter firms are associated with higher future stock returns when corporate governance is strong, and Gallemore et al. (2012) find that firms, and their top executives, do not appear to bear significant reputational costs from engaging in tax sheltering. Other studies focus on how investors perceive tax reserves disclosed under FIN 48. For instance, Koester (2011) examines equity investors' valuation of tax avoidance achieved through uncertain tax position under FIN 48 and finds that investors value uncertain tax avoidance positively on average. In contrast, Hutchens and Rego (2012) find that higher tax reserves are associated with a higher cost of capital, which suggests that investors require a higher rate of return for the risky tax position, consistent with Wilson's (2008) results for well governed firms. Overall, these studies focus on more extreme forms of corporate tax avoidance activities and the result are inconclusive on how equity investors perceive aggressive tax sheltering and risky tax position.[1] Our paper extends these studies by examining how investors perceive less aggressive and less risky forms of tax avoidance affects a firm's cost of equity.

We motivate the link between tax avoidance and cost of equity by relying on Lambert et al. (2007) who develop a model in a single-period, multisecurity CAPM setting that links the quality of accounting disclosures and information systems to firm risk and cost of equity. In this model, the quality of accounting information influences the cost of equity both directly and indirectly. The direct effect occurs when accounting information quality affects market

[1] Lisowsky et al. (2012) provide evidence that tax reserves are superior predictors of tax shelter activity relative to other measures of aggressive tax avoidance. Hence, we also treat tax reserves as an aggressive form of tax avoidance behavior.

participants' assessments of the variance of the firm's own cash flows as well as the covariance with other firms' cash flows, which is nondiversifiable. Higher accounting information quality allows better assessment of the firm's cash flows, reduces information uncertainty and hence leads to lower cost of equity. The indirect effect occurs when accounting information quality affects the firm's real decisions, and thus the firm's future expected cash flows. Higher accounting quality reduces managerial misappropriation of the firm's cash flow and enhances production and/or investment decisions, and therefore leads to higher expected cash flows generated by the firm and a lower cost of equity (Lambert et al. 2007, pp.392).[2]

Applying the Lambert et al. (2007) model to our setting of corporate tax avoidance, tax avoidance can increase the firm's cost of equity via its direct effect on investors' assessments of firm risk. Tax avoidance behavior can increase the opacity of a firm's information environment (Balakrishnan et al. 2011) and lead to more aggressive financial reporting (Frank et al. 2009), both of which may impair the quality or precision of the firm's accounting information and thereby increase investors' uncertainty of the firm's future cash flows.

On the other hand, tax avoidance via its indirect effect on the firm's expected future cash flows could either increase or decrease the firm's cost of equity. Desai and Dharmapala (2006) and Desai et al, (2007) argue and provide evidence consistent with their argument that there are complementarities between tax avoidance behavior and diversion, such that managers can use tax avoidance activities to extract rent from shareholders. If greater tax

[2] That the expected future cash flow affects the cost of equity capital in the Lambert et al. (2007) model might surprise some readers as expected cash flows is often thought of as the numerator in a discounted cash flow valuation model. Lambert et al. (2007, pp.392) clarify this relationship as follows: "Perhaps the most surprising result is that an increase in the expected value of cash flows decreases the expected rate of return. The intuition, however, is fairly straightforward. Consider a firm with two components of cash flow: a riskless component and a risky component. Clearly, the cost of capital for the firm is somewhere in between the cost of capital for the riskless component and the cost of capital for the risky component. But if the firm's expected cash flow increases without affecting the firm's variances or covariances, this is exactly analogous to adding a new riskless component of cash flow to the firm's existing cash flow. The firm's cost of capital therefore decreases."

avoidance increases the firm's assets appropriated by managers, this would result in lower cash flows available to investors. Finally, the firm suffers potential compliance or reputation costs in the event that the tax avoidance behavior is discovered by the IRS, hence decreasing expected cash flows and increasing the cost of capital.

Conversely, in the context of the Lambert et al. (2007) model, cash savings from tax planning can be interpreted as cash flow appropriated by the firm from the tax authorities, which increases expected future cash flows. Every dollar saved from paying tax can also be redeployed to more productive uses. For a firm that faces financial constraints in funding its profitable investment opportunities, the cash savings from tax can be utilized to fund these investments, which would otherwise be foregone.[3] In addition, efficient tax planning usually involves complex structuring of transactions to minimize the overall corporate tax burden. Investors may perceive managers who are able to effectively lower the tax burden as more capable and able to make better production and/or investment decisions, thus increasing their expectation of the firm's future cash flows. Finally, diversified and thus less risk-averse shareholders prefer risk-averse and under-diversified managers to increase firm risk optimally and to undertake risky but value-increasing activities (e.g. Jensen and Meckling 1976). If investors perceive tax avoidance as risk-taking activity that has a positive net present value, this can increase the expected future cash flows and reduce the cost of equity.

Hanlon and Heitzman (2010) recommend that researchers carefully consider the appropriateness of tax avoidance measures for the research question at hand. They also state, "If tax avoidance represents a continuum of tax planning strategies where something like municipal bond investments are at one end (lower explicit tax, perfectly legal), then terms such as "noncompliance," "evasion," "aggressiveness," and "sheltering" would be closer to

[3] Edwards et al. (2012) find that firms facing financial constraints undertake more tax avoidance in order to save tax cash outflows. Consequently, these cash flows could be employed to fund profitable investment opportunities.

the other end of the continuum." Given the Lambert et al. (2007) model, more aggressive forms of tax avoidance are likely to result in increased opacity of the financial statements, possible increased agency concerns and increased compliance and reputation risks while also saving taxes. Thus it is not clear which effect, the direct or indirect effect under the Lambert et al. model, will dominate for aggressive tax avoidance activities and this might explain the prior inconclusive evidence on how equity investors view aggressive tax avoidance. However, less aggressive and less risky tax avoidance activities are less likely to result in opaque financial statements, agency problems and compliance and reputation risks such that the indirect effect in the Lambert et al. model of increased after-tax cash flows is likely to dominate the direct effects resulting in a prediction that greater tax avoidance arising from less aggressive forms will result in lower cost of equity. We test this latter prediction. Lisowsky et al. (2012) suggest that the probability of engaging in tax sheltering, discretionary permanent book-tax difference, permanent book-tax difference, book-tax difference, and cash effective tax rates capture the varying degree of tax aggressiveness, from most aggressive to least aggressive. Thus given that our study aims to explore how investors perceive the less aggressive and less risky forms of tax avoidance, we focus on the following measures: book-tax differences, permanent book-tax differences, and long-run cash effective tax rates.[4] Hereafter we use the term tax avoidance to refer to less aggressive forms of tax planning and use the term tax aggressive to refer to more aggressive forms of tax planning.

We test the relation between tax avoidance and the cost of equity using a large sample of firms from 1993-2010. We find that greater levels of all of our three measures of tax avoidance are associated with a lower cost of equity capital, proxied by an implied cost of capital estimate, which is an *ex ante* cost of equity measure inferred from current stock prices and analysts' forecast of future earnings (Easton 2004; Botosan and Plumlee 2005). To

[4] We acknowledge that these three measures will also reflect the outcomes of aggressive tax planning such as tax shelters but will, as Lisowky et al. (2012) point out, be much more reflective of less aggressive tax planning.

further corroborate our findings, we conduct cross-sectional analyses to determine whether this effect is stronger for firms with better outside monitoring, for firms that accrue higher marginal benefits from tax savings, and for firms with better information quality because these firms are more likely to gain from tax avoidance and rational investors will perceive tax avoidance behavior in these firms more positively. The results are also consistent with our expectations. Our results are also robust to using three alternative measures of cost of equity, two alternative measures of less aggressive tax avoidance, and using a changes specification.

Finally, when we use proxies for more aggressive forms of tax planning, we find that the more aggressive tax avoidance is either not associated or positively associated with cost of equity. This result is consistent with our analysis of the Lambert et al. model that the direct effects become more salient when studying tax aggressive forms of tax planning. Overall, the results suggest that investors perceive less aggressive and less risky tax avoidance activities positively and reward firms that engage in these activities with a lower cost of equity.[5]

Our study makes several contributions to the existing literature. First, it extends the literature on how investors perceive corporate tax avoidance behavior. While prior studies examine how investors perceive extreme forms of tax avoidance behavior such as tax sheltering and uncertain tax position and the results are inconclusive (Hanlon and Slemrod 2009, Wilson 2009; Gallemore et al. 2012; Koester 2011; Hutchens and Rego 2012), there is little evidence on how investors perceive less extreme forms of tax avoidance in general. Our study complements these studies by examining how the less aggressive and less risky forms of tax avoidance activities affect the firm's cost of equity. A contemporaneous study by Hutchens and Rego (2012) examines the relation between a firm's tax reserves and cost of capital. However, their focus is on examining whether tax reserves capture uncertainty

[5] Not all firms will avoid taxes to the same extent to reduce their cost of equity. Firms trade-off the marginal benefits against the marginal costs of managing taxes. The benefits of tax avoidance include greater tax savings, while the costs include planning and implementation costs, potential penalties imposed by tax authorities and reputation costs. Hence, firms choose their "optimal" level of tax avoidance in their tax reporting.

surrounding a firm's tax positions (i.e., tax risk), and they find that tax reserve is significantly positively associated with the cost of equity capital. This result is not necessarily at odds with ours, given that tax reserves are superior predictors of tax sheltering activity (Lisowsky et al. 2012) and hence represent a more aggressive and more risky form of tax avoidance. Our study complements their finding and we document that less aggressive and less risky forms of tax avoidance, such as book-tax differences, permanent book-tax differences and cash effective tax rates, are associated with a lower cost of equity.

Second, our study adds to the debate on the corporate governance view of tax avoidance. While Desai and Dharmapala (2006) and Desai et al. (2007) argue that aggressive tax avoidance facilitates managerial rent extraction, Blaylock (2011) fails to find evidence to support this contention. In fact, using a large panel of US firms, he finds that tax avoidance is positively associated with performance and with more optimal investment policy, even among poorly governed firms. Similar to Blaylock (2011), we find little evidence to support economically significant diversion of tax savings or misappropriation of assets through tax avoidance activities. In fact, our results suggest that tax avoidance, at least less aggressive forms, transfers wealth from tax authorities to shareholders and hence shareholders view this positively, which results in a lower cost of equity capital. This result also potentially explains why many US corporations provide incentives to employees to reduce tax burdens (Robinson et al., 2010; Armstrong et al., 2012). If tax avoidance behavior is undesirable from the shareholders' viewpoint, it is difficult to reconcile the prevalence of tax planning in US corporations despite the relatively strong corporate governance and legal environment in the US.[6] This study thus highlights that corporate tax avoidance, as long as it is not too aggressive, may be value-enhancing from investors' and firms' perspective.

[6] For example, Dyreng et al. (2008) find that approximately one-fourth of their sample firms are able to maintain long-run cash effective tax rates below 20 percent, which suggests that many US firms engage in significant tax planning activities.

The remainder of our paper proceeds as follows. In the next section, we discuss the findings in related literature and develop our hypotheses. Section 3 describes the data and our research methodology. We present and discuss the results in Section 4. Section 5 reports additional analyses and sensitivity tests and Section 6 concludes.

2. Related Literature and Hypothesis Development

2.1 Lambert et al. (2007) model

To develop testable hypotheses relating tax avoidance and the cost of equity, we rely on Lambert et al. (2007) who develop a model in a single-period multi-security CAPM setting that links the quality of accounting disclosures and information systems to firm risk and cost of equity. In this model, the authors express the cost of equity, given the information available to market participants Φ, as follows (their equation 4b):

$$E\left(\tilde{R}_j\middle|\Phi\right) = \frac{R_f H(\Phi)+1}{H(\Phi)-1}, where\ H(\Phi) = \frac{E(\tilde{V}_j|\Phi)}{\frac{1}{N\tau}Cov(\tilde{V}_j, \sum_{k=1}^{J}\tilde{V}_k|\Phi)} \quad (1)$$

From this expression, the cost of equity for a firm is affected by the: 1) risk-free rate R_f; 2) aggregate market risk tolerance $N\tau$; 3) expected future cash flow $E(\tilde{V}_j)$ and; 4) covariance of the firm's cash flow with the sum of all firms' cash flows in the market $Cov(\tilde{V}_j, \sum_{k=1}^{J}\tilde{V}_k)$. As noted earlier, that the expected future cash flow affects the cost of equity capital in the Lambert et al. (2007) model might surprise some readers as expected cash flows is often thought of as the numerator in a discounted cash flow valuation model. Lambert et al. (2007, pp.392) clarify this relationship as follows: "Perhaps the most surprising result is that an increase in the expected value of cash flows decreases the expected rate of return. The intuition, however, is fairly straightforward. Consider a firm with two components of cash flow: a riskless component and a risky component. Clearly, the cost of capital for the firm is somewhere in between the cost of capital for the riskless component and the cost of capital for the risky component. But if the firm's expected cash flow increases without affecting the

firm's variances or covariances, this is exactly analogous to adding a new riskless component of cash flow to the firm's existing cash flow. The firm's cost of capital therefore decreases."

The quality of accounting information influences the cost of equity both directly and indirectly. The direct effect occurs when accounting information quality affects the market participants' assessments of the variance of the firm's own cash flows as well as the covariance with other firms' cash flows, which is nondiversifiable. Higher accounting information quality helps market participants to better assess the variance and covariance of the firm's cash flows, reduces information uncertainty and hence leads to a lower cost of equity. The indirect effect occurs when accounting information quality affects the firm's real decisions, which affects the firm's future expected cash flows. Higher accounting quality reduces managerial misappropriation of the firm's cash flow and enhances manager's production and/or investment decisions and therefore leads to higher expected cash flows generated by the firm and a lower cost of equity.[7]

2.2 Linking tax avoidance and the cost of equity

Based on the Lambert et al. (2007) model, we argue that tax avoidance can either increase or decrease the firm's cost of equity. In this section we use the term tax avoidance to cover all forms of tax avoidance from the most aggressive to the most benign. We narrow the definition later. On one hand, tax avoidance behavior increases the firm's cost of equity via its direct effect on investors' assessments of firm risk. Balakrishnan et al. (2011) argue that tax planning can increase the complexity of the organization and, to the extent that this greater complexity cannot be adequately communicated to outside parties (such as equity

[7] In this discussion, we assume that $H(\Phi)$ is increasing in expected cash flows $E(\tilde{V}_j|\Phi)$. However, this is not true universally because $H(\Phi)$is also driven by $Cov(\tilde{V}_j, \sum_{k=1}^{J} \tilde{V}_k|\Phi)$, which in turn is also affected by changes in expected cash flows. The equilibrium effect on the cost of equity is ambiguous (See Proposition 3 and 4 of Lambert et al. (2007) for more details). Following Lambert et al. (2007), we assume a more general case that higher accounting information quality leads to higher expected cash flows and a lower $H(\Phi)$, which results in a lower cost of equity.

investors, creditors, and analysts), transparency problems can arise. Their finding of associations between tax avoidance (proxied by the firm's effective tax rates) and measures of information uncertainty, information asymmetry and earnings quality suggests that tax avoidance behavior increases the opacity of a firm's information environment. Desai (2004) discusses the example of Enron in which tax avoidance activities give rise to earnings manipulation opportunities that can mislead investors. In addition, Frank et al. (2009) find a strong positive association between tax avoidance and aggressive financial reporting.[8] Their results suggest that insufficient costs exist to offset financial and tax reporting incentives, such that nonconformity between financial accounting standards and tax rules allows firms to manage book income upward and taxable income downward in the same reporting period. To the extent that lower financial reporting quality increases information uncertainty, their results provide additional evidence that tax avoidance results in greater financial opacity and information asymmetry. Taken together, these three studies suggest that tax avoidance could impair the quality or precision of the firm's accounting signals and thereby increases investors' uncertainty of the firm's future cash flows and result in higher cost of equity.

Within the Lambert et al. (2007) framework, tax avoidance can also increase the firm's cost of equity via its indirect effect on the firm's expected future cash flows. This indirect effect includes the amount of firm cash flows that managers appropriate for themselves. Desai and Dharmapala (2006) argue that complementarities exist between tax sheltering and rent extraction activities (e.g., earnings manipulation). In particular, they find that higher incentive compensation is associated with lower tax avoidance, and this negative effect is driven primarily by firms with weaker governance. The authors interpret their evidence as consistent with agency costs diminishing the benefits of corporate tax avoidance to shareholders. Desai and Dharmapala (2006) also discuss the example of Dynergy in which

[8] In contrast, Lennox et al. (2012) find that tax avoidance firms are less likely to commit accounting fraud, an extreme form of earnings management.

tax sheltering activities can facilitate managerial misrepresentation and destroy shareholder value. Consistent with this notion, Desai et al. (2007) find that firms targeted by enforcement actions experience an increase in market value after an increase in tax enforcement in Russia. This result suggests that even though tax avoidance activities save investors cash, investors are aware of the potential managerial self-dealing and react favorably to regulatory actions that prevent managers from transferring corporate resources under the cover of or through tax transactions. Hence, greater tax avoidance can exacerbate the agency problems between the firm and its shareholders increasing the firm's assets appropriated by management, resulting in lower cash flows available to investors. Finally, to the extent that the firm's tax avoidance activities are deemed by the IRS and the tax courts to be noncompliance, it may be disallowed and subject to additional taxes, fines, interest and penalties (Mills 1998; Hanlon and Slemrod 2009). This outcome can further reduce the expected cash flows to the firm. In sum, corporate tax avoidance can increase the firm's cost of equity, both directly and indirectly.

On the other hand, tax avoidance can decrease the firm's cost of equity via its indirect effect on the firm's expected future cash flows. The most obvious benefit of tax planning is cash tax-savings. In the context of Lambert et al. (2007) model, this benefit of tax avoidance can be interpreted as cash flow appropriated by the firm from the tax authorities, and therefore this appropriation is predicted to increase expected cash flows and thus reduce the firm's cost of equity. Every dollar saved from paying tax can also be redeployed to more productive uses. For a firm that faces financial constraints in funding its profitable investment opportunities, the cash savings from tax avoidance can be utilized to fund these investments that would otherwise be foregone (Edwards et al. 2012). For a firm in a fast-growing environment, the tax savings can be utilized to help fund its sales growth.

The above arguments, nonetheless, assume that the managers' interests are aligned with those of shareholders, and hence managers do not seek to appropriate all tax savings for themselves or to use tax avoidance to mask other rent extraction activities. This assumption may be too strong in light of the findings in Desai and Dharmapala (2006) and Desai et al. (2007) that managers can redirect tax savings to themselves. Blaylock (2011), however, cautions that the relation between rent extraction and tax avoidance may not be applicable in the US setting. Using a large panel of US firms, he cannot find any consistent evidence that tax avoidance is related to managerial rent extraction. He suggests that earlier finding of an association between tax avoidance and managerial rent extraction in Russia (Desai et al. 2007) may not be applicable in a strong legal and governance environment such as the US. Hence, to the extent that any association between managerial rent extraction and tax avoidance is tempered by the strong governance environment in the US, we expect corporate tax avoidance to result in an overall net increase in expected cash flows to shareholders.

Tax avoidance can also enhance the firm's real decisions such as production and/or investment decisions, thereby increasing the expected firm cash flow and reducing the cost of equity. Efficient tax planning usually involves complex structuring of transactions such as transfer pricing, setting up offshore intellectual property havens and centralizing operating activities in tax-friendly jurisdictions to minimize the overall corporate tax burden.[9] Managers who are able to effectively lower tax burdens are likely to be more capable and make better production and/or investment decisions, thus increasing investors' expectation of firm future cash flows. Consistent with this notion, Blaylock (2011) finds that tax avoidance is positively associated with future firm operating performance. He interprets this evidence as consistent with tax avoidance on average enhancing firm profitability and/or with tax

[9] For example, some corporations may take advantage of tax breaks and/or tax holidays offered in certain countries (such as Singapore and Vietnam) to centralize their regional administrative, research and development, manufacturing or logistics function to reduce overall tax burden and to reap economies of scale in these operating activities.

avoidance being a positive signal in general about managerial talent. He also finds that higher levels of tax avoidance are associated with relatively more optimal investment policy, consistent with managers of tax avoidance firms making better investment decisions.

Finally, investors could perceive managers who undertake tax avoidance activity as willing to take on more risks in production and/or investment decisions. Risk-neutral shareholders (who can diversify firm risk across various securities in their investment portfolio) prefer risk-averse and under-diversified managers to increase firm risk optimally and to undertake risky but value-increasing activities (e.g. Jensen and Meckling 1976). In line with this notion, Rego and Wilson (2012) find a positive association between option vega and corporate tax avoidance, consistent with shareholders providing equity risk incentives for managers to undertake risky tax avoidance activity.[10] If investors perceive tax avoidance as risk taking activity that has a positive net present value, this can increase the expected future cash flows of the firm and hence reduce the cost of equity.

Based on the above discussions that tax avoidance can potentially increase or decrease the firm's cost of equity, how investors perceive tax avoidance is ultimately an empirical question (see Figure 1 for a diagram that exhibit this relationship). While prior studies have examined this issue, they focus on the more aggressive and more risky form of tax avoidance. For instance, Hanlon and Slemrod (2009) find that the market reacts negatively to news about a firm's involvement in tax sheltering, which represents an extremely aggressive form of tax avoidance[11], while Wilson (2009) finds that tax shelter firms are associated with higher future stock returns when corporate governance is strong.[12] In addition, existing studies also

[10] Option vega measures the change in value of a manager's equity portfolio in response to a given change in stock return volatility and hence this measure provides an estimate of the payoff to managers for increasing firm risk.

[11] They find some limited evidence for cross-sectional variation in the reaction. For example, the stock price decline is smaller for firms that have good governance which is consistent with the idea that for these firms, the news is less likely to trigger concerns about insiders' self-dealing toward the investors themselves.

[12] Gallemore et al. (2012) also find that firms and their top executives do not appear to bear significant reputational costs from engaging in tax sheltering, which supports the view that equity investors do not view tax sheltering negatively.

examine investors' perception of another risky and aggressive form of tax avoidance—the total amount of tax reserves disclosed under FIN 48. Koester (2011) finds that equity investors value uncertain tax avoidance under FIN 48 positively on average. In contrast, Hutchens and Rego (2012) find that uncertain tax positions associated with a higher cost of capital, which suggests that investors require a higher rate of return for the risky tax position. Overall, while prior studies have examined how equity investors perceive aggressive tax sheltering and risky tax position and the results are inconclusive, there is limited research on how investors perceive less aggressive and less risky forms of tax avoidance.[13]

Given the Lambert et al. (2007) model, we expect that more aggressive forms of tax avoidance are likely to result in increased opacity of the financial statements, possible increased agency concerns, and increased compliance and reputation risks while also saving taxes. Thus it is not clear which effect, the direct or indirect effect under the Lambert et al. model, will dominate for aggressive tax avoidance activities and this might explain the prior inconclusive evidence on how equity investors view aggressive tax avoidance. However, less aggressive and less risky tax avoidance activities are less likely to result in opaque financial statements, agency problems and compliance and reputation risks such that the indirect effect in the Lambert et al. model of increased after-tax cash flows is likely to dominate the direct effects resulting in a prediction that greater tax avoidance arising from less aggressive forms will result in lower cost of equity. We test this latter prediction and explore how investors perceive the less aggressive and less risky forms of tax avoidance, hereafter simply referred to as tax avoidance. Consequently, we test the following directional hypothesis:

H1: Ceteris paribus, firms' tax avoidance is negatively associated with the cost of equity capital.

[13] Desai and Dharmapala (2009) find no significant relation between tax avoidance and Tobin's q, and only a positive relation between tax avoidance and Tobin's q in firms with high levels of institutional ownership. However, they do not examine whether tax avoidance affects a firm's cost of capital.

2.3 Cross-sectional Analyses

2.3.1 Effect of outside monitoring

In the cross-section of firms, we expect the cost of equity to vary with tax avoidance for firms with different characteristics, conditional on whether these characteristics strengthen or mitigate the relationship between tax avoidance and the cost of equity. As highlighted in the earlier section, the net benefits or costs accruing to the firm from tax avoidance are contingent on whether the tax savings are put to more productive uses or diverted to the manager for his private consumption (or used to mask managerial rent extraction). Outside monitoring is likely to reduce self-dealing of these tax savings by managers. Consistent with this argument, Chen et al. (2010) find that outside monitoring mitigates managerial rent extraction, and family firms with effective outside monitoring exhibit more tax avoidance than otherwise. Desai et al. (2007) also find that increases in corporate tax rates are associated with increases in corporate tax revenue only in countries with strong governance, suggesting that managers are able to divert less with more effective monitoring. Therefore, if tax avoidance is negatively associated with the cost of equity, we expect this effect to be stronger for firms with more effective outside monitoring. Our next hypothesis is presented as follows:

H2a: Ceteris paribus, the negative association between firms' tax avoidance and the cost of equity capital is stronger for firms that have better outside monitoring.

2.3.2 Effect of marginal benefits from tax savings

The marginal benefit of tax avoidance to shareholders likely depends on the use of the marginal dollar saved from taxes. Firms with financial constraints face difficulty in obtaining sufficient financing to fund investments when profitable opportunities arise. As such, the marginal benefit of a dollar of tax saved is likely to be higher for these firms. Consistent with this reasoning, Denis and Sibilkov (2010) find that the value of cash holdings is higher for

financial constrained firms because it allows constrained firms to increase investment and also from the fact that the marginal investment is more strongly related to firm value for constrained firms than for unconstrained firms. In a similar vein, firms with higher sales growth are likely to benefit more from the marginal dollar saved from paying tax as it allows them to fund their growth opportunities. Therefore, if we expect the cost of equity to be lower for firms with relatively higher levels of tax avoidance, this effect should be stronger for these firms with greater financial constraints and growth opportunities since the marginal benefit of tax avoidance to shareholders in these circumstances are higher. Our hypothesis is presented as follows:

H2b: Ceteris paribus, the negative association between firms' tax avoidance and the cost of equity capital is stronger for firms that accrue higher marginal benefits from tax savings than for other firms.

2.3.3 Effect of information quality

Desai and Dharmapala (2006) argue that tax avoidance is associated with greater opacity which facilitates managerial rent diversion. Consistent with this, Frank et al. (2009) find that tax avoidance is associated with financial reporting aggressiveness, which presumably increases opaqueness. In a similar vein, Balakrishnan et al. (2011) report that tax avoidance can increase the opacity of a firm's information environment. Hence for firms with poor information quality, managers could engage in tax avoidance behavior to increase opacity in order to mask their rent extraction from capital market participants. Rational investors may thus perceive tax planning activities negatively for firms with poor information quality as managers have greater ability to extract rents in such an environment. Therefore, if the cost of equity is lower for firms with relatively higher levels of tax avoidance, this effect should be weaker for these firms with poorer information quality. Our last hypothesis is presented as follows:

H2c: Ceteris paribus, the negative association between firms' tax avoidance and the cost of equity capital is weaker for firms with poorer information quality than for other firms.

3. Research Design

3.1 Measure of cost of equity capital

Following prior studies, our measure of *ex-ante* cost of equity capital is based on the discount rate that the market applies to a firm's future cash flow to determine the current stock price (e.g. Easton 2004; Botosan and Plumlee 2005; Easton and Monahan 2005). Because we cannot directly observe the market's expectation of a firm's future cash flow, we rely on analysts' expectations of future earnings as a proxy for market's expectations. Prior literature proposes a number of valuation models to derive the implied cost of equity (see Botosan and Plumlee 2005 and Botosan et al. 2011 for a comprehensive review of the models). These different models differ in their assumption of short-term and long-term growth rates, the explicit forecasting horizon and whether and how inflation is incorporated into the steady-state terminal value. Our main measure is based on Easton (2004), where the cost of equity capital (*R_PEG*) is defined as:

$$R\_PEG = \sqrt{\frac{eps_2 - eps_1}{P_0}}$$

where eps_2 (eps_1) refers to analysts' forecast of two-year (one-year) ahead earnings and P_0 refers to current stock price.[14]

We choose this measure for two important reasons. First, using Value Line analysts forecast data, Botosan and Plumlee (2005) suggest that this measure performs well as a proxy of cost of equity relative to other measures used in prior literature.[15] Second, this measure imposes minimal data restriction and does not require an estimate of analysts' forecasts of

[14] This measure restricts our sample to firms where eps_2 is greater than eps_1.
[15] In particular, Botosan and Plumlee (2005) find that *R_PEG* is associated with various proxies for firm-risk and is stable across alternative specifications.

long-term earnings and stock price. Therefore, it allows us to conduct a large-sample study using I/B/E/S consensus analyst forecasts data as compared to using a much smaller restricted sample using Value Line data. In sensitivity tests, we follow Botosan and Plumlee (2005) and test our main hypotheses using two alternative measures on a smaller sample based on Value Line data, and an average ex-ante cost of equity measure based on the valuation models derived from Claus and Thomas (2001), Gebhardt et al. (2001), Ohlson and Juettner-Nauroth (2005) and Easton (2004). Our main inferences are unchanged using these three alternative measures (see section 5.1).

3.2 Measures of tax avoidance

As mentioned earlier, our study aims to explore how investors perceive the less aggressive and less risky forms of tax avoidance. Based on Lisowsky et al. (2012), we focus on three measures: book-tax differences, permanent book-tax difference, and long-run cash effective tax rates. Using three measures increases the robustness of our results and mitigates concerns that our measure of tax avoidance is merely capturing some omitted firm-level characteristic that is unrelated to tax avoidance but related to the cost of equity capital. It is also important to note that all three measures capture non-conforming tax avoidance (i.e., tax planning strategies that result in different income reported for financial and tax reporting purposes).

Our first measure book-tax differences (*BTD*) is defined as the total difference between book and taxable income:

$$BTD = PI - (TXFED + TXFO)/STR$$

where PI refers to pretax income, TXFED refers to current federal tax expense, TXFO refers to current foreign tax expense and STR refers to the statutory tax rate. For cross-sectional aggregation purposes, *BTD* is scaled by lagged total assets.

Book-tax differences capture both permanent differences (e.g. book income that is non-taxable such as tax credits) as well as temporary differences (e.g. book income that is deferred to be taxed in future periods such as favorable tax treatment for depreciation). Prior literature is divided with respect to whether permanent or temporary differences better capture tax avoidance behavior (e.g., Hanlon and Heitzman 2010). Thus we utilize permanent book-tax difference (*PBTD)* as our second measure for tax avoidance. *PBTD* is computed as total book-tax differences (*BTD*) less temporary book-tax-differences (TXDI/STR), where TXDI is total deferred tax expense and STR is statutory marginal tax rate. Our third measure is the long-run cash effective tax rate (*CETR*), which is defined similarly to Dyreng et al. (2008):

CETR = -1 × [Five-year sum of cash taxes paid (TXPD)/(five-year sum of pretax income (PI) less special items (SPI))]

Using an effective tax rate measure over a five-year long horizon avoids annual volatility in effective tax rates, and mitigates concerns about earnings management through accruals because accruals are likely to reverse over the long run. Using a cash-based effective tax rate measure also avoids tax accrual effects present in the current tax expense. For ease of interpretation we multiply the five-year cash-based effective tax rate by minus 1 so that this measure is increasing in tax avoidance.

3.3 Empirical models

3.3.1 Main Analysis

To test H1, we estimate the following pooled cross-sectional regression:

$$R\_PEG_{it+1} = \alpha + \beta TAX_{it} + \psi FIRM\_CONTROLS_{it} + YEAR\_FE + IND\_FE + \varepsilon_{it} \quad (1)$$

where *R_PEG* refers to the measure of cost of equity capital, *TAX* refers to the measure of tax avoidance (*BTD*, *PBTD*, or *CETR*), *FIRM_CONTROLS* refers to a vector of firm-level

controls and *YEAR_FE* and *IND_FE* refer to time and industry fixed-effects respectively. We measure *R_PEG* at time t+1 to ensure that investors have access to information relating to the firm's tax avoidance activities before determining their expected returns. The control variables are measured contemporaneously with *TAX*. Because we conduct our hypothesis testing on a pooled sample, we cluster the standard errors by firm and include time fixed-effects in our regressions (Petersen 2009).[16] Table 1 includes the detailed definition of all variables.

We select *FIRM_CONTROLS* that are documented in prior literature to be associated with the cost of equity capital (e.g., Fama and French 1992, 1993; Botosan and Plumlee 2005; Armstrong et al. 2011). We include beta (*BETA*) because standard capital asset pricing models view beta as the sole determinant of the cost of equity capital. Firm size (*SIZE*) and book-to-market ratio (*BM*) are included to control for the empirical measurement error in *BETA*. We use the leverage ratio (*LEV*) to control for firm's capital structure, and bid-ask spread (*SPREAD*) to control for information asymmetry that is associated with the cost of capital. Finally, we include stock returns (*RET*) and stock returns volatility (*RETVOL*) to control for momentum effects and idiosyncratic risks that are known to affect the cost of equity. We expect negative associations between cost of equity and size, and between cost of equity and stock returns. We expect positive associations between cost of equity and other risk factors (*BETA*, *BM*, *LEV*, *SPREAD* and *RETVOL*).

3.3.2 Cross-sectional analyses

To test H2, we modify equation (1) to include the conditioning variable (*Conditional_VAR*) and the interaction between *TAX* and *Conditional_VAR*:

$$R\_PEG_{it+1} = \alpha + \beta TAX_{it} + \psi FIRM\_CONTROLS_{it} + \gamma Conditional\_VAR_{it}$$

[16] Petersen (2009) suggests that, in the presence of cross-sectional and time-series dependence, one dependence effect can be addressed parametrically (e.g., including time dummies for cross-sectional dependence) and then standard errors clustered on the other dependence effect (e.g., clustering by firms for time-series dependence) can be estimated. As we have more firm than year observations, we use year dummies and cluster by firms because a larger number of clusters lead to standard errors that are less biased.

$$+ \eta TAX_{it} \times Conditional\_VAR_{it} + YEAR\_FE + IND\_FE + \varepsilon_{it} \quad (2)$$

In H2a, we examine the moderating effect of outside monitoring on the relation between tax avoidance and cost of equity. We measure the extent of outside monitoring using two proxies. The first proxy is analyst following (*ANALYST*) because prior work suggests that analysts serve as external monitors to the firm and provide additional scrutiny over managers' actions (e.g. Jensen and Meckling 1976). Yu (2008) finds that firms followed by more analysts are associated with lower earnings management. Dyck et al. (2010) also document that analysts play a role in detecting corporate fraud. Therefore, we expect firms with greater analysts following to have more effective outside monitoring. The second proxy is the percentage of shares held by dedicated institutional investors (*DEDHELD*), where dedicated institutional investors are defined according to Bushee (1998) and used in Atkins et al. (2012).[17] Prior work suggests that dedicated institutional investors are long-term oriented, often hold large stakes in the firm and hence are likely to be more effective monitors (e.g. Bushee 1998; Chen et al. 2007). Therefore, we expect firms with greater percentage of shares held by dedicated institutions to have more effective outside monitoring. Based on H2a, we expect η to be negative in equation (2).

In H2b, we examine the moderating effect of marginal benefits from tax savings on the relation between tax avoidance and cost of equity. We estimate the marginal benefits from tax savings using two proxies. The first proxy is sales growth (*SG*), and we expect firms with greater sales growth to enjoy greater marginal benefits from tax savings because the cash saved from taxes can be used to fund the growth opportunities. The second proxy is a measure of financial constraints based on the KZ index (*DKZ*), which is a linear combination of five accounting ratios constructed by Lamont et al. (2001) based on the results in Kaplan and Zingales (1997). Prior work in finance often uses the KZ index as a proxy for financial

[17] We thank the authors for sharing the data on institutional classification with us.

constraints. We expect firms with greater financial constraints to enjoy greater marginal benefits from tax savings because the cash saved from taxes can be utilized to relieve financial constraints and to fund profitable investment opportunities. Based on H2b, we expect η to be negative in equation (2).

Finally in H2c, we examine the moderating effect of information quality on the relation between tax avoidance and cost of equity. We measure the quality of financial reporting using three measures. The first measure is the natural log of the absolute value of performance-adjusted discretionary accruals, as used in Ashbaugh et al. (2003). The second measure is accrual quality based on Dechow and Dichev (2002). The third measure is tax accrual quality based on Choudhary et al. (2012). All three measures capture the quality of the accruals estimation process, which could be affected by the firm's underlying economic determinants, the measurement error in the accounting system and/or earnings management. Poorer quality of accruals negatively affects the quality of external financial reporting and hence leads to lower corporate transparency. We expect investors to perceive tax avoidance negatively for firms with poor information quality because they expect such an environment to facilitate rent-seeking by managers. Hence, based on H2c, we expect η to be positive in equation (2).

4. Results

4.1. Sample

The sample period for the current study spans from 1993-2010.[18] We collect our data primarily from I/B/E/S, Compustat, and CRSP in computing the cost of equity capital, tax avoidance, the hypothesized intervening variables and the control variables used in the regression analysis. We exclude firms in the financial industries (i.e., SIC codes 6000 to

[18] Our sample begins in 1993 to coincide with the implementation of FAS 109 (now codified in ASC 740) to ensure consistent financial reporting for income taxes over the sample period.

6999). The sample size varies for each test because of the specific measure used in the test. For example, sample size is typically larger when tax avoidance is measured by total book-tax-difference (*BTD*) or permanent book-tax differences (*PBTD*), compared to long-run cash effective tax rates (*CETR*) because of the more stringent requirement to compute the latter variable. Similarly, models using sales growth (*SG*) and financial constraints (*DKZ*) as the intervening variables have relatively larger sample size compared to models using analyst coverage (*ANALYST*) or dedicated institutional ownership (*DEDHELD*), because these latter variables are available only for larger firms. We also truncate each continuous variable at the 1% and 99% level to mitigate the effect of outliers. The final sample size used in the regression analyses ranges from 24,539 to 34,652 firm-year observations for the 18-year sample period.

4.2 Descriptive statistics

Table 2 reports descriptive statistics on the regression variables. The mean and median cost of equity (*R_PEG*) is 11.5% and 10.2% respectively. The mean and median cost of equity in our sample is comparable to that reported in prior studies (e.g. Botosan et al. 2011). The mean (median) total book-tax difference (*BTD*) is 0.013 (0.016), which is comparable to that reported in another large sample study by Frank et al. (2009). The mean (median) permanent book-tax difference (*PBTD*) is 0.012 (0.007), and the mean (median) five-year cash effective tax rate is 34.7% (29.7%).[19] Recall that *CETR* is multiplied by -1 so that all three tax avoidance measures are increasing in tax avoidance.

Table 3 reports the Pearson correlation table of the variables in our paper. The three

[19] The mean and median five-year cash effective tax rate in our sample is higher than that reported in Dyreng et al. (2008) who reported a mean and median five-year cash effective tax rate of 29.1% and 27.7% respectively. The difference is likely due to Dyreng et al.'s (2008) sample of larger firms that survived at least ten years to compute their measure of ten-year cash effective tax rate. Dyreng et al. (2008) also reported that the larger firms in their sample are associated with a lower cash effective tax rate, which potentially explains the lower mean and median five-year cash effective tax rate in their sample as compared to ours.

measures of tax avoidance (*BTD*, *PBTD*, and *CETR*) are positively correlated with one another, which suggest that all three measures capture tax planning activities in general. However, the correlation among the three measures are not extremely high (between 0.11 to 0.65), which suggests that each measure likely captures different dimensions of tax avoidance and hence supports our choice of using all three measures in our analyses to triangulate our results and increase the robustness of our findings.

The correlation between cost of equity (*R_PEG*) and all three measures of tax avoidance (*BTD*, *PBTD*, and *CETR*) are significantly negative, which suggests that tax avoidance is associated with a lower cost of equity. The correlation between cost of equity and other control variables is also largely consistent with prior literature. In particular, *R_PEG* is positively correlated with beta (*BETA*), book-to market (*BM*), leverage (*LEV*), bid-ask spreads (*SPREAD*) and stock return volatility (*RETVOL*), and is negatively correlated with firm size (*SIZE*) and stock returns (*RET*). Because these are pairwise univariate correlations, we defer the main analyses to multivariate tests in section 4.3.

4.3 Main analysis – Test of H1

In this section, we report our results for the test of H1 which examines the association between tax avoidance and cost of equity. As shown in Table 4, all three of our measures of tax avoidance are highly and significantly associated with a lower cost of equity capital (t-statistic = -3.80, -3.96, and -4.96 for *BTD*, *PBTD*, and *CETR*, respectively). The effect of tax avoidance on cost of equity is also economically significant. Specifically, a one standard deviation increase in book-tax difference (*BTD*), permanent book-tax difference (*PBTD*), and cash-based effective tax rate (*CETR*) is associated with a 31 basis points, 22 basis points, and

19 basis points decrease in the cost of equity, respectively.[20]

The coefficients on the other control variables are significant and consistent with prior literature. In particular, we find that firms with higher beta (*BETA*), higher book-to-market (*BM*), higher leverage (*LEV*), higher bid-ask spread (*SPREAD*), and higher idiosyncratic risks (*RETVOL*) are associated with a higher cost of equity while larger firms (*SIZE*) and firms with higher stock returns (*RET*) are associated with a lower cost of equity.

Overall, the results suggest that investors perceive tax avoidance positively and reward tax-avoiding firms with a lower cost of equity.[21]

4.4 Cross-sectional analyses – Test of H2

In this section, we explore cross-sectional variation in the relation between tax avoidance and cost of equity. In H2a, we examine the moderating role of outside monitoring. In particular, we argue that stronger outside monitoring reduces diversion of tax savings to managers' private consumption or rent extraction masked by tax avoidance and hence investors should perceive tax planning more positively for tax-avoiding firms with better outside monitoring. The results of these analyses are presented in Table 5. In Panel A, we use analyst coverage (*ANALYST*) as a proxy for the extent of outside monitoring. Consistent with our prediction in H2a, we find that the cost of equity is lower for tax-avoiding firms with greater analyst following (t-statistic = -4.34, -3.00, and -1.96 for *BTD* × *ANALYST*, *PBTD* ×

[20] The impact of a one standard deviation increase in total book-tax difference (*BTD*) on the cost of equity (*R_PEG*) is computed as -0.027 (coefficient on *BTD*) × 0.113 (the sample standard deviation of *BTD*) = -0.31%. The other comparative statics are computed analogously.

[21] Guenther et al. (2012) find that volatility in cash effective tax rate is positively associated with firm risk proxied by stock returns volatility. They suggest that the level of cash effective tax rate (*CETR*) does not capture tax riskiness or firm risk. Guenther et al. (2012) document that the profile for low *CETR* tend to be more capital intensive, rely more on R&D, and hence likely benefit more from tax shields (thus firm risk is not necessarily higher). If so, we would expect firms with low *CETR* to have lower risk and cost of equity. We find evidence consistent with this expectation. On the other hand, Guenther et al. (2012) show that high *CETR* volatility firms are generally smaller, less capital intensive, with smaller tax benefits from the exercise of stock options. These firms are more risky and hence have greater future stock returns volatility. As a robustness check, we include the volatility of *CETR* in our regressions, and find that our main findings still hold (i.e., tax avoidance firms have lower cost of equity after controlling for the volatility of *CETR*).

ANALYST, and *CETR* × *ANALYST* respectively). In Panel B, we use the percentage of dedicated institutional ownership (*DEDHELD*) as a proxy for the extent of outside monitoring. Again consistent with H2a, we find that the cost of equity is lower for tax-avoiding firms with greater dedicated institutional ownership (t-statistic = -2.32, -2.56, and -2.16 for *BTD* × *DEDHELD*, *PBTD* × *DEDHELD*, and *CETR* × *DEDHELD* respectively). We also find that the coefficients of *ANALYST* and *DEDHELD* are negative and mostly significant, which suggests that better outside monitoring is associated with a lower cost of equity. In sum, the results in Table 5 are consistent with hypothesis H2a which suggests that investors perceive tax planning more positively for tax-avoiding firms with better outside monitoring as better outside monitoring likely mitigates managerial rent-diversion associated with tax avoidance.

In H2b, we examine the moderating role of marginal benefits of tax savings and predict that investors perceive tax planning more positively for tax-avoiding firms which likely realize more benefits from a marginal dollar saved from taxes. Table 6 reports the results of our analyses. In Table 6 Panel A, we use sales growth (*SG*) as a proxy for the marginal benefits for tax savings and we expect firms with higher sales growth to realize greater benefits from a marginal dollar saved because these tax savings can be used to fund firm growth. The results are consistent with our prediction H2b. In particular, we find that the cost of equity is lower for tax avoiding firms with greater sales growth (t-statistic = -1.98, -1.99, and -2.68 for *BTD* × *SG*, *PBTD* × *SG*, and *CETR* × *SG* respectively). In panel B, we use the KZ Index (*DKZ*) as a proxy for the marginal benefits for tax savings and we expect firms with greater financial constraints to benefit more from incremental tax savings as these savings can be used to fund profitable investment opportunities that they could not have afforded otherwise. Consistent with H2b, we find some evidence that the cost of equity is lower for tax-avoiding firms with greater financial constraints (t-statistic = -3.95, -1.87 and -

1.35 for *BTD* × *DKZ*, *PBTD* × *DKZ*, and *CETR* × *DKZ* respectively). Overall, the results in Table 6 are consistent with our prediction in H2b which suggests that investors recognize how tax savings can be redeployed to more productive uses and hence reward tax-avoiding firms with higher marginal benefits from tax savings with a lower cost of equity.

Finally in H2c, we examine the moderating role of information quality. In this hypothesis, we argue that poor information quality enhances managers' ability to use tax avoidance to obfuscate rent-seeking activities for their own self-interests and hence investors perceive tax planning more negatively for tax-avoiding firms with poor information quality. We measure the information quality of the firm using its financial reporting quality. The results of our tests are presented in Table 7. In panel A, we use the magnitude of performance-adjusted discretionary accruals (*APDAC*) as a proxy for information quality. Consistent with H2c, we find that the cost of equity is higher for tax-avoiding firms with higher magnitude of discretionary accruals (t-statistic = 6.00, 3.82, and 2.01 for *BTD* × *APDAC*, *PBTD* × *APDAC*, and *CETR* × *APDAC* respectively). In panel B, we use accrual quality based on the Dechow and Dichev (2002) as a proxy for information quality. Again consistent with H2c, we find that the cost of equity is higher for tax-avoiding firms with poorer accrual quality (t-statistic = 2.58, 2.06, and 1.91 for *BTD* × *AQ*, *PBTD* × *AQ*, and *CETR* × *AQ* respectively). Finally in Panel C, we use tax accrual quality based on Choudhary et al. (2012) as a proxy for information quality. The results are also consistent with H2c and we find that the cost of equity is higher for tax-avoiding firms with poor tax accrual quality (t-statistic = 3.13, 2.56, and 3.01 for *BTD* × *TAXAQ*, *PBTD* × *TAXAQ*, and *CETR* × *TAXAQ* respectively). The coefficients for *APDAC*, *AQ* and *TAXAQ* are all positive and significant, suggesting that poor information quality is associated with a higher cost of equity, consistent with the theoretical prediction of Lambert et al. (2007). The results from Table 7 suggest that investors perceive tax planning less positively for firms with poor information quality as

investors deduce managers have greater ability to divert tax savings to their own private benefits when the information quality is poor.

Overall in this section, we find results consistent with our hypotheses that the cost of equity is lower for tax avoidance firms with better outside monitoring, firms that likely realize greater marginal benefits from tax savings, and firms with higher information quality.

5. Additional Analyses and Sensitivity Checks

5.1 Using Alternative Measures of Cost of Equity Capital

In this section, we test the robustness of our results using three alternative measures of cost of equity capital. The first two alternative measures are proposed by Botosan and Plumlee (2005) and Botosan et al. (2011). Both papers assess the empirical validity of various proxies of cost of equity utilized in extant literature using Value Line data and they recommend two measures, *VL_PEG* and *VL_DIV* as appropriate measures because these measures correlate consistently and predictably with various known proxies for risk. We follow Botosan and Plumlee (2005) and Botosan et al. (2011) and use these two measures to test our hypotheses on a restricted sample of firms where Value Line coverage is available from 1993-2005. The exact measurement of *VL_PEG* and *VL_DIV* is described in greater detail in Table 1.[22] For the third alternative measure, we use an average ex-ante cost of equity measure based on the valuation models from Claus and Thomas (2001), Gebhardt et al. (2001), Ohlson and Juettner-Nauroth (2005) and Easton (2004). This average measure has been used extensively in the literature (e.g. Dhaliwal et al. 2007).

We present the results in Table 8 for the main analysis using these alternative

[22] Our main measure of cost of equity *R_PEG* and the alternative measure *VL_PEG* are both based on Easton (2004). The main difference is that *R_PEG* is estimated based on one and two-year ahead forecast of earnings whereas *VL_PEG* is based on four and five-year ahead forecast of earnings. Because four and five-year ahead earnings forecasts are not often provided in the I/B/E/S database, we do not use this measure using I/B/E/S data. We also do not use *VL_DIV* on I/B/E/S data because this measure requires analysts' estimate of five-year ahead stock price which I/B/E/S does not provide.

measures but we do not tabulate the results for the cross-sectional analyses for the sake of brevity. Panels A and B report results for cost of equity estimated from Value Line[23], while Panel C reports results for the average cost of equity measure. The results indicate that tax avoidance is negatively and significantly associated with all three alternative proxies for cost of equity. In cross-sectional analyses, we repeat all our tests for H2 using these three alternative measures. The untabulated results show that most coefficients of interest (i.e., the interaction terms) are significant at 10% or better and in the same direction as our predictions.[24] Overall, the results in this section suggest that the inferences from our earlier analyses remain unchanged using these three alternative measures of cost of equity.

5.2 Using Alternative Measures of Tax Avoidance

5.2.1 Alternative measures for less aggressive form of tax avoidance

To triangulate our results, we repeat our analyses using two other measures that capture less aggressive forms of tax avoidance. The first measure, *ETR1*, reflects the traditional GAAP effective tax rate with total tax expense divided by pretax book income. The second measure, *ETR2*, is based on Zimmerman (1983), computed as ((Total tax expense – Change in deferred tax) / Operating cash flows). We report the findings in the first two columns of Table 9. The results indicate that both alternative measures of tax avoidance (*ETR1* and *ETR2*) are negatively and significantly associated with cost of equity capital. These results are consistent with our analysis using *BTD*, *PBTD*, and *CETR* as our main measures of tax avoidance.

5.2.2 Measures that capture extremely aggressive form of tax avoidance

Accordingly to Hanlon and Heitzman (2010), tax shelter activities represent the most extreme and aggressive form of tax avoidance. In addition, Lisowsky et al. (2012) find that a

[23] Note that this restricted sample is about a third of our main sample using I/B/E/S data and sample size ranges from 8,703 to 11,086 firm-year observations.
[24] Results are available from the authors upon request.

firm's reserve for income taxes disclosed pursuant to FIN 48 reflects corporate tax shelter activities. Consistent with tax reserve capturing more aggressive forms of tax avoidance, Hutchens and Rego (2012) find a positive association between the level of a firm's tax reserve and the cost of equity capital. Hence, we examine the sensitivity of our results using these two more aggressive measures of tax avoidance—the tax shelter prediction score (*SHELTER*) developed by Wilson (2009) and uncertain tax benefits (*UTB*) disclosed by the firm pursuant to FIN 48. The last two columns of Table 9 show that the coefficient on *SHELTER* is negative but not statistically significant, while the coefficient on *UTB* is positive and significant. Taken together, these results indicate that our main finding of a negative association between corporate tax avoidance and cost of equity does not hold for the more extreme and more aggressive form of tax avoidance, consistent with our analysis of the Lambert et al. model that the direct effects become more salient when studying tax aggressive forms of tax planning.

5.3 Change Analyses

To mitigate the concern that an omitted correlated variable is driving our results, we utilize a change regression specification for our main analyses in an additional sensitivity test. In particular, we regress the change in the cost of equity on the change in tax avoidance and other control variables, and assume that the endogeneity resulting from the omitted correlated variable is stationary over time. The results are presented in Table 10. Consistent with our earlier analyses, we find that an increase in tax avoidance (ΔTAX) is associated significantly with a decrease in the cost of equity (ΔR_PEG). Overall, results from the change analyses strengthen our main conclusion that tax avoidance is associated with a lower cost of equity.

6. Conclusion

Based on the model developed by Lambert et al. (2007), we generate a testable hypothesis that relates tax avoidance to a firm's cost of equity capital. Tax avoidance can be associated with a higher cost of equity both directly and indirectly. The direct effect occurs when investors perceive tax avoidance negatively as tax planning usually involves complex transactions that increases firm opacity and thus leads to a higher cost of equity. The indirect effect occurs when investors perceive managers to engage in more opportunistic rent-seeking because tax planning allows managers to obfuscate their self-dealing behavior and hence investors expect greater misappropriation and demand a higher cost of equity for tax-avoiding firms. On the other hand, tax avoidance can be associated with a lower cost of equity because cash savings from taxes can be redeployed to more productive uses (hence improving a firm's operating and investment decisions) and risk-neutral investors would prefer risk-averse managers to engage in risky tax planning activities that have positive net present value. Hence investors expect higher future cash flows for tax-avoiding firms and demand a lower cost of equity.

Given the Lambert et al. (2007) model, we expect that more aggressive forms of tax avoidance are likely to result in increased opacity of the financial statements, possible increased agency concerns, and increased compliance and reputation risks while also saving taxes. Thus it is not clear which effect, the direct or indirect effect under the Lambert et al. model, will dominate for aggressive tax avoidance activities and this might explain the prior inconclusive evidence on how equity investors view aggressive tax avoidance. In contrast, less aggressive and less risky tax avoidance activities are less likely to result in opaque financial statements, agency problems and compliance and reputation risks such that the indirect effect in the Lambert et al. model of increased after-tax cash flows is likely to dominate the direct effects resulting in a prediction that greater tax avoidance arising from less aggressive forms will result in lower cost of equity. We test this latter prediction and

explore how investors perceive the less aggressive and less risky forms of tax avoidance,

We find that investors perceive tax planning activities positively in our large sample of firms from 1993-2010. In particular, we utilize three measures of tax avoidance that capture generally less aggressive forms of tax planning to test our hypothesis and find that the cost of equity is lower for tax-avoiding firms. The effect is also economically significant. A one standard deviation increase in our measure of tax avoidance is associated with a 19 to 31 basis points reduction in the cost of equity. To corroborate our findings, we examine cross-sectional variation where we expect the cost of equity to be different for subsample of firms. Consistent with our predictions, we find investors perceive tax planning more positively for firms with outside monitoring and for firms that likely realize higher marginal benefits from tax savings. We also find that investors discount the value of tax planning for firms with poor information quality. In addition, our results are robust to using three alternative measures of cost of equity, two alternative measures of tax avoidance, and using a change specification.

This paper makes several novel contributions to the literature. It is the first large-sample study that directly examines how investors perceive relatively less aggressive forms of corporate tax avoidance. Earlier papers examine how investors perceive extreme forms of tax avoidance behavior such as tax sheltering and uncertain tax positions and the results are inconclusive (Hanlon and Slemrod 2009, Wilson 2009; Gallemore et al. 2012; Koester 2011; Hutchens and Rego 2012). However, tax sheltering and uncertain tax positions are extremely aggressive tax planning activity and hence these prior studies examining market response to these activities may not be generalizable to other tax planning activities. Hence, our study extends prior literature by documenting how investors perceive less extreme forms of tax planning. The finding that tax avoidance is associated with a lower cost of equity suggests that tax planning is a value-enhancing activity that investors appreciate in general. The results of this paper also potentially explain why many large US corporations engage in tax planning

and why corporations provide incentives for managers to engage in tax planning (Robinson et al. 2010; Armstrong et al. 2012). Also consistent with Blaylock (2011), our results suggest that tax planning in the US does not constitute large scale managerial rent-seeking on average.

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Figure 1: The relationship between tax avoidance and cost of equity

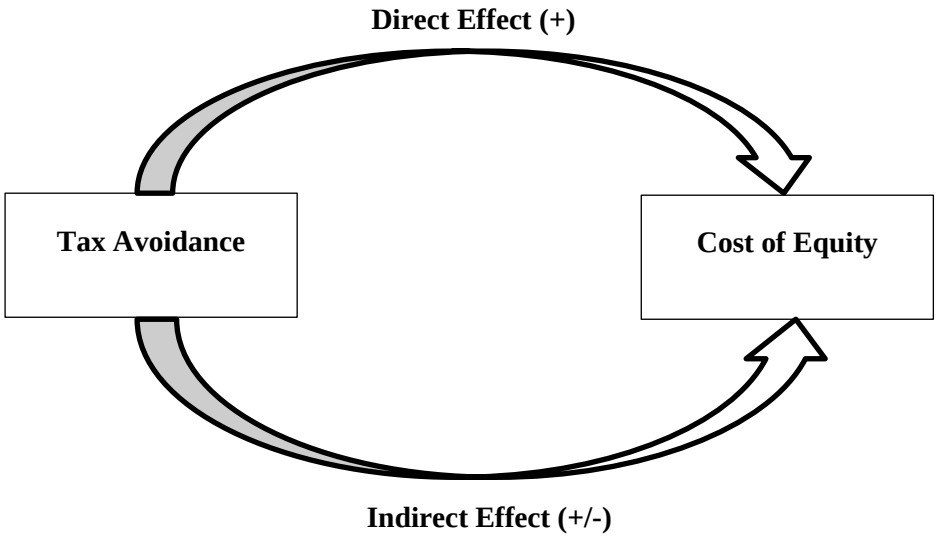

Table 1: Definitions of variables

R_PEG	=	Measure of cost of equity, based on Easton (2004): $R\_PEG = \sqrt{\frac{eps_2 - eps_1}{P_0}}$ where eps_2 (eps_1) refers to analysts' forecast of two-year (one-year) ahead earnings and P_0 refers to current stock price. Inputs are obtained from I/B/E/S summary statistics and prices file and measured at the end of the fiscal year following Easton and Monahan (2005).
VL_PEG	=	Measure of cost of equity, based on Botosan and Plumlee (2005): $VL\_PEG = \sqrt{\frac{eps_5 - eps_4}{P_0}}$ where eps_5 (eps_4) refers to analysts' forecast of five-year (four-year) ahead earnings and P_0 refers to current stock price. Forecasts are obtained from Value Line, current stock prices obtained from CRSP and measured at the end of the fiscal year following Easton and Monahan (2005).
VL_DIV	=	Measure of cost of equity, based on Botosan and Plumlee (2005): $P_o = \sum_{t=1}^{5}(1 + VL_{DIV})^{-t}(dps_t) + (1 + VL_{DIV})^{-5}(P_5)$ where P_0 refers to current stock price, dps_t refers to analysts' forecast of time t dividends and P_5 refers to analysts' forecast of long-term stock price. Forecasts are obtained from Value Line, current stock prices obtained from CRSP and measured at the end of the fiscal year following Easton and Monahan (2005).
MAVG_R	=	An average ex-ante cost of equity measure based on the valuation models derived from Claus and Thomas (2001), Gebhardt et al. (2001), Ohlson and Juettner-Nauroth (2005) and Easton (2004). Details provided in Dhaliwal et al. (2007).
BTD	=	Total book-to-tax differences which is computed as PI – (TXFED + TXFO/)STR, where PI refers to pretax income, TXFED refers to current federal tax expense, TXFO refers to current foreign tax expense and STR refers to the statutory tax rate.
PBTD	=	Total book-tax differences (*BTD*) less temporary book-tax-differences (TXDI/STR), where TXDI is total deferred tax expense and STR is statutory marginal tax rate.
CETR	=	Five-year cumulative cash effective tax rate as in Dyreng et al. (2008), computed as the five-year sum of cash taxes paid (TXPD) dividend by five-year sum of pretax income (PI) less special item (SPI). The variable is multiplied by negative one so that it is increasing in tax avoidance.
ETR1	=	Total tax expense divided by Pre-tax income. The variable is multiplied by negative one so that it is increasing in tax avoidance.
ETR2	=	(Total tax expense – Change in deferred tax)/Operating cash flows. Based on Zimmerman (1983). The variable is multiplied by negative one so that it is increasing in tax avoidance.

SG	=	The percentage change in sales (scaled by total assets) over the previous year.
SHELTER	=	The tax shelter prediction score developed by Wilson (2009), computed as: *SHELTER* = **-4.86** + **5.20** * *BTD* + **4.08** * *DAC* - **1.41** * *LEV* + **0.76*** *Size* + **3.51** * *ROA* + **1.72** * *Foreign_Income* + **2.43** * *R&D*, where *BTD* is book income less taxable income scaled by lagged total assets, *DAC* is the discretionary accruals from the performance-adjusted modified cross-sectional Jones Model, *LEV* is long-term debt divided by total assets; *Size* is the log of total assets, *ROA* is pre-tax earnings divided by total assets, *Foregin_Income* is foreign pre-tax earnings divided by lagged total assets, *R&D* is research and development expenditure divided by lagged total assets.
UTB	=	Ending balance (in millions) of the unrecognized tax benefit (UTB) accrual, scaled by lagged total assets.
DKZ	=	Indicator variable equals 1 if the KZ index is in the top quartile, 0 otherwise. KZ index is measured by KZ=-1.002 * CHE/K + 0.283*Q + 3.139 * DEBTCAP - 39.368 * DIV/K - 1.315 * Cash/K; where CHE is cash and short term investments; K is lagged plant, property and equipment (PPEGT); Q = (AT - CEQ - TXDB + CSHO * PRCC_F)/AT; DEBTCAP = (DLC + DLTT) / (DLC + DLTT + SEQ); DIV = DVC + DVP; where AT is total assets; CEQ is total common equity; TXDB is deferred taxes; CSHO is number of common shares outstanding; PRCC_F is price at fiscal year-end; DLC is debt in current liabilities; DLTT is long-term debt; SEQ is total shareholders' equity; DVC is common dividends; and DVP is preferred dividends.
APDAC	=	Discretionary total accruals is first computed based on the cross-sectional modified Jones (1991) model for all firms recorded in Compustat based on 2-digit SIC industry. Following Ashbaugh et al. (2003), the firms are sorted in each industry into deciles based on the prior year's return on assets (ROA). Performance-adjusted abnormal accruals are obtained by subtracting from each firm's abnormal accrual the median abnormal accrual from the corresponding ROA industry decile to which the firm belongs. The absolute value of the accrual measure is log-transformed to correct for the non-normality of the measure.
AQ	=	Accrual quality as in Dechow and Dichev (2002) and modified by McNichols (2002), defined as the standard deviation of the residual over t+1 to t+4, where the residual is estimated from the following equation by industry (2-digit SIC) and year. $\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta SALE_t + \beta_5 PPE_t + \varepsilon_t$ where ΔWC is changes in working capital scaled by average total assets, where working capital is Δaccount receivables (RECT)+ Δinventory (INVT)- Δaccount payable (AP) - Δtax payable (TXP)+ Δother current asset (ACO) - Δother current liabilities. CFO is cash flows from operation (OANCF), ΔSALE is changes in sales (SALE) scaled by average total assets, PPE is gross PP&E (PPEGT) scaled by average total assets.
TAXAQ	=	Tax accrual quality as in Choudhary et al. (2012), defined as the

		standard deviation of the residuals from the regression ($TaxACC_t = \beta_0 + \beta_1 CTP_{t-1} + \beta_2 CTP_t + \beta_3 CTP_{t+1} + \varepsilon_t$), with larger values indicating poorer tax accrual quality. TaxACC is the current period income tax accrual, defined as the difference between current period tax expense (TE) for financial statement purposes and current period tax-related cash outflows (CTP). All variables are scaled by total assets.
ANALYST	=	Natural log of number of analysts following a firm.
DEDHELD	=	Dedicated institutional ownership as defined in Bushee (1998) and used in Atkins et al. (2012).
BETA	=	Beta estimated from CAPM model over the fiscal year.
SIZE	=	Natural log of market capitalization at fiscal year-end.
BM	=	Natural log of book-to-market ratio at fiscal year-end.
LEV	=	Total debt to asset ratio.
SPREAD	=	Roll's (1984) effective bid-ask spreads over the fiscal year.
RET	=	Stock returns over the fiscal year.
RETVOL	=	Stock returns volatility over the fiscal year.

Table 2: Descriptive Statistics

	N	Mean	Median	Q1	Q3	Std Dev
R_PEG	34,652	0.115	0.102	0.080	0.137	0.061
BTD	34,652	0.013	0.016	-0.009	0.043	0.113
PBTD	34,652	0.012	0.007	-0.003	0.025	0.116
CETR	31,150	-0.347	-0.297	-0.377	-0.199	0.465
SG	32,604	0.116	0.003	-0.079	0.086	18.025
DKZ	32,552	0.250	0.000	0.000	0.000	0.433
APDAC	33,662	-2.487	-2.313	-3.221	-1.589	1.330
AQ	30,833	0.044	0.034	0.021	0.055	0.035
TAXAQ	28,726	0.012	0.009	0.006	0.016	0.010
ANALYST	29,623	1.639	1.792	1.099	2.398	0.957
DEDHELD	26,205	0.081	0.040	0.000	0.128	0.333
BETA	34,652	1.128	1.005	0.609	1.507	0.780
SIZE	34,652	6.671	6.562	5.347	7.870	1.880
BM	34,652	-0.869	-0.800	-1.267	-0.400	0.730
LEV	34,652	0.212	0.200	0.041	0.338	0.175
SPREAD	34,652	0.015	0.009	0.002	0.020	0.020
RET	34,652	0.226	0.177	-0.058	0.437	0.499
RETVOL	34,652	0.122	0.106	0.074	0.150	0.074

The sample period used for the study spans from 1993-2010. The descriptive statistics for all variables are based on the largest sample when tax avoidance is measured by *BTD*. The detailed definitions of the variables are provided in Table 1. All continuous variables trimmed at the 1 and 99 percentiles. For the regressions, *CETR* is multiplied by -1 so that all three tax avoidance measures are increasing in tax avoidance.

Table 3: Pearson Correlation Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) *R_PEG*	1.00																	
(2) *BTD*	**-0.10**	1.00																
(3) *PBTD*	**-0.08**	**0.65**	1.00															
(4) *CETR*	**-0.09**	**0.20**	**0.11**	1.00														
(5) *SG*	0.01	0.00	0.00	**-0.02**														
(6) *KZ*	**0.12**	-0.01	**-0.05**	0.00	0.01	1.00												
(7) *APDAC*	**0.04**	0.00	**0.04**	0.00	0.00	**-0.11**	1.00											
(8) *AQ*	**0.21**	**-0.02**	0.00	**-0.07**	0.00	**-0.06**	**0.17**	1.00										
(9) *TAXAQ*	**0.11**	**-0.05**	0.00	**-0.09**	0.00	**-0.04**	**0.15**	**0.23**	1.00									
(10) *ANALYST*	**-0.28**	**0.04**	**0.02**	**0.08**	0.00	**-0.04**	**-0.06**	**-0.20**	**-0.06**	1.00								
(11) *DEDHELD*	0.01	**-0.02**	-0.01	**-0.04**	0.00	0.00	**-0.02**	0.00	**-0.03**	0.01								
(12) *BETA*	**0.10**	**-0.07**	**-0.02**	**-0.04**	0.00	**-0.08**	**0.15**	**0.17**	**0.20**	**0.07**	-0.01	1.00						
(13) *SIZE*	**-0.40**	**0.07**	**0.04**	**0.08**	0.00	**-0.06**	**-0.04**	**-0.29**	**-0.13**	**0.67**	0.00	**-0.04**	1.00					
(14) *BM*	**0.21**	**-0.05**	**-0.07**	**-0.08**	0.00	**0.07**	**-0.13**	**-0.07**	**-0.07**	**-0.30**	0.00	**-0.10**	**-0.37**	1.00				
(15) *LEV*	**0.07**	**-0.02**	**-0.07**	-0.01	0.01	**0.57**	**-0.17**	**-0.12**	**-0.17**	**0.03**	**0.02**	**-0.19**	**0.06**	**0.09**	1.00			
(16) *SPREAD*	**0.31**	**-0.07**	**-0.05**	**-0.06**	0.00	**0.08**	**-0.05**	**0.17**	0.01	**-0.38**	**0.05**	**-0.09**	**-0.53**	**0.22**	**0.08**	1.00		
(17) *RET*	**-0.04**	**0.08**	**0.09**	**0.02**	0.00	0.00	**0.07**	**0.11**	**0.07**	**-0.04**	0.00	**0.15**	**0.05**	**-0.35**	**-0.10**	**-0.02**	1.00	
(18) *RETVOL*	**0.24**	**-0.11**	**-0.06**	**-0.06**	0.00	0.01	**0.17**	**0.29**	**0.25**	**-0.17**	**-0.02**	**0.41**	**-0.30**	**-0.02**	**-0.12**	**0.15**	**0.37**	1.00

This table reports the Pearson's correlation between the variables used in the regression analysis, based on the largest possible sample. The detailed definitions of the variables are provided in Table 1. All correlations that are bold are statistically significant at the 0.01 level or better (two-tailed).

Table 4: Tax Avoidance and Cost of Equity (H1)

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.151	25.88***	0.150	25.90***	0.130	23.04***
TAX	**?**	**-0.027**	**-3.80*** **	**-0.019**	**-3.96*** **	**-0.004**	**-4.96*** **
BETA	+	0.003	5.25***	0.003	5.18***	0.006	7.66***
SIZE	-	-0.008	-18.55***	-0.008	-18.59***	-0.006	-14.56***
BM	+	0.006	8.00***	0.006	8.11***	0.009	11.75***
LEV	+	0.040	14.59***	0.040	14.57***	0.031	12.44***
SPREAD	+	0.354	4.24***	0.348	4.21***	0.299	3.59***
RET	-	-0.009	-10.21***	-0.009	-10.39***	-0.007	-7.86***
RETVOL	+	0.128	11.44***	0.130	11.60***	0.124	8.61***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		25.58		25.37		24.14	
N		34,652		34,652		31,150	

This table reports the regression results of the relation between tax avoidance and the cost of equity capital. The dependent variable is the cost of equity capital (*R_PEG*). The detailed definitions of all variables are provided in Table 1. Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Tax Avoidance and Cost of Equity – the Role of Outside Monitoring (H2a)

Panel A: Analyst coverage

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.147	25.34***	0.145	25.03***	0.131	29.88***
TAX	?	-0.067	-5.00***	-0.035	-3.68***	-0.007	-4.21***
BETA	+	0.004	5.80***	0.004	5.69***	0.006	7.80***
SIZE	-	-0.007	-15.63***	-0.007	-15.45***	-0.006	-11.83***
BM	+	0.006	8.36***	0.006	8.32***	0.009	12.40***
LEV	+	0.041	13.94***	0.041	14.00***	0.020	7.74***
SPREAD	+	0.301	3.55***	0.300	3.52***	0.305	3.27***
RET	-	-0.009	-9.35***	-0.009	-9.70***	-0.007	-7.11***
RETVOL	+	0.124	9.96***	0.128	10.16***	0.138	8.18***
ANALYST	-	-0.004	-5.73***	0.004	5.62***	-0.001	-1.01
TAX*ANALYST	**-**	**-0.022**	**-4.34*** **	**-0.011**	**-3.00*** **	**-0.002**	**-1.96** **
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		25.52		25.35		20.32	
N		29,623		29,623		27,078	

Panel B: Dedicated institutional ownership

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.132	23.17***	0.132	21.47***	0.119	19.01***
TAX	?	-0.022	-3.84***	-0.025	-4.39***	-0.009	-2.57***
BETA	+	0.003	5.21***	0.003	4.98***	0.005	6.39***
SIZE	-	-0.008	-18.68***	-0.008	-17.33***	-0.006	-14.46***
BM	+	0.007	9.22***	0.006	8.11***	0.009	11.35***
LEV	+	0.039	13.94***	0.042	13.98***	0.032	11.79***
SPREAD	+	0.257	3.52***	0.305	3.50***	0.263	3.15***
RET	-	-0.006	-6.27***	-0.007	-7.62***	-0.006	-6.33***
RETVOL	+	0.107	8.67***	0.119	9.29***	0.113	7.01***
DEDHELD	-	-0.003	2.32**	-0.001	-2.24**	-0.019	-2.23**
TAX*DEDHELD	**-**	**-0.118**	**-2.32** **	**-0.103**	**-2.56*** **	**-0.050**	**-2.16** **
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		25.58		25.08		24.86	
N		26,205		26,205		24,539	

This table reports the regression results of the role of outside monitoring on the relation between tax avoidance and the cost of equity capital. The dependent variable is the cost of equity capital (*R_PEG*). In Panel A, we report the results when outside monitoring is proxied by analyst coverage. In Panel B, we report the results when outside monitoring is proxied by ownership held by dedicated institutions. The detailed definitions of all variables are provided in Table 1. In each Panel, Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Tax Avoidance and Cost of Equity –
the Role of Marginal Benefits of Tax Savings (H2b)

Panel A: Sales growth

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.128	52.48***	0.128	52.40***	0.135	22.97***
TAX	?	-0.012	-3.79***	-0.008	-3.30***	-0.003	-3.90***
BETA	+	0.004	9.16***	0.004	9.13***	0.005	6.48***
SIZE	-	-0.005	-20.27***	-0.005	-20.28***	-0.007	-15.03***
BM	+	0.005	10.26***	0.005	10.44***	0.008	10.64***
LEV	+	0.011	6.21***	0.012	6.46***	0.037	12.53***
SPREAD	+	0.169	6.11***	0.160	5.84***	0.285	3.14***
RET	-	-0.003	-4.61***	-0.003	-4.75***	-0.007	-7.53***
RETVOL	+	0.078	9.48***	0.079	9.55***	0.110	7.37***
SG	?	0.000	-0.61	0.000	-0.65	-0.015	-5.89***
TAX*SG	**-**	**-0.001**	**-1.98****	**-0.001**	**-1.99****	**-0.007**	**-2.68*****
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		16.67		16.67		25.99	
N		32,604		32,604		26,388	

Panel B: KZ index

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.151	25.49***	0.150	25.23***	0.120	16.57***
TAX	?	-0.020	-3.11***	-0.016	-3.39***	-0.003	-2.55***
BETA	+	0.003	5.24***	0.003	5.18***	0.007	6.33***
SIZE	-	-0.008	-18.37***	-0.008	-18.29***	-0.006	-10.21***
BM	+	0.006	8.44***	0.006	8.41***	0.012	12.33***
LEV	+	0.030	9.73***	0.031	9.95***	0.037	9.31***
SPREAD	+	0.338	4.10***	0.336	4.07***	0.550	5.65***
RET	-	-0.008	-9.38***	-0.009	-9.62***	-0.020	-17.40***
RETVOL	+	0.121	10.65***	0.125	10.88***	0.167	9.60***
DKZ	+	0.007	6.48***	0.006	5.87***	0.003	2.07**
TAX*DKZ	**-**	**-0.057**	**-3.95*****	**-0.028**	**-1.87***	**-0.003**	**-1.35**
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		25.97		25.65		25.27	
N		32,552		32,552		27,716	

This table reports the regression results of the role of marginal benefits of tax savings on the relation between tax avoidance and the cost of equity capital. The dependent variable is the cost of equity capital (*R_PEG*). In Panel A, we report the results when the marginal benefit of tax savings is proxied by sales growth. In Panel B, we report the results when the marginal benefit of tax savings is proxied by financial constraints, KZ index. The detailed definitions of all variables are provided in Table 1. In each Panel, Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Tax Avoidance and Cost of Equity – the Role of Information Quality (H2c)

Panel A: Performance-adjusted discretionary accruals

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.156	26.13***	0.155	25.93***	0.139	26.88***
TAX	?	-0.023	-7.73***	-0.015	-3.86***	-0.001	-0.85
BETA	+	0.003	5.05***	0.003	5.00***	0.005	7.13***
SIZE	-	-0.008	-18.20***	-0.008	-18.12***	-0.006	-17.40***
BM	+	0.006	8.00***	0.006	8.21***	0.008	11.99***
LEV	+	0.041	14.72***	0.041	14.55***	0.027	11.73***
SPREAD	+	0.354	4.18***	0.350	4.14***	0.206	3.56***
RET	-	-0.008	-9.56***	-0.008	-9.68***	-0.005	-6.22***
RETVOL	+	0.119	10.91***	0.123	11.10***	0.099	7.65***
APDAC	+	0.001	4.20***	0.001	4.78***	0.001	3.43***
TAX*APDAC	**+**	**0.013**	**6.00*** **	**0.013**	**3.82*** **	**0.001**	**2.01** **
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		26.02		25.77		24.30	
N		33,662		33,662		28,777	

Panel B: Accrual quality

		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.142	23.09***	0.137	22.83***	0.112	16.23***
TAX	?	-0.036	-3.34***	-0.041	-3.39***	-0.005	-3.47***
BETA	+	0.004	5.31***	0.004	5.04***	0.007	5.96***
SIZE	-	-0.007	-15.81***	-0.007	-15.37***	-0.006	-10.48***
BM	+	0.007	8.81***	0.008	10.06***	0.012	10.59***
LEV	+	0.043	14.44***	0.040	14.15***	0.048	11.36***
SPREAD	+	0.353	3.68***	0.331	3.62***	0.540	5.39***
RET	-	-0.009	-9.20***	-0.008	-8.62***	-0.020	-16.25***
RETVOL	+	0.114	9.86***	0.117	9.29***	0.162	9.04***
AQ	+	0.147	9.80***	0.199	9.72***	0.159	6.66***
TAX*AQ	**+**	**0.097**	**2.58*** **	**0.396**	**2.06** **	**0.037**	**1.91***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		26.42		25.61		24.84	
N		30,833		30,833		26,774	

Table 7: Tax Avoidance and Cost of Equity – the Role of Information Quality (H2c) (Con't)

Panel C: Tax accrual quality							
		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.145	22.49***	0.144	22.24***	0.132	24.09***
TAX	?	-0.058	-5.88***	-0.049	-5.04***	-0.007	-5.02***
BETA	+	0.004	5.10***	0.004	5.17***	0.005	6.37***
SIZE	-	-0.008	-15.53***	-0.008	-15.49***	-0.006	-16.10***
BM	+	0.007	8.29***	0.007	8.25***	0.009	11.11***
LEV	+	0.042	13.97***	0.042	13.83***	0.034	12.64***
SPREAD	+	0.332	3.48***	0.330	3.45***	0.227	3.19***
RET	-	-0.008	-9.18***	-0.009	-9.39***	-0.005	-6.25***
RETVOL	+	0.118	9.35***	0.121	9.50***	0.098	6.91***
TAXAQ	+	0.223	4.66***	0.232	4.75***	0.323	6.08***
TAX*TAXAQ	**+**	**1.068**	**3.13*** **	**0.876**	**2.56*** **	**0.189**	**3.01*** **
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		26.63		26.44		26.17	
N		28,726		28,726		25,839	

This table reports the regression results of the role of information quality on the relation between tax avoidance and the cost of equity capital. The dependent variable is the cost of equity capital (*R_PEG*). In Panel A, we report the results when the information quality is proxied by performance-adjusted discretionary accruals. In Panel B, we report the results when the information quality is proxied by accrual quality. In Panel C, we report the results when the information quality is proxied by tax accrual quality. The detailed definitions of all variables are provided in Table 1. In each Panel, Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries dummies are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Tax Avoidance and Alternative proxies for Cost of Equity

Panel A: VL_PEG							
		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.108	11.55***	0.106	11.36***	0.106	9.83***
TAX	**?**	**-0.059**	**-5.10*** **	**-0.066**	**-5.88*** **	**-0.003**	**-2.85*** **
BETA	+	0.008	5.87***	0.008	5.81***	0.006	4.32***
SIZE	-	-0.004	-6.97***	-0.004	-6.80***	-0.003	-5.44***
BM	+	0.008	6.53***	0.008	6.56***	0.009	8.45***
LEV	+	0.043	9.12***	0.042	8.86***	0.032	7.35***
SPREAD	+	0.421	4.53***	0.428	4.62***	0.402	4.44***
RET	-	-0.019	-11.10***	-0.019	-10.96***	-0.017	-10.69***
RETVOL	+	0.196	10.94***	0.197	11.24***	0.179	10.58***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		34.50		34.47		33.25	
N		11,086		11,086		9,724	
Panel B: VL_DIV							
		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.062	2.98***	0.060	2.89***	0.037	2.92***
TAX	**?**	**-0.048**	**-3.96*** **	**-0.055**	**-3.52*** **	**-0.002**	**-1.93** **
BETA	+	0.009	5.28***	0.009	5.19***	0.002	1.40
SIZE	-	-0.001	-0.95	-0.001	-0.81	0.000	-0.09
BM	+	0.005	3.11***	0.005	3.09***	0.013	9.19***
LEV	+	0.044	7.72***	0.044	7.64***	0.026	4.68***
SPREAD	+	0.560	4.88***	0.576	5.03***	0.574	5.58***
RET	-	-0.022	-9.13***	-0.022	-9.02***	-0.042	-20.43***
RETVOL	+	0.204	8.99***	0.205	9.13***	0.154	7.24***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		22.76		22.69		24.73	
N		10,639		10,639		8,703	

Table 8: Tax Avoidance and Alternative proxies for Cost of Equity (Con't)

Panel C: MAVG_R							
		TAX = BTD		*TAX = PBTD*		*TAX = CETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.156	21.35***	0.155	21.43***	0.127	20.54***
TAX	**?**	**-0.056**	**-9.44*** **	**-0.055**	**-10.19*** **	**-0.005**	**-5.40*** **
BETA	+	0.005	5.95***	0.005	5.94***	0.003	4.08***
SIZE	-	-0.010	-22.58***	-0.011	-22.71***	-0.006	-13.12***
BM	+	0.010	10.44***	0.010	10.27***	0.015	15.32***
LEV	+	0.052	14.49***	0.053	14.46***	0.042	13.00***
SPREAD	+	0.055	1.14	0.045	0.95	0.195	3.78***
RET	-	-0.028	-22.73***	-0.029	-23.27***	-0.018	-15.66***
RETVOL	+	0.216	17.08***	0.218	17.56***	0.175	10.47***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		34.86		34.83		31.56	
N		34,095		34,095		25,443	

This table reports the regression results of the relation between tax avoidance and the alternative proxies for cost of equity capital. In Panel A, the dependent variable for the cost of equity is *VL_PEG*. In Panel B, the dependent variable for the cost of equity is *VL_DIV*. In Panel C, the dependent variable for the cost of equity is *MAVG_R*. The detailed definitions of all variables are provided in Table 1. Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries dummies are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 9: Alternative Proxies for Tax Avoidance

		Alternative measures for less aggressive form of tax avoidance				*Measures for most aggressive tax avoidance*			
		TAX = ETR1		*TAX = ETR2*		*TAX=SHELTER*		*TAX=UTB*	
		(1)		*(2)*		*(3)*		*(4)*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.137	24.33***	0.135	25.68***	0.149	24.93***	0.139	14.13***
TAX	**?**	**-0.002**	**-1.71***	**-0.002**	**-3.62*****	**0.000**	**-0.39**	**0.122**	**2.56*****
BETA	+	0.004	6.50***	0.005	6.82***	0.004	5.29***	0.008	3.90***
SIZE	-	-0.007	-15.76***	-0.007	-19.81***	-0.008	-17.86***	-0.006	-8.34***
BM	+	0.008	12.38***	0.008	11.66***	0.006	7.86***	0.007	4.24***
LEV	+	0.033	13.07***	0.038	14.43***	0.042	15.18***	0.023	3.77***
SPREAD	+	0.300	3.57***	0.413	9.28***	0.362	4.16***	0.836	3.01***
RET	-	-0.005	-5.91***	-0.006	-6.71***	-0.010	-10.68***	-0.009	-3.39***
RETVOL	+	0.101	7.73***	0.107	8.15***	0.132	11.55***	0.095	4.52***
Year Dummies		Yes		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes		Yes	
Adj R^2 (%)		23.63		23.93		25.51		17.02	
N		30,079		28,655		33,806		4,145	

This table reports the regression results of the relation between tax avoidance and the cost of equity capital. The dependent variable is the cost of equity capital (*R_PEG*). Column 1 shows the results using *ETR1* to proxy tax avoidance, Column 2 shows the results using *ETR2* to proxy tax avoidance, Column 3 shows the results using *SHELTER* to proxy tax avoidance, and Column 4 shows the results using *UTB* to proxy tax avoidance. The detailed definitions of all variables are provided in Table 1. Coefficients on the year and industry dummies based on Fama and French 48 industries are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 10: Tax Avoidance and Cost of Equity – Change Analysis

		ΔTAX = ΔBTD		*ΔTAX = ΔPBTD*		*ΔTAX = ΔCETR*	
	Exp. Sign	Coef.	t-value	Coef.	t-value	Coef.	t-value
Intercept	?	0.003	1.31	0.003	1.31	0.002	0.86
ΔTAX	**?**	**-0.012**	**-2.21****	**-0.009**	**-2.12****	**-0.002**	**-2.39****
ΔBETA	+	-0.001	-1.06	-0.001	-1.02	-0.002	-1.75*
ΔSIZE	-	-0.045	-21.17***	-0.045	-21.10***	-0.042	-23.06***
ΔBM	+	0.008	4.06***	0.008	3.95***	0.008	4.29***
ΔLEV	+	-0.019	-2.74***	-0.018	-2.67***	-0.011	-1.93**
ΔSPREAD	+	0.191	2.75***	0.190	2.73***	0.114	1.77*
ΔRET	-	-0.008	-7.63***	-0.008	-7.77***	-0.008	-8.04***
ΔRETVOL	+	0.030	3.19***	0.031	3.27***	0.031	3.75***
Year Dummies		Yes		Yes		Yes	
Industry Dummies		Yes		Yes		Yes	
Adj R^2 (%)		19.84		19.80		19.31	
N		33,464		33,464		29,034	

This table reports the regression results of the relation between changes in tax avoidance and changes in the cost of equity capital. The detailed definitions of all variables are provided in Table 1. Column 1 shows the results using *BTD* to proxy tax avoidance, Column 2 shows the results using *PBTD* to proxy tax avoidance, and Column 3 shows the results using *CETR* to proxy tax avoidance. Coefficients on the year and industry dummies based on Fama and French 48 industries are not tabulated for brevity. The t-statistics are based on standard errors clustered by firm to control for cross-sectional dependence in the data. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.