Relative Performance Evaluation and Corporate Tax Avoidance

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Abstract

We show that firms adopting relative performance (RPE) evaluation exhibit a higher extent of tax avoidance and managerial performance incentives. The result shows that the RPE-tax avoidance relation mainly manifests in firms with good internal governance and weak external monitoring. We also find that RPE affects tax avoidance through CEO's risk-taking and dismissal threat. In addition, we document that firms adopting RPE are associated with lower agency costs and higher information disclosure quality. Overall, our findings suggest that RPE adoption increases tax savings and alleviates agency conflicts.

JEL Classification: D22; D23; J33

Keywords:relative performance evaluation, tax avoidance, agency conflicts, corporate governance

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1 Introduction

Relative performance evaluation (RPE) in compensation scheme has received extensive academic attention over the past decades. Its incentive effects remain controversial and there is a lack of consistent empirical evidence (Aggarwal and Samwick, 1999). RPE scheme compensates the top executives based on their relative performance compared to self-designated benchmarks, acting as a part of corporate governance to align the interests between managers and shareholders (Hölmstrom, 1979).

However, incentive contracts are criticized for providing opportunities for powerful CEOs to rig the incentive part of their pay (Morse et al., 2011). Morse et al. (2011) find that the incentive effects depend on power distribution between agents and principles. Similarly, corporate governance view of taxation such as Desai and Dharmapala (2006) believes that tax avoidance has a complex non-linear relationship with agency conflicts. When the board of directors is relatively weak, CEOs may exploit strategies such as tax avoidance (Desai et al., 2007) to conceal private rent extraction (Morse et al., 2011). By contrast, in well-governed firms, incentive contracts motivates managers to act in shareholder interests (Jensen and Meckling, 1976), and they may increase firm value by tax avoidance (Armstrong et al., 2015). Thus, it is unclear how RPE scheme is related to the extent of corporate tax avoidance.

This study uses an explicit approach to examine the influence of RPE adoption on corporate tax avoidance. Most existing studies use an implicit approach due to a lack of detailed information on RPE scheme (Park and Vrettos, 2015)[1]. The empirical specification

[1]The implicit approach assumes a linear relationship between CEO compensation and benchmark performance, and examines the existence of RPE by regressing CEO compensation on benchmark performance. However, the payoff structure in RPE scheme is frequently non-linear (Murphy, 1999), limiting the ability of standard regression estimates that assume linear contracts to detect RPE (Carter et al., 2009).

problem of implicit approach makes it difficult to identify RPE adoption precisely. We aim to fill the gap in the literature by applying the explicit approach that relies on a direct measure of RPE adoption at the firm level.

Specifically, we follow Rego and Wilson (2012) and construct the RPE indicator based on the 10-K or 8-K filings of the firms. We argue that RPE adoption is associated with corporate tax avoidance because of the motivation to increase shareholder wealth in well-governed firms and the need to conceal rent extraction in firms with weak governance. These two motivations for tax avoidance exist simultaneously, consistent with the opposite effects of incentive contracts on agency conflicts. First, RPE reduces CEO's exposure to common risk (Holmstrom, 1982), making them less reluctant to adopt risky investment projects (Do et al., 2021). CEOs may engage in tax avoidance to conceal rent extraction (Desai and Dharmapala, 2008; Morse et al., 2011). Second, CEOs are motivated to act in shareholder interests if their compensations are related to firm performance (Hölmstrom, 1979). Thus, they may tend to increase shareholder value through tax avoidance (Desai and Dharmapala, 2009), aligning interests between managers and shareholders (Armstrong et al., 2015; Austin and Wilson, 2017).

We construct a panel dataset containing tax avoidance measures, RPE indicators, and several firm characteristics for a sample of U.S. listed firms from 1998 to 2020. The detailed compensation information obtained from Institutional Shareholder Services' Incentive Lab helps identify whether the firms adopt RPE scheme and which benchmarks and performance metrics they define. The results show that firms adopting RPE in CEO compensation contracts are associated with a larger extent of corporate tax avoidance. The association is mainly driven by the RPE scheme with stock-based performance and peer group performance

benchmarks.

We explore the channels for the association between RPE and corporate tax avoidance and find that with RPE adoption, the CEO risk-taking and the probability of CEO dismissal increases. We use CEO risk-taking to measure CEO's tendency to use tax avoidance to conceal rent extraction and the probability of CEO dismissal to reflect the incentive for managers to act in shareholder's interest. The formal mediation analysis supports that the mediating role of the probability of CEO dismissal is larger than CEO risk-taking in affecting corporate tax avoidance. They account for 81.74% and 18.26% of the total mediating effect, respectively. Particularly, the positive association mainly manifests in firms with a better internal governance and weaker external governance. Our primary findings are robust to endogenous issues, variable definitions, and model specifications.

Our study contributes to three strands of the literature. First, we provide an insight into the role of RPE in agency conflicts. RPE was proposed to solve the moral hazards and motivate managers to increase shareholder wealth (Hölmstrom, 1979; Antle and Smith, 1986). Jensen and Meckling (1976) document that linking CEO pay to firm performance motivates them to maximize firm value. However, incentive contracts have been widely criticized for providing inadequate incentive to promote shareholder value (Morse et al., 2011). In this study, we shed light on whether incentive contracts, especially RPE, are effective in inducing CEOs to maximize shareholder value.

Second, our work also contributes to the growing studies on the determinants of tax avoidance, especially from an agency view of tax avoidance. The traditional theory views tax avoidance as a transfer of wealth from the state to corporate shareholders, which acts as a value-maximizing activity (Kim et al., 2011). Considering the benefits of tax avoidance,

an extensive trend of literature explores the determinants of tax avoidance. Specifically, both internal characteristics including corporate governance (Desai and Dharmapala, 2008), hedge fund activism (Cheng et al., 2012), corporate social responsibility (Hoi et al., 2013), dual-class ownership (McGuire et al., 2014), product market power (Kubick et al., 2015), customer-supplier relationship (Cen et al., 2017), and external factors such as institutional ownership (Khan et al., 2017), external labor market (Kubick and Lockhart, 2016) are tested as drivers of tax avoidance. However, tax avoidance is a agency problem associated with rent extraction (Desai and Dharmapala, 2006; Desai et al., 2007). We document that, as a solution to agency conflicts, RPE schemes motivate tax avoidance. Compared to industry tournament incentives that measure the promotion in the external labor market, RPE scheme is an internal corporate governance mechanism.

Finally, our study is closely related to previous research on the association between compensation incentives and tax avoidance. Recent tax avoidance literature has incorporated corporate governance characteristics that are designed to reduce agency conflicts (Hanlon and Heitzman, 2010). As a part of corporate governance, the use and scale of compensation incentives are highly associated with corporate tax avoidance (Desai and Dharmapala, 2006; Armstrong and Vashishtha, 2012; Rego and Wilson, 2012). However, the accurate relationship is conflicting. As for the total compensation of the CEO, Phillips (2003) finds a insignificant influence on tax avoidance, while the relationship turns significantly positive in Gaertner (2014). A similar situation applies to equity-based incentives: There is a positive relationship between equity incentive and tax avoidance according to Rego (2003); Armstrong et al. (2015), while negative in Desai and Dharmapala (2006).

The remainder of the paper is organized as follows: Section 2 reviews the relevant

literature and proposes testable hypothesis; Section 3 discusses the data and methodology, and report summary statistics; Section 4 examines how RPE and contract details are associated with tax avoidance, explores the possible mechanisms, and performs a series of robustness checks; Section 5 provides further discussion, and Section 6 finally concludes this study.

2 Related Literature and Hypothesis Development

Relative performance evaluation (RPE) evaluates a specific unit's performance based on performance relative to the target. Principals cannot observe the agents' efforts directly in the principal-agent settings, and the agents may afford unnecessary risk (Holmstrom, 1982). In traditional compensation contracts, CEOs undertake unnecessary common risk when their compensation is determined by the firm value, which is also influenced by external factors in ineffective market. Hölmstrom (1979) proposes a novel compensation contract scheme named RPE and explicates the risk-reduction benefit of RPE as an optimal incentive contract when there is a commonality in the uncertainty by modeling performance evaluation. After that, academics and practitioners focus on the RPE hypotheses and empirical tests of RPE (Murphy, 1999).

Apart from examining of RPE adoption and its determination, recent RPE literature investigates the influence of RPE adoption. As for the direct impact of RPE, RPE may influence the annual returns, return on assets (Ma et al., 2017), and the timing of earnings release (Gong et al., 2019). RPE also has a moderating effect, reinforcing the incentive portfolio vega's effect on the total risk (Park and Vrettos, 2015). In general, research on the influence of relative performance evaluation is relatively few. Our study focuses on exactly

the influence of RPE adoption on corporate tax avoidance. Besides, RPE adoption may have two different effects on corporate tax avoidance.

We posit that RPE adoption is likely to influence a firm's tax avoidance decision. A non-agency explanation for RPE suggests that CEOs may export more effort to prove their talent and get paid for talent since RPE is used to pay for the CEO's excellent talent relative to peers (De Angelis and Grinstein, 2020). Due to the unexpected association between CEO effort and tax avoidance decisions, we adopt the agency framework instead, which is a widely used paradigm in RPE research (Armstrong et al., 2015). According to behavioral theories, agents may interpret RPE as signaling that competition is desirable behavior (Frederickson, 1992). Thus, they may make more effort to behave well and improve firm performance as a certification of their ability (Fee and Hadlock, 2004). Standard agency models conclude that RPE adoption filters out noise from performance measures, removing unnecessary risks and improving the efficiency of incentive contracts (Holmstrom, 1982). Therefore, the CEO is able to undertake more risk in RPE-firms. In a word, when CEOs decide to increase their effort, they may choose corporate policies following two principles: more firm value and more risk-taking.

Firstly, RPE scheme is generally considered to increase the contract efficiency and spurs the CEOs to act in shareholders' interest (Hölmstrom, 1979; Antle and Smith, 1986; Albuquerque, 2009). We can also find from the proxy statement of RPE-firms that the RPE scheme is mainly used to align the interests between employees and shareholders. Then, managers may adopt corporate policies that help improve firm performance and increase shareholders wealth (Hannan et al., 2008). Since tax avoidance increases after-tax cash flows and benefit principals (Armstrong et al., 2015; Austin and Wilson, 2017), CEOs may

adopt more tax avoidance to increase shareholder value in the RPE scheme (Desai and Dharmapala, 2009). More literature on tax avoidance argue that the impact of tax avoidance on shareholder value is controversial (Desai and Dharmapala, 2009) conclude that the positive association only exists in well-governed firms. Analyses below in weakly-governed firms also presage a positive relationship between RPE adoption and tax avoidance.

Secondly, RPE adoption influences the risk aversion of delegated investment decisions. According to the agency theory (Hölmstrom, 1979), RPE adoption isolates the CEO from common exogenous risk and reduces the amount of unnecessary risk (Albuquerque, 2014; De Angelis and Grinstein, 2020), and the CEO can can undertake more risk in RPE-firms (Do et al., 2021). In firms with weak governance, managers tend to use tax avoidance to conceal their rent extraction (Desai et al., 2007). Tax avoidance with the purpose of concealing rent extraction mainly happens in firms with a weaker board and a more powerful CEO (Morse et al., 2011). Therefore, we also expect a positive association between relative performance evaluation and tax avoidance.

Two circumstances in different levels of corporate governance both approve the positive relationship between relative performance evaluation and tax avoidance. We can combine the benefits and risks of tax avoidance and consider tax avoidance as a risky investment opportunity that increases after-tax cash flows and induces risk as well (Desai and Dharmapala, 2008; Hoopes et al., 2012; Armstrong et al., 2015; Guenther et al., 2017). We can speculate that the aim of improvement firm performance and the improve of risk-taking motivates managers to engage in more tax avoidance.

However, different views exist. Although RPE adoption increases the CEO's ability to undertake the potential risks of tax avoidance and can motivate them to act in shareholder's

interest, it may decrease corporate tax avoidance for two reasons. First, tax avoidance is a costly activity for the firm reputation (Austin and Wilson, 2017). CEO may decrease tax avoidance if they tends to act in shareholders' interest in firms that adopt relative performance evaluation due to the reputation costs (Wilson, 2009). Besides, the increased bad reputation in tax planning will lead to higher volatility of corporate firm performance, especially stock performance and stock crash risk (Kim et al., 2011), contrary to the interest alignment.

Second, managerial decisions, including tax avoidance, are affected by reputation concerns in CEO labor markets (Fee and Hadlock, 2003). Reputational costs for CEO are often posited as an essential factor that limits tax avoidance activities (Gallemore et al., 2014; Graham et al., 2014). If a CEO's compensation increases with the improved performance induced by tax avoidance, he has to afford the bad influence of tax avoidance on his reputation. If he prefers reputation in the labor market and his future career to high short-term compensation, the reputation cost on his career is an essential limit to tax avoidance (Gallemore et al., 2014). These considerations suggest that the effect of RPE adoption on corporate tax avoidance is ultimately an empirical question, and we propose our hypothesis in the null form:

H_0: Ceteris paribus, RPE adoption is not associated with corporate tax avoidance.

3 Data and Methodology

3.1 Data and Sample

We obtain stock prices, shares outstanding, standard industrial classification (SIC) codes from the Center for Research in Security Prices (CRSP), firm-level annual accounting data

from Compustat, and CEO compensation and demographics from Excucomp. We also collect performance metrics, peer benchmarks definition, and elements information from the Institutional Shareholder Services(ISS).

We start with the ISS dataset and match it with Compustat and Excucomp. We only focus on the adoption of RPE in CEOs but not CFOs, so we retain all public firms for which there is complete compensation data for CEO, and where we can estimate all of the tax attributes and control variables. We exclude firms headquartered outside the U.S. and the sample covers the period from 1998 to 2020. We further exclude firms in the utility ((SIC 4900–4999) and finance industry (SIC 6000–6999). Following prior research, we drop firm-year observations with negative pretax income and negative sales (Dyreng et al., 2010; Cen et al., 2017). Our final sample consists of 69,200 firm-year observations.

3.2 Variable Constructions

3.2.1 Measures of Relative Performance Evaluation

In relative performance evaluation, firms have to select relevant performance metrics and peer groups as a benchmark. First proposed by Antle and Smith (1986), existing literature on RPE mainly examines RPE terms using an implicit method due to the lack of compensation benchmark data before the SEC requirement in 2006, which is widely adopted in the related research on the RPE (Bertrand and Mullainathan, 2001). Due to the data scarcity of detailed peer firms in CEO compensation, early studies mainly use an industry benchmark or a market index, or both to measure RPE. However, the actual CEO compensation target firms are different from the industry benchmark or market index, indicating that the implicit method cannot reflect whether the firms apply RPE in CEO compensation.

After the SEC requirement in 2006, firms have to disclose their compensation peers' identifies to shareholders in their annual report. Moreover, detailed data on the executive compensation plan's terms over fifteen years are readily available from Institutional Shareholder Services (ISS) recently. Based on the contractual terms, we identify firms that employ relative performance evaluation in CEO compensation contracts by a dummy variable (RPE), which is defined as a dummy variable that equals one for firms that adopt relative performance evaluation in CEO compensation and zero otherwise. Our approach is different from a two-stage procedure proposed by Antle and Smith (1986), which regresses CEO pay on unsystematic and systematic performance in the second stage. Compared to the implicit approach, our dummy variable reflects the RPE application disclosed by the listed firms in the U.S. Nevertheless, our findings are robust to traditional definitions and RPE evaluation methods.

3.2.2 Tax Avoidance Measures

For corporate tax avoidance measures, we use $TGETR$ (i.e., the income effective tax rate defined under GAAP) as the main explained variable, supplemented by the current effective tax rate and cash tax differential. Our first tax avoidance measure $TGETR$ is calculated as the total tax expense (TXT) divided by pretax book income (PI) less special items (SPI) Armstrong et al. (2012); Graham et al. (2014); Bird et al. (2018):

$$TGETR_{i,t} = -\frac{TXT_{i,t}}{PI_{i,t} - SPI_{i,t}}, \tag{1}$$

where TXT is the total tax expense, and $DIFPISPI$ is the adjusted pretax book income. The effective tax rate under GAAP includes both current and deferred taxes and captures the executive's propensity to affect this metric (Hanlon and Heitzman, 2010; Huseynov and

Klamm, 2012), which is appropriate to examine the reduction of tax expenses relative to the pretax accounting income managed by the CEO (Dyreng et al., 2010; Huseynov and Klamm, 2012; Cen et al., 2017).

The *TGETR* measures include current tax expenses and deferred tax expenses. Although deferred tax expenses mainly depend on accounting rules. Taxes may also be subject to earnings management Dyreng et al. (2010); Huseynov and Klamm (2012). As a result, GAAP effective tax rate does not reflect all tax avoidance behaviors, especially those associated with earnings management. Due to the limitations of *TGETR*, we adopt the current effective tax rate and cash tax differential (Nguyen, 2019) as two additional measures of corporate tax avoidance. Specifically, the firm-level current effective tax rate is current income tax expenses divided by pretax accounting income. The cash tax differential is defined as cash taxes paid divided by pretax operating cash flows adjusted for extraordinary items and discontinued operations, as shown as follows:

$$CURRENTETR_{i,t} = -\frac{TXT_{i,t} - TXDI_{i,t}}{PI_{i,t} - SPI_{i,t}} \tag{2}$$

$$CASHRATIO_{i,t} = -\frac{TXT_{i,t}}{OANCF_{i,t} + TXPD_{i,t} - XIDOC_{i,t}}, \tag{3}$$

where $TXDI$ is the differed income taxes, $TXPD$ is the income taxes paid, $OANCF$ is the net cash flow, $XIDOC$ is the extraordinary items and discontinued operations. Consistent with Hasan et al. (2017), we multiply the alternative tax avoidance measures by (-1) so that higher values of new variables convey greater tax avoidance. Besides, we winsorize all continuous variables at the 1st and 99th percentiles to mitigate the effect of extreme outliers.

3.3 Econometric Model

We examine the association between relative performance evaluation and corporate tax avoidance by estimating the following panel regression model:

$$Y_{i,t+1} = \beta RPE_{i,t} + \gamma X_{i,t} + \delta_i + \theta_t + \varepsilon_{i,t+1}, \tag{4}$$

where $Y_{i,t+1}$ denotes the corporate tax avoidance measure *TGETR*, *CURRENTETR*, and *CASHRATIO* of firm i in year t+1. Following Carter et al. (2009), our primary explanatory variable, *RPE*, is a dummy variable that equals one for firms that adopt relative performance evaluation in CEO compensation contracts and zero otherwise. The vector X includes several firm characteristics. We also include industry and year fixed effects to control time-invariant industry factors and general business cycles.

We include several determinants of corporate tax avoidance widely documented in the existing literature (Kim et al., 2011; Nguyen, 2019). We first include the absolute performance evaluation *ABS*, a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise. Although there has been a controversy over the association between firm size and firm's tax avoidance activities, firm size has been widely proved associated with the firm's tax avoidance strategies (Rego, 2003). Therefore, we include firm size in our regression, calculated as the natural logarithm of total assets. As the most critical control variable, *ROA* is also included in the regression model, given that *ROA* has been confirmed as the most dominant variable that affects tax avoidance. *ROA* is calculated as income before extraordinary items measured by total assets. Besides, the firm leverage *LEV*, which is defined as total liabilities over total assets, is also included as a control variable. Moreover, the market-to-book ratio (*MTB*), measured as the market

value of equity scaled by the book value of equity is also included as a control variable to control firms' growth opportunities and potential future profitability (Gallemore and Labro, 2015).

Furthermore, we include other control variables that are determinants of tax avoidance in previous research as follows: firm age (*AGE*), loss carries forward (*NOL*), foreign income (*FORINC*), *R&D* expenditure (*RD*), equity income in earnings (*EQINC*), property, plant, and equipment (*PPE*), special items (*SPI*), cash holdings (*CASH*), and intangible assets (*INTAN*) (Chen et al., 2010; Cheng et al., 2012; Kubick et al., 2015; Cen et al., 2017; Nguyen, 2019).

3.4 Summary Statistics

Panel A of Table 1 reports the descriptive statistics of the main variables. The mean (median) value of tax avoidance measure *TGETR* is −0.240 (−0.254). The mean (median) value of *CURRENTETR* and *CASHRATIO* is −0.210 (−0.336) and −0.113 (−0.659), respectively. The average (median) of *RPE* is 0.0079 (0.000), suggesting approximately 7.9% of total firm-year observations adopt relative performance evaluation. The average absolute performance evaluation adoption is 21.7%. Concerning firm-level characteristics, an average firm has total assets of $397.82 billion, leverage of 0.222, return on assets of −3.7%. In addition, firms have an average market-to-book of 3.002. Moreover, firms have an average percentage of foreign income, and intangible assets to total assets are 1.0% and 16.7%, respectively.

Panel B presents the Spearman correlation matrix for the main variables. The relative performance evaluation measure *RPE* has a significant and positive correlation with tax

avoidance *TGETR*. Besides, the relative performance evaluation is positively associated with *LEV*, *SIZE*, and *ROA*. The correlation among control variables is modest, with correlation coefficients generally below 0.3, suggesting minor multicollinearity problems.

(Insert Table 1 about here)

4 Empirical Results

4.1 Relative Performance Evaluation and Tax Avoidance

Our primary estimation examines the association between relative performance evaluation and tax avoidance. Table 2 presents the relevant results.

Column (1) reports the result when *TGETR* is used as the primary explanatory variable. We include the *ABS*, a dummy variable used to identify absolute performance evaluation for CEO compensation, to control the influence of another type of compensation contract on corporate tax avoidance. The estimated coefficient of *RPE* is positive (coefficient=0.0218) with a t-statistic of 4.80, which is significant at the 1% level. This value is equivalent to a 0.59% increase in tax avoidance with one standard deviation increase in *RPE*. The significantly positive coefficient suggests that the adoption of relative performance evaluation increases corporate tax avoidance. The positive coefficient of *ABS* suggests that the adoption of absolute performance evaluation also motivates corporate tax avoidance. Besides, *LNSIZE* has a significantly negative coefficient on tax avoidance, suggesting that large firms are associated with less aggressive tax avoidance strategies. The positive coefficient of leverage indicates that firms with a high level of financial leverage may avoid more tax.

In Column (2), we use the current effective tax rate as the tax avoidance measure. The coefficient of the relative performance evaluation proxy is 0.0168 with a t-statistic

of 3.80. This value is equivalent to a 0.45% increase in tax avoidance with one standard deviation increase in *RPE*. The economic magnitude is slightly smaller than that in Column (1) when we use effective tax rate as tax avoidance measure. In contrast, when the tax avoidance is measured by cash differential ratio in Column (3), the higher significantly positive coefficient of *RPE* suggests that the economic magnitude of relative performance evaluation on corporate tax avoidance is larger than that in Column (1).

The results in Table 2 indicate that the adoption of specific compensation practices exports provokes corporate tax avoidance, which is a risky investment closely related to agency conflicts. We speculate that the managers' compensation and incentive arrangements increase CEO risk-taking and remedy agency problems between CEOs and shareholders.

(Insert Table 2 about here)

4.2 Endogeneity

Previous literature related to RPE relies on the hidden-action agency models proposed by Holmstrom (1982), where risk-neutral investors sign compensation contracts with risk-averse CEOs (De Angelis and Grinstein, 2020). However, the compensation system may be rigged by powerful CEO (Faulkender and Yang, 2010; Morse et al., 2011; Abernethy et al., 2015), who can extract rents in the form of higher compensation (Desai and Dharmapala, 2006). At the same time, CEOs with more decision-making power use earnings management and tax avoidance to disguise private benefits from shareholders (Desai et al., 2007). Since RPE adoption and corporate tax avoidance may be driven by CEO power simultaneously, a major concern about our baseline results is omitted variable bias. This section applies the propensity score matching (PSM) technique and endogenous treatment effect model to

alleviate endogeneity concerns.

4.2.1 Propensity Score Matching

Our primary findings might be driven by the systematic difference between RPE forms and firms that do not adopt RPE. To mitigate and quantify the effects of potential unobservable factors that may affect a firm's tax avoidance activities, we design a propensity score matching research to test the robustness of our findings. Specifically, the listed companies adopting RPE are defined as the treatment group, otherwise the control group. We estimate the propensity score using a Logit model with the same set of control variables as matching covariates. Then, the three-to-one nearest neighbor matching technique without replacement is applied with a common support requirement in the matching procedure. The PSM procedure leaves us with a matched sample consisting of 5,564 firm-year observations.

In Figure 2, we compare the kernel density of propensity scores between the two groups after matching and find no significant difference. The test of covariate balance in Panel A of Table 3 shows that the matching covariates are not significantly different from each other between the treatment and control groups. The result suggests that the matching procedure has minimized the difference in the firm characteristics between the treatment and the control group.

The results based on the matched sample are reported in Panel B Table 3. The tax avoidance measures are *TGETR*, *CURRENTETR*, and *CASHRATIO*. When using different tax avoidance measures and including different control variables, the coefficients of *RPE* are all significantly positive, indicating that our results in baseline regression are insensitive to systemic characteristics of firms. In sum, the main results of this paper remain robust

after controlling the differences in the systemic characteristics of firms based on the matched sample.

(Insert Table 3 about here)

4.2.2 Endogenous Treatment Effect Model

We estimate a linear regression with endogenous treatment effects using the number of peer firms in the 3-digit SIC industry and the *HHI* index as treatment variables. The result of the treatment effects equation shows that the number of peer firms and *HHI* is negatively associated with the likelihood of adopting RPE. We can also see a potential underestimate of the effect of the adoption of RPE on corporate tax avoidance.

Table 4 presents the relevant results. Similarly, we adopt *TGETR*, *CURRENTETR*, and *CASHRATIO* as tax avoidance proxies. In Columns (1)–(3), the estimated coefficients of *RPE* is all significant and positive. Besides, the economic magnitude of the treatment effect is significantly larger than that in the baseline results, indicating a potential underestimate of the effect of the adoption of RPE on corporate tax avoidance. Moreover, the result of the treatment effects equation shows that the percentage of firms that adopt RPE in the same industry is positively associated with the likelihood of adopting RPE, while the number of peer firms in the 3-digit SIC industry is negatively associated with the likelihood of adopting RPE, except in Column (3). The results of the endogenous treatment effect are consistent with our conjecture that the adoption of RPE is partially determined by external competition and the industry adoption of RPE.

(Insert Table 4 about here)

4.2.3 Sample Selection Model

In our study, whether the firms apply relative performance evaluation in CEO compensation comes from the announcement of the detailed compensation contract in the proxy disclosures. However, the disclosure is not compulsory before the requirement of SEC in 2006, indicating that it's not sure whether firms disclose the details of manager's compensation practices to signal well-running operations or they want to disguise the compensation contracts for specific purposes. The firms included in ISS may be inconsistent with total firms, and it is not clear whether our sample correctly reveals the adoption of RPE in all companies comprehensively. We employ Heckman (1979) two-stage method to solve the endogenous problem caused by sample selection deviation. Apart from the control variables, we also include the percentile and the number of firms that adopt RPE in the same industry to estimate the possibility of the specific firm adopting RPE.

The results in Table A2 present the results of the Heckman Selection Model. In Column (1), the estimated coefficients of the percentage of firms that adopt RPE in the same industry and the number of peer firms in the same industry suggest are both significantly negative, suggesting that external RPE adoption and industry competition disturb the adoption of a specific firm. In Columns (2)–(4), we include the inverse miller ratio to control the influence of unobservable interference variables. The estimated coefficients of *RPE* are all significant when we use three tax avoidance measures, suggesting that our results are not biased by sample selection deviation.

(Insert Table A2 about here)

4.3 Tax Avoidance Incentives

Baseline results indicate that CEO tend to engage in more tax avoidance in the RPE scheme. In this section, we try to explore the prior executive compensation research that managers make choices that are consistent with maximizing the value of their compensation (Wallace, 1997). The same applies to CEOs. When their compensation depend on the company's performance relative to previously defined targets, their behaviors are aimed at improving firm performance. Tax avoidance engagement in well-governed firms helps increase firm value (Armstrong et al., 2015). By contrast, powerful CEO in a weak-governed firm manipulates the compensation contract to increase the compensation by defining the performance metric that helps to improve relative performance. The increases in CEO pay reflects CEOs using power to skim rents from the firm (Morse et al., 2011). Therefore, we expect a positive relationship between tax avoidance and rent extraction since tax avoidance provide techniques for rent skim (Desai and Dharmapala, 2009). To conclude, RPE is supposed to improve the CEO's tendency for more tax avoidance, and we examine whether RPE is positively associated with tax avoidance motivation in this section.

We use several managerial incentive to measure CEO's motivation to engage in tax avoidance in RPE firms. First, powerful CEOs may incorporate performance measures used in relative performance evaluation beneficial to increasing total compensation. Much of the increases in CEO compensation reflects CEOs using power to skim rents from the firm (Morse et al., 2011). Researchers find that executive options are often backdated to hide direct cash giveaways to CEOs and senior management (Lie, 2005; Narayanan and Seyhun, 2008). Besides, one reason that managers engage in tax avoidance is to conceal their rent

extraction. Therefore, CEOs stock options are positively associated with the motivations for tax avoidance. This relationship is buttressed by empirical evidence that firms with large employee stock options have lower effective tax rates (Phillips, 2003). We expect a positive relationship between RPE adoption and equity compensation incentives if relative performance evaluation can also increase the CEO's appetite for tax avoidance.

The theory basis above is that tax avoidance is used to conceal the rent skim of the managers. However, tax avoidance not only reduce the costs of managerial diversion (Desai et al., 2007), but generally helps increase cash flow, improve firm performance, and benefit shareholders (Armstrong et al., 2015). Therefore, it is not rigorous to ignore the motivation of tax avoidance to increase the shareholders wealth.

As for another motivation for tax avoidance, we use after-tax incentives to measure whether CEOs act in shareholders' interest and reduce tax payments. Specifically, management incentives are closely related to shareholder bonuses for the risk added to CEOs in tax avoidance. As a risky investment that induce costs to both CEO's reputation and future promotion, tax avoidance creates cash flows and increase firm value (Armstrong et al., 2015). Considering the economic benefits of the reduced tax rate to shareholders and the negative influence on CEOs' careers, CEOs need to be provided additional compensation for the risk they undertake when engaging in tax avoidance (Kubick et al., 2015). A flood of literature finds that firms are more likely to use after-tax incentives when they have greater tax planning opportunities (Newman, 1989). Therefore, we use after-tax incentives to measure the tax avoidance motivation and examine the influence of relative performance evaluation on the motivation.

We use three incentive measures to reflect the motivation for tax avoidance and examine

the association between relative performance evaluation and tax avoidance motivation. The first proxy is the percentage of annual stock and option awards to total annual compensation, following the method of (Armstrong and Vashishtha, 2012). Similarly, we use the ratio of annual stock and option awards to total annual compensation for the CEO to measure the motivation to engage in tax avoidance when extracting rent (Desai and Dharmapala, 2006). In terms of the tax avoidance to increase firm value, we use an estimated proxy for the adoption of after-tax incentives, defined in (Gaertner, 2014), to reflect tax avoidance motivation. Detailed variable constructions are presented in the Table of variable definitions.

The results in Table 5 are consistent with our conjecture. In Columns (1) and (2), the estimated coefficients of *RPE* are significantly positive, indicating that relative performance evaluation increases managerial equity incentives. The results prove that CEO may engage in tax avoidance to conceal tax avoidance. In Column (3), we use *CEOATAX* to measure the existence of CEO after-tax incentives following (Gaertner, 2014). The significant coefficient of *RPE* implies that tax avoidance can be used for the purpose of improving firm performance and increasing shareholders wealth. The results prove that relative performance evaluation motivate managers to engage in tax avoidance for different purposes and indicate that our mechanisms in section 4.5 are reasonable.

(Insert Table 5 about here)

4.4 RPE characteristics

4.4.1 Benchmark Selection

Among the four essential RPE elements: payout award structure, benchmark, performance metric, and assessment period, benchmarks can be a peer group of firms or an index

self-designated by the board of directors. In this section, we examine which kind of RPE benchmark plays a leading role in the association between RPE adoption and corporate tax avoidance.

RPE benchmark is subject to potential managerial influence (Abernethy et al., 2015), and the selection of compensation benchmark peers will lead to the expansion of executive compensation (Bizjak et al., 2011; Faulkender and Yang, 2013). Therefore, a CEO will infiltrate the RPE benchmark selection procedure to improve his compensation (Morse et al., 2011). The interference of peer group choice by CEO in RPE may influence corporate tax avoidance. On the one hand, the flexibility and maneuverability of peer groups increase the probability of the overlap between compensation benchmarks and RPE benchmarks. Compensation benchmarks create a tournament between the CEO and external competitors, motivating CEOs to engage in more tax avoidance (Kubick and Lockhart, 2016). On the other hand, peer benchmarks increase the probability that two firms have each other as peers in their respective RPE contracts, which creates a strategic interaction and, in turn, increases their competitive aggressiveness (Feichter et al., 2019). In summary, an RPE contract that chooses peer as a benchmark may cause an implication for strategic competition derived from tournament (Do et al., 2021), which increases peer pressure and induces tax avoidance. Thus, we conjuncture that the peer benchmark in the RPE contract encourages the CEO to engage in more tax avoidance compared to the index benchmark.

This section examines the heterogeneous effect of different kinds of benchmarks adopted in the CEO's RPE contract on corporate tax avoidance. We construct two benchmark proxies(i.e., *PEER* and *INDEX*) to examine which RPE performance metrics are associated with corporate tax avoidance. *PEER* is a dummy variable that equals one for firms that

adopt a self-selected peer group as the relative benchmarks. *INDEX* indicates whether a firm adopts S&P 500 or other indexes as the relative benchmark.

Panel A of Table 6 presents the relevant results. In this section, we use *TGETR* to measure corporate tax avoidance. According to Columns (1) and (3), only the coefficients of *PEER* remain significantly positive while the estimated coefficients of *INDEX* are not significant. The result indicates that only RPE contracts that use peer group as benchmark increase corporate tax avoidance. The result is consistent with our hypothesis, suggesting that the tournament effect between the corporate and its peers in the CEO compensation contract motivates the CEO to engage in more tax avoidance. The result provides supportive evidence that the influence of RPE on corporate tax avoidance is mainly driven by the RPE adoption of peer group benchmarks.

4.4.2 Performance Metrics

Another vital element in RPE is performance metrics, including accounting-based metrics and stock-based metrics. This section examines the heterogeneous effect of different kinds of performance metrics on corporate tax avoidance. The bulk of research in the RPE field constructs various RPE proxies based on different data sources, including compensation, discussion, and analysis proxy disclosure (Ball et al., 2020), collected information De Angelis and Grinstein (2020), and ISS data recently.

For a CEO whose RPE compensation contract adopts an accounting-based performance metric, engaging in earnings management can be deliberately done for personal inflated earnings (Lo, 2008). However, according to traditional agency theory, the earnings management is due to a conflict of interest between management itself as the manager of

the company with shareholders in the agency relationship (Jensen and Meckling, 1976). In this case, if RPE improves incentive alignment between CEO and shareholders (Hölmstrom, 1979), the CEO will act in shareholders' interest and decrease earning management. As a result, it is unclear whether accounting-based performance metrics will induce more earnings management. Since tax avoidance is a major instrument for companies doing earnings management, there may be weak evidence between accounting-based RPE and corporate.

However, for a CEO whose RPE compensation contract adopts a stock-based performance metric, RPE filters common risk and improves CEO risk-taking (Hölmstrom, 1979). Therefore, compared to firms that adopt other performance evaluation methods apart from RPE, CEOs may engage in more tax avoidance because they can afford more costs imposed by tax avoidance, such as stock crash risk (Kim et al., 2011). The more tax avoidance in firms that use stock-based relative performance evaluation is also consistent with the incentive-alignment effect of RPE. As a result, we expect a pronounced relationship between stocked-based RPE and corporate tax avoidance than accounting-based RPE.

To examine the heterogeneous effects of performance metrics on corporate tax avoidance, we construct two dummy variables. Specifically, according to different performance evaluation metrics, we construct two dummy variables *ACC* and *STK*. *ACC* equals one for firms that adopt accounting-based relative performance evaluation for CEO compensation and zero otherwise. *STK* equals one for firms that adopt stock-based relative performance evaluation for CEO compensation and zero otherwise.

Panel B of Table 6 presents the relevant results. In this section, we use the one-year GAAP effective tax rate (*TGETR*) to measure corporate tax avoidance. Even though the estimated coefficient of *ACC* is significant at the 10% level, the coefficient of *STK* is positive

and significant at the 1% level, respectively. The coefficient of *STK* remains significantly positive in Column (3) when we measure tax avoidance by three-year GAAP effective tax rate, while the estimated coefficient of *ACC* is insignificant. Whether weak or insignificant, we contend that the RPE contract that uses accounting-based performance metrics have a limited impact on corporate tax avoidance. Instead, the coefficient of *STK* remains significantly positive, indicating that the prominent promotion of RPE to tax avoidance is realized by RPE that adopt stock-based performance metric, suggesting that the risk-sharing effect of RPE improve the CEO risk-taking ability and can undertake the risk produced by tax avoidance.

4.4.3 Short-term and Long-term Incentive

In this section, we examine the effect of different components in relative performance evaluation scheme on corporate innovation. According to traditional agency theory, the relationship between agents and principles is aligned in firms adopting the RPE scheme (Jensen and Meckling, 1976; Hölmstrom, 1979; Holmstrom, 1982; Jensen and Murphy, 1990). However, RPE includes incentives aimed to prize success in different periods. Therefore, it is necessary to identify which kind of incentive awarded according to the RPE compensation contract plays a dominant role in aligning agent-principle interest conflicts. As stated in many proxies statement that present the details of relative performance evaluation, long-term incentive plan (LTIP) emphasizes performance-based equity awards and is more efficient to motivate managers to enhance shareholder wealth. For example, in developing long-term incentive compensation recommendations for 2020, the primary focus of *A. H. Belo Corporation*'s Compensation and Management Development Committee was to balance

dilution caused by equity grants, cost and retention concerns. And one of the objectives[2] of long-term incentives is to align the interests of executives with those of shareholders. Since the existence of long-term incentives in CEO compensation package is designed to focus executives on achieving key financial goals, and motivate and reward them for the market-driven results, we expect managers who are awarded long-term incentives tend to manage firm operation in a way that is beneficial shareholder wealth. By contrast, the effect of short-term incentives on corporate tax avoidance may not be efficient in increasing shareholder wealth because managers can manage the earnings based on the principle of achieving the goal in the short term rather than gaining a competitive advantage in the long run.

The relevant results are presented in Table 6. Consistent with our expectation, the coefficients of long-term incentive proxy *LONGINCT* are all significantly positive when we use three different tax avoidance proxies, as presented in Columns (1)–(3). In contrast, the estimated coefficient of short-term incentives proxy is only significantly positive when we measure tax avoidance by *CURRENTETR* in Column (2). As for another two tax avoidance proxies in Column (1) and Column (3), the effect of short-term incentive on tax avoidance is not significant. The results indicate that long-term elements under the RPE scheme are the driving force of encouraging tax avoidance. Considering the relative advantage of long-term incentive to short-term incentive, we conjecture that RPE motivates tax avoidance due to the aligned interests between managers and shareholders.

(Insert Table 6 about here)

[2]Other objectives include:(1) managing share usage and dilution to acceptable levels; (2) providing retention to key executives over a multi-year period; (3) enhancing the Company's ability to recruit executives who can further diversify sources of revenue and grow EBITDA; and (4) ensuring that the total expense incurred is consistent with the value delivered to executives.

4.5 Cross-Sectional Analysis

The association between relative performance evaluation and corporate tax avoidance may be heterogeneous. Previous literature documents that overall governance structure has a significant impact on how managers make decisions on investment policy (King and Wen, 2011). On the one hand, the incentive contract itself is generally considered a corporate governance mechanism in agency theory (Bebchuk et al., 2011). On the other hand, tax avoidance has been viewed to intertwine with corporate governance issues. Stronger governance mechanisms can help firms mitigate the negative consequences of tax avoidance (Bayar et al., 2018), while tax avoidance activity is potentially detrimental to firm value in the absence of solid governance mechanisms (Desai and Dharmapala, 2009). Therefore, both relative performance evaluation and tax avoidance are closely related to corporate governance. In this section, we examine whether the association between relative performance evaluation and corporate tax avoidance varies with corporate governance, both internal governance and external monitoring.

4.5.1 Internal Governance

Compensating CEOs based on firm performance reduces the agency costs by shifting a portion of the firm's operating risk onto CEOs, effectively aligning the interests between CEO and shareholders (Jensen and Meckling, 1976; Jensen and Murphy, 1990). If CEOs export effort to maximize firm value by tax avoidance, the influence of tax avoidance on firm value should be conducive. However, the valuation of tax avoidance depends on the quality of firm governance, and the average effect of tax avoidance on firm value is only positive in well-governed firms (Desai and Dharmapala, 2006). Therefore, we expect a more pronounced

association between relative performance evaluation and tax avoidance.

We adopt two internal governance proxies and examine the influence of internal governance on the association. We use board independence as the first proxy because board independence is supposed to improve corporate governance practices (Gupta and Fields, 2009). The second corporate governance measure is CEO tenure, which is negatively associated with corporate governance (Hermalin, 2005). The results are presented in Table 7 Panel A. Consistent with our conjecture, the positive association between relative performance evaluation and corporate tax avoidance only exists in firms with efficient internal governance.

4.5.2 External Monitoring

Two motivations for tax avoidance in firms that adopt relative performance evaluation include increasing shareholder wealth and concealing rent-seeking (Desai et al., 2007; Armstrong et al., 2015). The alignment effect of relative performance evaluation gives managers a strong incentive to work for the shareholders' best interests. But we shouldn't neglect the desire of tax avoidance to camouflage rent extraction, which is also associated with the rent extraction view of relative performance evaluation. We have document internal governance influences the motivation of tax avoidance to enhance shareholders interest in Section 4.5.1 and convince our theoretical ratiocination. In this section, we examine the influence of external governance on the association between relative performance evaluation because external governance can substitute board structure (Gupta and Fields, 2009).

Managerial power theory argues that outrage, such as management in takeover bids, constrains the excessive rent-seeking behavior of powerful CEOs (Bebchuk and Fried, 2003).

More correctly, institutional monitoring as an external governance mechanism reduces the rents that managers can extract from corporations (Almazan et al., 2005; Desai and Dharmapala, 2006). Therefore, tax avoidance used to conceal rent extraction in firms faced with effective external monitoring mechanisms is constrained. When viewing tax avoidance as a risky investment, we also theorize that there are less tax avoidance in firms with strong external governance, which inhibit risk-taking in investment decisions (John et al., 2008; Heyden et al., 2017). In sum, we expect a significantly positive association exists only in firms facing insufficient external monitoring.

We adopt two external governance proxies and examine the influence of external monitoring on the association. Firstly, we measure external monitoring by institutional ownership, positively associated with corporate governance (Schmidt and Fahlenbrach, 2017). The second external governance proxy measures the anti-takeover defense based on the E-index of (Bebchuk et al., 2009), which is negatively associated with corporate external monitoring. The results are presented in Table 7 Panel B. Consistent with our conjecture, the positive association between relative performance evaluation and corporate tax avoidance only exists in firms with insufficient external monitoring, indicating that motivation for tax avoidance to conceal rent extraction and alignment between managers and shareholders are essential in the relationship between RPE and tax avoidance.

(Insert Table 7 about here)

4.6 Possible Mechanisms

We try to explore the mechanisms of the relationship by focusing on the motivation of tax avoidance and examining the influence of corporate governance in the association. We

can draw a preliminary conclusion that the effect of incentive contracts to align the interests between managers and shareholders and the improved ability to undertake the risk of rent skim may be possible channels of the relationship between relative performance evaluation and tax avoidance.

First, the increased risk-taking motivates managers to engage in more tax avoidance to conceal rent-seeking. According to agency theory, the use of RPE in CEO compensation contracting helps to filter out common risk factors or referred to as systematic risk (Holmstrom and Milgrom, 1987; Aggarwal and Samwick, 1999). Besides, RPE adoption may reduce managers' reluctance to adopt risky capital investments (Do et al., 2021). Aggressive tax strategies involve significant uncertainty and impose costs on both firms and managers (Hanlon and Slemrod, 2009; Hoopes et al., 2012; Rego and Wilson, 2012), while also increasing cash flow and after-tax income (Armstrong et al., 2015). Thus, tax avoidance can be regarded as a risky investment opportunity (Rego and Wilson, 2012). In a word, CEOs are more risk-taking if their compensation contracts adopt relative performance evaluation so that they can undertake the risk of tax avoidance used to conceal rent skim.

Second, optimal contracting theory suggests that compensation contracts are set up to solve agency problems and to make managers do what's in the shareholders' best interests (Murphy, 1999; Core et al., 2003). Relative performance evaluation is no exception, which is initially proposed to solve moral hazards in the agency scheme (Hölmstrom, 1979). If the incentive effect acts as the board expect (actually the more pronounced in well-governed firms), the policies adopted by managers should increase firm value and improve firm performance. We use the probability of CEO survival, which is associated with superior firm performance (Dikolli et al., 2014; Jenter and Kanaan, 2015), to measure whether managers

are inclined to behave in the shareholders' interests. The threat of dismissal motivates the CEO to maximize the shareholders' value by engaging in tax avoidance, which helps increase cash flows and improve firm performance (Armstrong et al., 2015; Austin and Wilson, 2017). In sum, relative performance evaluation motivates managers to act in shareholders' interests by increasing the possibility of dismissal. The threat of dismissal acts as a channel to provoke firms to adopt tax avoidance to improve firm performance and maximize firm value.

This section performs mediation analyses to identify the underlying channels of CEO risk-taking and CEO dismissal probability that affects corporate tax avoidance. Specifically, we apply a standard two-step mediation analysis approach formulated as follows:

$$M_{i,t} = \beta RPE_{i,t} + \gamma X_{i,t} + \delta_i + \theta_t + \varepsilon_{i,t} \tag{5}$$

$$Y_{i,t+1} = \beta RPE_{i,t} + \alpha M_{i,t} + \gamma X_{i,t} + \delta_i + \theta_t + \varepsilon_{i,t+1}, \tag{6}$$

where $Y_{i,t+1}$ denotes the corporate tax avoidance measure $TGETR$ of firm i in year t+1, and M denotes the mediating variables.

In the first step, the association between RPE adoption and CEO risk-taking or CEO dismissal probability is investigated. In the second step, the tax avoidance measure is regressed on relative performance evaluation, mediating variables, absolute performance evaluation proxy, and other firm characteristics. Based on John et al. (2008), we construct the corporate risk-taking proxy $ROARISK$, which is defined as the company earnings volatility. A high value of the index represents a high level of corporate risk-taking. As for the CEO dismissal probability proxy, $PDISSMAL$ is constructed following the method of Jenter and Kanaan (2015), and a high value of the index indicates that CEOs are more likely to be fired. The mediating effect holds if the coefficients of RPE and the mediating variables are

statistically significant.

Table 8 presents the results of the mediation analyses. Column (1) repeats our baseline results that relative performance evaluation has a positive and significant association with corporate tax avoidance. In Column (2), the intangible intensity has a positive association with the risk-taking index *ROARISK*, and the coefficient of *RPE* is significant at the 5% level (t-statistic = 2.57). The finding indicates that firms that adopt relative performance evaluation are associated with a high degree of risk-taking because RPE filters out common risk factors and reduces the CEOs' reluctance to adopt risky capital investments. Column (3) shows that relative performance evaluation is negatively associated with CEO dismissal probability due to the decreased uncontrollable bad performance and the improved incentive alignment.

In Column (4), we include the two mediating variables in the regression to examine the relative explanatory power of the two possible underlying channels. The results show that the coefficient of *ROARISK* is positive and significant, whereas the coefficient of *PDISSMAL* is significantly negative. The result suggests that the mediating effect rarely (18.26%) comes from corporate risk-taking, whose mediating effect is statistically significant at the 1% level. Most (81.74%) of the mediating effect comes from CEO dismissal probability, and the effect is significant at the 1% level. The findings of the mediation analyses demonstrate that the relative performance evaluation affects corporate tax avoidance mainly through the increased degree of risk-taking and alignment between managers and shareholders. The increased CEO risk-taking enables managers to take risks when using tax avoidance to extract rent; the threat of dismissal motivates managers to engage in more tax avoidance which increases firm value. The dominant mediating effect of alleviated agency problem and the subordinate role

of improved risk-taking is consistent with the cross-section results: tax avoidance is mainly conducted to conceal rent extraction in firms with weak governance, due to the subsidiary mediating effect of risk-taking, tax avoidance is easily offset by the mitigated agency conflicts in firms with weak governance. The results of the mediation analyze are consistent with the irrelevance between the relative performance evaluation and tax avoidance of weakly governed firms.

(Insert Table 8 about here)

4.7 Robustness Checks

4.7.1 Alternative RPE Measures

We evaluate the sensitivity of our results to the alternative selections of RPE measures in this section. For explanatory variable *RPE*, we construct two alternative RPE measures using the implicit approach proposed by Antle and Smith (1986). Specifically, we construct two implicit RPE measures (both are named *RPER*) by calculating the *t*-statistic of the percentile of *TSR* in the same industry in the regression with CEO total compensation as the dependent variable. The difference between the two relative performance evaluation proxies is the different industry classifications when identifying the percentile of *TSR* in the industry. Specifically,

$$LNTDC_{i,t+1} = \alpha + \beta TSR_{i,t} + \gamma CDFTSR_{i,t} + \delta LNSIZE_i + \varepsilon_{i,t+1}, \tag{7}$$

where *LNTDC* is the natural logarithm of the total compensation of the CEO, *TSR* is the total shareholder return, *CDFTSR* is the percentage of total shareholder return in the industry under two different industry classifications (2-digit SIC and ICODE 50, respectively). Rewarding CEOs for taking actions that increase shareholder wealth implies

that $\beta > 0$. RPE adoption implies that CEO pay revisions should be negatively related to the industry and market return. *RPER* is a dummy variable defined as whether γ is negatively related to the industry and market return.

The relevant results are presented in Table 9. Similar to the baseline regression, we use three tax avoidance measures to ensure the robustness of the results. In Columns (1)–(3), we use the first implicit RPE proxy based on 2-digit industry classification to replace the dummy variable in baseline regression. The estimated coefficients of the implicit relative performance evaluation are all significantly positive at the 1% level. Besides, the economic magnitude is larger than that in baseline regression. The replicated results of the second implicit RPE proxy are presented in Columns (4)–(6). The association between RPE and tax avoidance remains significantly positive, indicating that RPE adoption increases tax avoidance when using implicit RPE measures instead of explicit RPE proxies in the baseline regression.

4.7.2 Sampling Criteria

In this section, we use five alternative sampling criteria to test the robustness of our results. The results are presented in Table 10. According to Nguyen (2019), we exclude the firms with negative income taxes paid (i.e., item *TXPD*) as many types of research concerning tax avoidance do. Prior research regarding the determinants of tax avoidance activities removes firms with negative adjusted pretax income (generally referred to as loss firms) because effective tax rates are difficult to interpret when the denominator is negative (Dyreng et al., 2017). Thus, we further exclude the firms with negative adjusted pretax income, following the method of Hasan et al. (2017). The estimated coefficients of *RPE* in

Columns (1) and (2) suggest that abnormal operating conditions do not drive our results.

Since the economic magnitude of the executive effects on corporate tax avoidance is large (Dyreng et al., 2010), the CEO's compensation benchmark's influence on the firm's tax avoidance activities may change prominently. As a result, in Column (3), we exclude the year when the CEO started his tenure. In Column (4), we exclude firms in three specific industries in which tax avoidance is particularly prevalent (Dyreng et al., 2008), so that the main determinants of successful tax avoidance may be other factors. Finally, we exclude observations during 1998 and 2005 in Column (5), during which firms are not forced to announce the compensation details. Moreover, the Securities and Exchange Commission issued new rules that require the disclosure of the use of relative performance evaluation in CEO compensation contracts in 2006 (Gong et al., 2011). All these sampling criteria do not change our primary results.

4.7.3 Model Specifications

In this section, we examine whether our findings are sensitive to model specifications, such as alternative fixed effects and additional control variables.

Table A3 reports the relevant results. In our baseline regression, we use 3-digit SIC as industry classification when controlling industry fixed effects. As for robustness check, we use 2-digit SIC and Fama-French 48 industry classifications in Columns (1) and (2), respectively. In Column (3), we control the firm fixed effect instead of the industry fixed effect to check whether omitted firm factors cause more tax avoidance. Column (4) further controls CEO characteristics, including the total compensation, age, tenure, gender, and the sensitivity of the CEO's option portfolio value to stock price. The positive association between RPE and

tax avoidance remains quantitatively similar when the regression models are altered. We contend that our findings are robust after accounting for industry-level characteristics, firm effects, and CEO characteristics that may affect tax avoidance.

4.7.4 Other Explanations

This section tests other possible explanations regarding the positive effect of RPE on corporate tax avoidance. To begin with, managers employ avoidance techniques to manage earnings. In the short term, the amount of tax payable and tax payment are affected by adjusting the firm's earnings affects (Watts and Zimmerman, 1978). Since tax avoidance is the most obvious motive for earnings management, one may argue that CEO may avoid tax to manage earnings in RPE firms because the relative performance of the company is more likely to become better after earning management. That is to say, earnings management may be a controversial explanation for the association between the use of relative performance evaluation and corporate tax avoidance.

In addition, the tax activities of peer firms may affect the tax avoidance policies in the focal firm (Li et al., 2014). Besides, the presence of relative performance evaluation increases competitive aggressiveness among peer firms (Feichter et al., 2020). As a result, one may argue that CEOs' plan-based awards may lead to more tax avoidance, which is used to gain an advantage over competitors and achieve the goal in RPE scheme. Thus, the peer effect in the RPE scheme may also drive more tax avoidance engagement apart from the mechanisms discussed in Section 4.6. Below, we identify whether the tax of peer firms plays the mediating effect between RPE and tax avoidance.

Table A4 reports the estimated results of RPE on possible drivers that may dampen

tax avoidance. The dependent variable in Column (1) is corporate earnings management measure defined as absolute discretionary accruals estimated from modified Jones Model (Jones, 1991). The coefficient of RPE in Column (1) is −1.188 with a t-statistic of −6.03 and is significant at the 1% level, suggesting that the earnings management does serve as alternative motivation for more tax avoidance. The result in Column (2) examines the effect of peer tax on corporate tax avoidance. The positive coefficient of peer tax and the negative coefficient of the interaction term of RPE and peer tax offset, indicating that the effect of peer firm on tax avoidance in RPE scheme is negligible. The result implies that we exclude other possible drivers that mediate the effects of relative performance evaluation on tax avoidance.

5 Further Discussion

5.1 Agency Conflict and Firm Value

Any discussion of executive compensation must proceed against the background of the fundamental agency problem afflicting management decision-making (Bebchuk and Fried, 2003). Both the optimal contracting view and the rent extraction view of incentive plans has been used to analyze the effect of incentive compensation. The optimal contracting view highlights that pay arrangements are powerful governance mechanisms that motivate managers towards shareholder value maximization, alleviating agency conflicts (Jensen and Meckling, 1976; Douglas, 2006). By contrast, the rent extraction view underscores that incentive contracts provide a way for managers to misappropriate a sizeable portion of the wealth produced by the firm (Bebchuk et al., 2001). Below, we analyze two opposing views about the link between CEO compensation contracts, agency costs, and firm value.

First, managers' pay arrangements are viewed as a partial remedy to the agency problem (Bebchuk and Fried, 2003). Agency theory predicts that compensation policy will give the manager incentive to select and implement actions that increase shareholder wealth (Jensen and Murphy, 1990).According to agency theory, firms adopt relative performance evaluation face fewer moral hazards (Hölmstrom, 1979), and CEOs are motivated to maximize the shareholder's value (Jensen and Meckling, 1976). In this sense, relative performance evaluation helps reduce the agency cost effectively and increase firm value.[3]

However, the optimal contracting view is unilateral and incentive compensation itself has been criticized for aggravating agency conflicts in weak governed firms (Morse et al., 2011). As several researchers have recognized, some features of compensation policy seem to induce managerial rent-seeking rather than provide efficient incentives to maximize shareholder wealth (Lie, 2005; Narayanan and Seyhun, 2008; Morse et al., 2011). Rent extraction view highlights that compensation contracts can improve the ability of managers to enrich themselves through the extraction of rents at the expenses of shareholders (Bebchuk and Fried, 2003). And some incentive contracts are potentially symptomatic of the extraction of private benefits (Morse et al., 2011). Moreover, compared to typical incentive contracts, compensation peer benchmarking in RPE scheme is also a self-serving behavior and can be seen as a tool of managerial rent extraction (Bizjak et al., 2008; Faulkender and Yang, 2010; Albuquerque et al., 2013). Increased rent extraction reflects the conflicts between managers and shareholders. If incentive contracts provoke rent extraction behaviors, managers may also avoid more tax to conceal their opportunistic activities, which reduces the wealth of

[3]Actually, this philosophy is also obviously observed in some specific proxy statements, such as 1st Constitution Bancorp: "Our executive compensation program is designed to ensure that we execute on our goal to establish a community bank with the means to deliver a superior level of service and enhance long-term shareholder value."

shareholders and aggravates agency conflicts.

The alignment effect and rent extraction behaviors coexist in firms using incentive compensation contracts. Even though both effects accelerate tax avoidance, we are not clear to what extent these two explanations drive the engagement of tax avoidance. We are not sure about the interaction between these two effects. Thus, we intend to advance our understanding of the relation between agency conflicts, firm value, relative performance evaluation adoption, and corporate tax avoidance. In particular, we test whether tax avoidance by firms adopt RPE can reduce agency costs and increase firm value under the interaction of alignment effect and higher possibility of rent extraction. By analyzing the effect of relative evaluation on agency conflicts and firm value, we shed light on which explanation act as a dominant role in provoking tax avoidance. We test this conjecture with the following equation:

$$Y_{i,t+1} = \alpha RPE_{i,t} + \beta TGETR_{i,t} + \epsilon RPE_{i,t} * Y_{i,t} + \gamma X_{i,t} + \delta_i + \theta_t + \varepsilon_{i,t+1}, \tag{8}$$

where $Y_{i,t+1}$ denotes the agency cost measure SGA, calculated as selling and general administrative over total sales (Bird et al., 2018), another agency cost measure FCF, calculated as free cash flow over total assets (Lang et al., 1991), firm value proxy $TOBINQ$, defined as the Tobin's Q of the focal firm (Desai and Dharmapala, 2006), and another proxy $TOTALQ$, which is defined as the total Q of the focal firm. Besides, $TGETR_{i,t}$ denotes the corporate effective tax rate.

Table 11 presents the relevant results. The coefficients of the interaction term are all negative and significant at the 1% level in Columns (1) and (2), implying that tax avoidance by firms adopting RPE reduces agency costs. Even though the compensation arrangement

can be agency conflicts itself, our result indicates that RPE alleviates agency conflicts as a whole. In other words, the effect of incentive contracts on exacerbating agency conflicts is less pronounced than the alleviating effect. This result also supports our findings in Section 4.6 that dismissal probability is a channel through which tax avoidance by firms that adopt RPE aligns the interests between CEOs and shareholders. Besides, the results in Columns (3) and (4) suggest that tax avoidance helps improve firm value in the presence of RPE. The results indicate that the tax avoidance in the relative performance evaluation scheme is mainly driven by the strong incentive for managers to work for the shareholders' best interests.

(Insert Table 11 about here)

5.2 Information Disclosure Quality

In this section, we examine the improvement of information disclose quality in the relationship between relative performance evaluation and corporate tax avoidance. On the one hand, the information discloses quality is closely related to agency conflicts, consistent with the results in Section 4.8. Section 4.8 shows that the dominant effect of relative performance evaluation is alleviating agency problem and motivating managers to make decisions to enhance the value of the firm's shares (Jensen and Meckling, 1976; Jensen and Murphy, 1990). Since most managers increase accounting opacity to belie their rent diversion and opportunistic behaviors, the decreased opportunistic behaviors will improve the accounting transparency of the firm. In other words, we expect a higher level of information discloses quality in firms that adopt relative performance evaluation compensation contracts. On the other hand, more tax avoidance requires a higher level of information quality because

a high-quality internal information environment will lead to improved managerial decision-making (Gallemore and Labro, 2015). In this sense, the influence of the relative performance evaluation on the information environment is also positive.

We use four information disclose quality proxy to examine the improvement of accounting transparency in firms that adopt relative performance evaluation. First, we use the earnings aggressiveness proxy (*EARNAGG*) to reflect management actions that lead to the tendency of delaying the recognition of losses and accelerate the recognition of income (Bhattacharya et al., 2003). Since earnings aggressiveness is widely used to capture earnings numbers that could lead to earnings opacity, we expect a negative association between relative performance evaluation and earnings aggressiveness. Second, we use accounting conservatism (*CSCORE*) to measure the information asymmetry as information asymmetry increases conservatism in financial statements (LaFond and Watts, 2008). The accounting conservatism proxy is estimated from regression, and it reflects the incremental timeliness of bad news over good news (Khan and Watts, 2009). In contrast to earnings aggressiveness, we expect a positive association between relative performance evaluation and accounting conservatism.

Besides, we use stock price synchronicity to reflect the information disclose quality. Following Roll (1988), the stock price synchronicity proxy (*SYNCH*) is defined as the R^2 statistic from the market model. Further, we use idiosyncratic return volatility to measure private information gathering. Since idiosyncratic return volatility is positively associated with information quality (Chen et al., 2012), we expect a positive association between relative performance evaluation and idiosyncratic return volatility. The idiosyncratic return volatility proxy *IVOL* is measured as the standard deviation of residuals from firm-specific regressions of daily returns on daily values of the three Fama and French (1993) factors

and the Carhart (1997) momentum factor over the years t to t-2 (Ang et al., 2009). Both stock price synchronicity and crash risk are positively related to accounting opacity (Hutton et al., 2009). As a result, we expect negative coefficients of earnings aggressiveness and stock price synchronicity, as well as positive coefficients of accounting conservatism and idiosyncratic return volatility if RPE can restrain opportunistic managerial behaviors and improve information quality.

Table 12 presents the relevant results. Consistent with our conjuncture, the coefficient of *EARNAGG* is significantly negative at the 1% level in Column (1), indicating that RPE reduces management actions that lead to the tendency of delaying the recognition of losses and accelerate the recognition of income. The result shows that even though tax avoidance provides an opportunity to hide bad news (Desai and Dharmapala, 2006), they actually improve accounting conservation as presented in Column (2). The results in Columns (3)–(4) also show the improvement of information disclose quality, reflected in the decrease of stock price synchronicity and the increase of idiosyncratic return volatility. The results indicate that RPE adoption can improve information disclose quality, which is possibly related to the alleviated agency conflicts and the need to engage in tax avoidance.

(Insert Table 12 about here)

6 Conclusion

Previous RPE literature mainly examines the existence of RPE empirically and solves the "RPE Puzzle" by investigating the hypotheses and searching for effective peer-group identification. After the detailed disclosure requirement in 2006 and available data collected by ISS, more research focuses on the influence of RPE. Though financial economists

and practitioners have recognized CEO compensation incentives as a determinant of tax avoidance, whether RPE adoption is associated with tax avoidance receives inadequate attention. Using an explicit approach to identify RPE adoption, we investigate the association between RPE adoption, corporate tax avoidance and explore the underlying channels.

We find that firms that adopt RPE are positively associated with more tax avoidance. RPE helps align the interests between CEO and shareholders, motivating CEOs to engage in more tax avoidance to improve firm value. RPE also increases tax avoidance incentives, which promote tax avoidance. The mediation analysis shows that relative performance adoption is associated with a high degree of CEO risk-taking and CEO dismissal probability, which plays mediating role in affecting corporate tax avoidance. A heterogeneous effect of RPE adoption exists, such that firms with better internal governance and a weaker external monitoring environment tend to exhibit a large association between RPE adoption and corporate tax avoidance. Moreover, RPE mitigates agency conflicts and improves information disclosure quality. Our findings remain robust to endogeneity issues, alternative variable definitions, alternative model specifications, and alternative sampling criteria.

These findings help explain the growing cross-sectional variation among firms in their tax avoidance levels over our sample period. Besides, our results call on corporate shareholders to consider the risk-sharing effect and incentive alignment effect of RPE when formulating and improving CEO compensation contracts. Our findings also provide policy implications for regulatory agencies to address managers' appetite for tax avoidance policies. Future policies should pay more attention to the firms whose CEO is compensated relative to the target performance because these CEOs are more likely to avoidance tax, along with more

significant risks. Nevertheless, our findings' economic magnitude is relatively small. Thus, exploring the more solid association between the relative performance evaluation and tax avoidance will be our future research direction.

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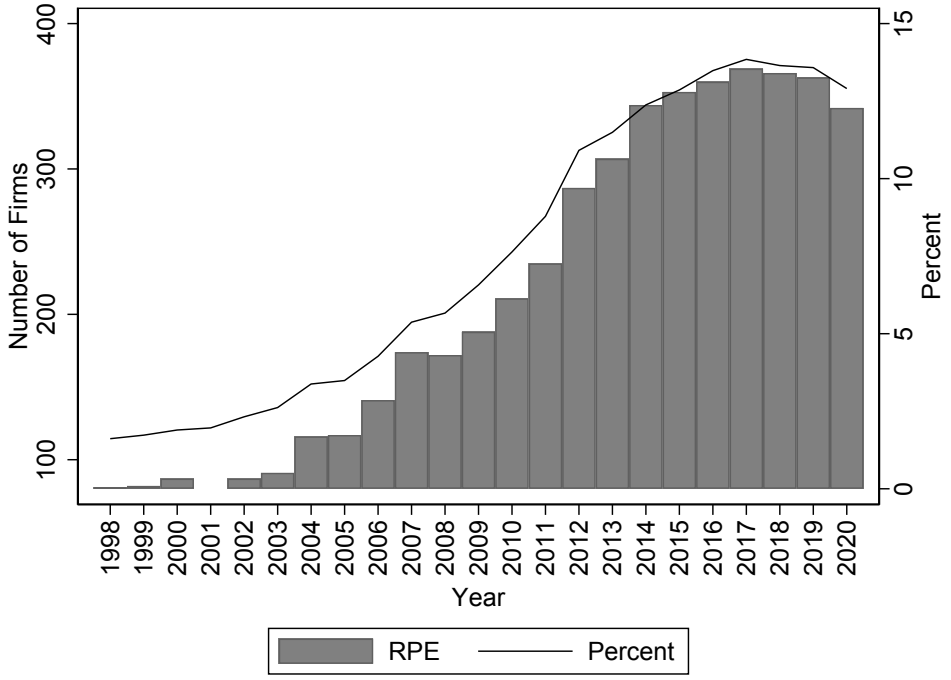

Figure 1: Time-Series Pattern of RPE

The figure shows the number and percentage of firms that adopt RPE from 1998–2018.

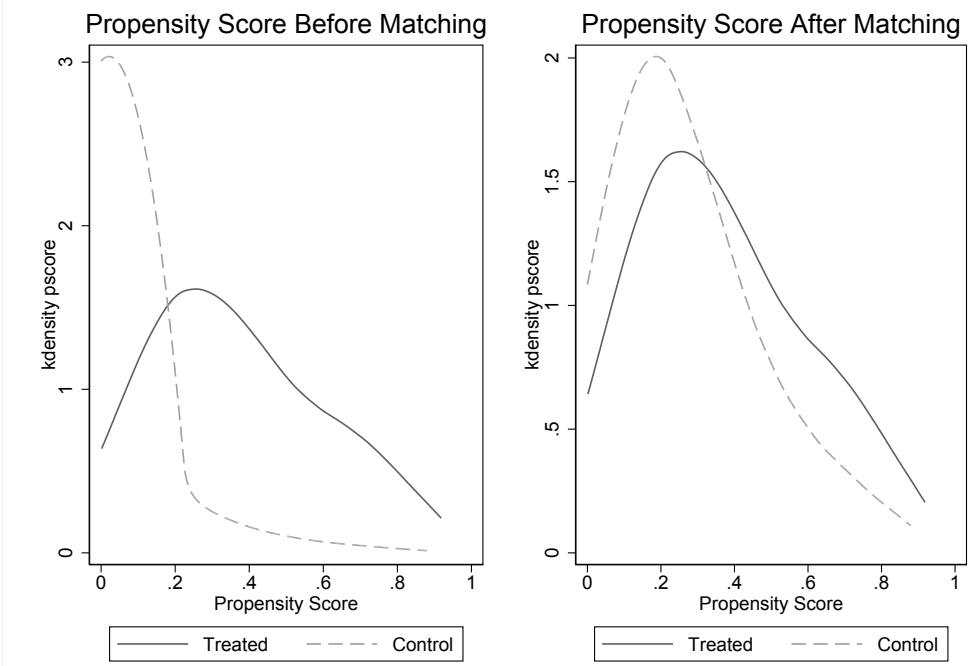

Figure 2: Kernel Density of Propensity Score Before and After Matching

Table 1: Descriptive Statistics

This table presents the descriptive statistics and Spearman correlation matrix for a sample of U.S. listed firms from 1998 to 2020. The detailed variable definitions are presented in Table A1.

Panel A. Summary Statistics

	Mean	S.D.	Q5	Q25	Median	Q75	Q95	N
TGETR	-0.240	0.222	-0.608	-0.365	-0.254	0.000	0.000	59,861
CURRENTETR	-0.210	0.219	-0.587	-0.336	-0.184	0.000	0.000	59,861
CASHRATIO	-0.113	0.659	-0.692	-0.275	-0.136	0.000	0.582	59,861
RPE	0.079	0.269	0.000	0.000	0.000	0.000	1.000	59,861
ABS	0.217	0.412	0.000	0.000	0.000	0.000	1.000	59,861
LNSIZE	5.986	2.012	2.744	4.513	5.954	7.404	9.435	59,861
AGE	2.435	1.047	0.693	1.792	2.565	3.219	3.892	59,861
LEV	0.222	0.219	0.000	0.016	0.180	0.348	0.635	59,861
ROA	-0.037	0.274	-0.489	-0.038	0.032	0.076	0.166	59,861
MTB	3.002	5.353	0.224	1.129	1.979	3.548	10.038	59,861
NOL	0.590	0.492	0.000	0.000	1.000	1.000	1.000	59,861
FORINC	0.010	0.034	-0.016	0.000	0.000	0.012	0.076	59,861
EQINC	0.000	0.003	-0.000	0.000	0.000	0.000	0.004	59,861
PPE	0.239	0.220	0.018	0.073	0.166	0.335	0.743	59,861
SPE	-0.022	0.071	-0.122	-0.015	-0.001	0.000	0.011	59,861
CASH	0.192	0.211	0.004	0.033	0.111	0.280	0.656	59,861
RD	0.052	0.107	0.000	0.000	0.004	0.061	0.235	59,861
INTAN	0.163	0.180	0.000	0.004	0.092	0.273	0.576	59,861

Panel B. Spearman Correlation Matrix

	TGETR	RPE	LNSIZE	AGE	LEV	ROA	NOL	FORINC	MTB	EQINC	PPE	RD	INTAN
TGETR	1.00												
RPE	-0.05***	1.00											
LNSIZE	-0.23***	0.40***	1.00										
AGE	-0.16***	0.23***	0.31***	1.00									
LEV	-0.01***	0.09***	0.25***	0.03***	1.00								
ROA	-0.32***	0.11***	0.43***	0.25***	-0.04***	1.00							
NOL	0.15***	0.03***	-0.02***	-0.21***	0.03***	-0.15***	1.00						
FORINC	-0.11***	0.17***	0.29***	0.19***	-0.02***	0.25***	-0.02***	1.00					
MTB	0.06***	0.02***	0.00	-0.05***	-0.09***	-0.03***	0.04***	0.04***	1.00				
EQINC	-0.06***	0.08***	0.14***	0.10***	0.04***	0.10***	-0.04***	0.08***	-0.01**	1.00			
PPE	-0.09***	0.09***	0.18***	0.07***	0.30***	0.12***	-0.10***	-0.02***	-0.09***	0.06***	1.00		
RD	0.29***	-0.09***	-0.36***	-0.20***	-0.14***	-0.65***	0.15***	-0.13***	0.12***	-0.08***	-0.26***	1.00	
INTAN	-0.06***	0.11***	0.28***	0.05***	0.15***	0.11***	0.08***	0.08***	-0.02***	0.01*	-0.29***	-0.16***	1.00

Table 2: Relative Performance Evaluation and Tax Avoidance

This table presents the association between the adoption of relative performance evaluation and corporate tax avoidance for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) TGETR	(2) CURRENTETR	(3) CASHRATIO
RPE	0.0218***	0.0168***	0.0257***
	(4.80)	(3.80)	(3.06)
ABS	0.0172***	0.0046	-0.0126
	(5.06)	(1.27)	(-1.63)
LNSIZE	-0.0158***	-0.0173***	-0.0131***
	(-17.03)	(-18.52)	(-5.69)
AGE	-0.0064***	-0.0047***	-0.0011
	(-5.36)	(-3.83)	(-0.34)
LEV	0.0636***	0.0877***	0.1500***
	(10.96)	(15.55)	(8.99)
ROA	-0.1092***	-0.0988***	-0.0464***
	(-26.13)	(-23.97)	(-2.59)
MTB	0.0009***	0.0005***	-0.0016***
	(6.82)	(3.80)	(-3.69)
NOL	0.0270***	0.0396***	0.0273***
	(10.85)	(15.63)	(4.29)
FORINC	-0.1310***	-0.3781***	-0.6775***
	(-3.52)	(-9.53)	(-7.29)
EQINC	-0.3724	-0.2234	-2.6282***
	(-1.20)	(-0.70)	(-2.65)
PPE	0.0357***	0.0851***	0.0232
	(3.41)	(8.58)	(0.90)
SPE	-0.0011	0.0100	-0.5189***
	(-0.07)	(0.80)	(-7.83)
CASH	0.1214***	0.0931***	0.0122
	(15.84)	(12.84)	(0.53)
RD	0.0188*	0.0107	-0.0072
	(1.92)	(1.16)	(-0.20)
INTAN	0.0358***	0.0344***	-0.0537**
	(3.86)	(3.67)	(-2.21)
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	69,200	69,200	59,861
Number of Firms	8,428	8,428	7,226
Adjusted R^2	0.20	0.20	0.02

Table 3: Propensity Score Matching

This table presents the association between relative performance evaluation and corporate tax avoidance for a matched sample of U.S. listed firms from 1998 to 2020. We define firms adopting RPE as the treatment group and rest of the firms as the control group. The matched sample is constructed by employing the one-to-three nearest neighborhood matching technique using the same set of control variables as the matching covariates. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variable *RPE* is a dummy variable that equals one for firms adopting RPE and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Covariate Balance

	Sample	Control	Treatment	Diff	T-stats
LNSIZE	Full	5.48	8.79	-3.32	-179.05
	Matched	8.27	8.76	-0.49	-1.57
AGE	Full	2.27	3.24	-0.97	-71.52
	Matched	2.98	3.22	-0.24	-1.02
LEV	Full	0.21	0.29	-0.08	-31.13
	Matched	0.28	0.29	-0.01	-0.28
ROA	Full	-0.11	0.04	-0.16	-78.17
	Matched	0.04	0.05	-0.00	-0.04
MTB	Full	3.28	3.64	-0.35	-3.99
	Matched	3.85	3.62	0.23	0.15
NOL	Full	0.63	0.66	-0.03	-4.65
	Matched	0.65	0.67	-0.02	-0.15
FORINC	Full	0.01	0.03	-0.02	-37.37
	Matched	0.03	0.03	-0.00	-0.24
EQINC	Full	0.00	0.00	-0.00	-16.28
	Matched	0.00	0.00	-0.00	-0.13
PPE	Full	0.22	0.30	-0.08	-21.89
	Matched	0.28	0.30	-0.02	-0.26
SPE	Full	-0.02	-0.01	-0.01	-15.45
	Matched	-0.01	-0.01	-0.00	-0.04
CASH	Full	0.25	0.13	0.12	57.29
	Matched	0.13	0.13	0.01	0.19
RD	Full	0.08	0.03	0.05	53.82
	Matched	0.03	0.03	0.00	0.16
INTAN	Full	0.15	0.22	-0.08	-27.99
	Matched	0.22	0.23	-0.01	-0.16

Panel B: Matched Sample

	(1) TGETR	(2) CURRENTETR	(3) CASHRATIO
RPE	0.032***	0.024***	0.022***
	(4.97)	(3.92)	(3.60)
ABS	0.001	-0.006	0.006
	(0.14)	(-0.76)	(0.37)
LNSIZE	0.004	-0.003	0.011*
	(1.17)	(-1.00)	(1.77)
AGE	-0.007*	-0.005	-0.010
	(-1.78)	(-1.27)	(-1.18)
LEV	0.086***	0.083***	0.085*
	(4.02)	(4.46)	(1.92)
ROA	-0.006	-0.065**	-0.322
	(-0.16)	(-2.40)	(-1.55)
MTB	-0.000	-0.000	0.001
	(-0.66)	(-0.36)	(0.68)
NOL	0.002	0.017***	0.030**
	(0.26)	(2.69)	(2.13)
FORINC	0.037	-0.254***	-0.565**
	(0.44)	(-2.65)	(-2.42)
EQINC	0.647	-0.358	-3.211*
	(0.74)	(-0.42)	(-1.88)
PPE	0.062**	0.155***	0.132**
	(2.07)	(5.57)	(2.10)
SPE	-0.422***	-0.060	-1.013***
	(-3.96)	(-0.82)	(-3.30)
CASH	0.090***	0.094***	0.075
	(2.85)	(3.15)	(0.90)
RD	0.438***	0.340***	0.253
	(6.51)	(6.12)	(1.51)
INTAN	0.080***	0.021	0.025
	(3.04)	(0.79)	(0.38)
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	6,968	6,968	6,828
Number of Firms	1,222	1,222	1,199
Adjusted R^2	0.10	0.13	0.05

Table 4: Endogenous Treatment Effect Model

This table presents the results of endogenous treatment effect model for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). *RPEIND* is the percentage of firms adopting RPE in the 2-digit SIC industry in a given year. *NPEER* is the number of peer firms in the 3-digit SIC industry. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) TGETR	(2) CURRENTETR	(3) CASHRATIO
RPE=1	0.0756***	0.0921***	0.5738***
	(10.40)	(13.71)	(21.61)
ABS	0.0136***	-0.0016	-0.0136*
	(3.96)	(-0.42)	(-1.78)
LNSIZE	-0.0142***	-0.0152***	-0.0132***
	(-15.68)	(-16.81)	(-6.13)
AGE	-0.0039***	-0.0023*	-0.0004
	(-3.35)	(-1.92)	(-0.13)
LEV	0.0642***	0.0882***	0.1286***
	(10.85)	(15.63)	(7.97)
ROA	-0.1106***	-0.1042***	-0.0419**
	(-26.81)	(-25.55)	(-2.40)
MTB	0.0011***	0.0006***	-0.0015***
	(7.84)	(4.23)	(-3.45)
NOL	0.0393***	0.0523***	0.0378***
	(15.95)	(21.01)	(6.15)
FORINC	-0.1122***	-0.3809***	-0.5628***
	(-3.16)	(-10.13)	(-6.36)
EQINC	-0.1645	0.0581	-2.5960***
	(-0.50)	(0.17)	(-2.74)
PPE	0.0454***	0.1318***	0.0898***
	(5.74)	(16.69)	(4.69)
SPE	0.0086	0.0304**	-0.5461***
	(0.55)	(2.45)	(-8.28)
CASH	0.1715***	0.1474***	0.1126***
	(25.86)	(22.49)	(5.51)
RD	0.0789***	0.0555***	0.0994***
	(8.58)	(6.55)	(2.88)
INTAN	0.0610***	0.0635***	0.0273
	(7.19)	(7.20)	(1.24)
RPE			
RPEIND	0.0470***	0.0477***	0.0452***
	(20.62)	(20.88)	(20.37)
NPEER	-0.0007***	-0.0007***	-0.0002
	(-4.25)	(-4.11)	(-1.58)
Observations	69,200	69,200	59,861
Number of Firms	8,428	8,428	7,226

Table 5: Tax Avoidance Incentives

This table presents the association between the adoption of relative performance evaluation and tax avoidance incentives for a sample of U.S. listed firms from 1998 to 2020. The dependent variable in Column (1) is *EQCOMP*, calculated as the ratio of annual stock and option awards to total annual compensation for the CEO, following Armstrong et al. (2012). The dependent variable in Column (2) is *STKCOMP*, calculated as the ratio of annual stock and option awards to total annual compensation for the CEO, following Desai and Dharmapala (2006). The dependent variable in Column (3) is *CEOATAX*, defined as the sensitivity of CEO cash compensation to income tax expense estimated from a firm-level OLS regression, following Gaertner (2014). The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *MTB* (market-to-book ratio), *RD* (R&D expenditure over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) EQCOMP	(2) STKCOMP	(3) CEOATAX
RPE	0.0578***	0.0799***	0.0216*
	(5.53)	(7.73)	(1.91)
ABS	0.0557***	0.0260***	0.0088
	(6.55)	(3.38)	(1.13)
LNSIZE	0.0289***	0.0177***	0.0059***
	(7.81)	(5.64)	(4.65)
AGE	-0.0218***	-0.0082**	0.0045**
	(-5.25)	(-2.11)	(2.47)
LEV	0.0207	0.0225	-0.0279***
	(1.09)	(1.26)	(-3.42)
ROA	-0.0505*	-0.0245	0.0016
	(-1.90)	(-1.09)	(0.37)
MTB	-0.0005	-0.0008*	-0.0002
	(-0.94)	(-1.88)	(-1.07)
NOL	0.0076	0.0109*	-0.0013
	(1.13)	(1.77)	(-0.34)
FORINC	-0.3260***	-0.1812*	-0.0481
	(-2.98)	(-1.82)	(-0.92)
EQINC	1.1175	0.9871	0.1736
	(1.18)	(1.19)	(0.32)
PPE	0.0707**	0.0903***	-0.0131
	(2.21)	(2.94)	(-1.10)
SPE	-0.1906***	-0.1903***	0.0112
	(-3.60)	(-4.10)	(1.29)
CASH	0.0753***	0.0268	-0.0110
	(2.59)	(1.02)	(-1.32)
RD	0.2189***	0.0102	0.0057
	(3.39)	(0.17)	(0.50)
INTAN	0.1378***	0.1031***	0.0121
	(4.90)	(3.91)	(0.93)
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	27,497	27,497	69,200
Number of Firms	2,338	2,338	8,428
Adjusted R^2	0.47	0.39	0.08

Table 6: Characteristics of RPE Scheme

This table presents the association between relative performance evaluation and corporate tax avoidance for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variables in Panel A include *PEER*, which is a dummy variable that equals one for firms that adopt peer group as performance benchmark and zero otherwise, and *INDEX*, which is a dummy variable that equals one for firms that adopt index as performance benchmark and zero otherwise. The main explanatory variables in Panel B include *ACC*, which is a dummy variable that equals one for firms that adopt accounting-based performance metric and zero otherwise, and *STK*, which is a dummy variable that equals one for firms that adopt stock price-based performance metric and zero otherwise. The main explanatory variables in Panel C include *SHORTINCT*, which is a dummy variable that equals one for firms that adopt short-term incentives scheme and zero otherwise, and *LONGINCT*, which is a dummy variable that equals one for firms that adopt long-term incentive scheme and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Benchmark Selection			
	(1)	(2)	(3)
	TGETR	CURRENTETR	CASHRATIO
PEER	0.0218***	0.0249***	0.0164***
	(3.85)	(4.73)	(2.76)
INDEX	0.0136*	0.0042	-0.0066
	(1.85)	(0.61)	(-0.90)
Controls	Y	Y	Y
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	69,200	69,200	69,200
Number of Firms	8,428	8,428	8,428
Adjusted R^2	0.19	0.20	0.20
Panel B: Performance Evaluation Metrics			
	(1)	(2)	(3)
	TGETR	CURRENTETR	CASHRATIO
ACC	0.0073	0.0100	0.0027
	(0.91)	(1.28)	(0.18)
STK	0.0122**	0.0148***	0.0312***
	(2.15)	(2.93)	(3.15)
Controls	Y	Y	Y
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	69,200	69,200	59,861
Number of Firms	8,428	8,428	7,226
Adjusted R^2	0.20	0.20	0.02
Panel C: Long-term and Short-term Incentives			
	(1)	(2)	(3)
	TGETR	CURRENTETR	CASHRATIO
SHORTINCT	0.0100	0.0126*	0.0065
	(1.54)	(1.86)	(0.51)
LONGINCT	0.0206***	0.0134***	0.0263***
	(4.15)	(2.83)	(2.85)
Controls	Y	Y	Y
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	69,200	69,200	59,861
Number of Firms	8,428	8,428	7,226
Adjusted R^2	0.19	0.20	0.02

Table 7: Cross-Sectional Analysis

This table presents the association between relative performance evaluation and corporate tax avoidance for a sample of U.S. listed firms from 1998 to 2020. The sample is divided into two parts based on the median level of internal or external governance measures. In Panel A we use board independence and CEO tenure as measures of internal governance. In Panel B, we use institutional ownership and E-Index as measures of external governance. The dependent variable is *TGETR*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Internal Governance				
	Board Independence		CEO Tenure	
	(1)	(2)	(3)	(4)
	Low	High	Low	High
RPE	0.0195	0.0317***	0.0103*	0.0046
	(1.55)	(4.78)	(1.72)	(0.75)
Controls	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	17,145	15,253	14,946	12,229
Number of Firms	3,413	2,732	1,959	1,792
Adjusted R^2	0.20	0.20	0.10	0.13
Panel B. External Governance				
	Institutional Ownership		E-Index	
	(1)	(2)	(3)	(4)
	Low	High	Low	High
RPE	0.0556***	0.0057	0.0137	0.0458***
	(4.98)	(1.19)	(1.05)	(3.70)
Controls	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	25,759	27,006	4,181	4,864
Number of Firms	5,806	3,688	808	1,034
Adjusted R^2	0.21	0.16	0.11	0.16

Table 8: Possible Mechanism

This table presents the mediating effect of CEO risk-taking and CEO turnover in the association between relative performance evaluation and corporate tax avoidance for a sample of U.S. listed firms from 1998 to 2020. The dependent variable in Columns (1) and (4) is *TGETR*. The dependent variables in Columns (2) and (3) are *ROARISK* and *PDISSMAL*. *ROARISK* is CEO risk-taking proxy defined as the company earnings volatility proposed by John et al. (2008). *PDISSMAL* is the probability of CEO dismissal following the method of Jenter and Kanaan (2015). The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include firm and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) TGETR	(2) ROARISK	(3) PDISSMAL	(4) TGETR
RPE	0.0218***	0.0029***	0.0102***	0.0147***
	(4.80)	(3.89)	(9.86)	(3.26)
ROARISK				0.4364***
				(16.48)
PDISSMAL				0.5468***
				(9.39)
ABS	0.0172***	0.0035***	0.0030***	0.0149***
	(5.06)	(5.30)	(5.65)	(4.44)
LNSIZE	-0.0158***	-0.0055***	0.0019***	-0.0145***
	(-17.03)	(-28.41)	(13.20)	(-15.36)
AGE	-0.0064***	0.0019***	0.0016***	-0.0083***
	(-5.36)	(7.64)	(10.27)	(-6.76)
LEV	0.0636***	0.0130***	0.0015**	0.0570***
	(10.96)	(10.30)	(2.25)	(9.76)
ROA	-0.1092***	-0.0389***	-0.0020***	-0.0914***
	(-26.13)	(-35.02)	(-4.55)	(-21.17)
MTB	0.0009***	0.0002***	0.0003***	0.0006***
	(6.82)	(4.95)	(14.54)	(4.84)
NOL	0.0270***	0.0036***	-0.0007**	0.0257***
	(10.85)	(7.41)	(-2.23)	(10.47)
FORINC	-0.1310***	-0.0039	0.0278***	-0.1412***
	(-3.52)	(-0.60)	(5.78)	(-3.79)
EQINC	-0.3724	-0.0474	0.1653***	-0.3827
	(-1.20)	(-0.71)	(3.59)	(-1.24)
PPE	0.0357***	-0.0203***	-0.0029**	0.0462***
	(3.41)	(-10.62)	(-2.48)	(4.43)
SPE	-0.0011	-0.0346***	0.0085***	0.0091
	(-0.07)	(-12.66)	(8.24)	(0.57)
CASH	0.1214***	0.0120***	0.0028***	0.1144***
	(15.84)	(6.98)	(3.82)	(14.89)
RD	0.0188*	0.0098***	-0.0002	0.0173*
	(1.92)	(3.32)	(-0.25)	(1.74)
INTAN	0.0358***	-0.0051***	-0.0036***	0.0411***
	(3.86)	(-2.80)	(-3.34)	(4.46)
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	69,200	69,089	67,591	67,590
Number of Firms	8,428	8,419	8,308	8,308
Adjusted R^2	0.20	0.41	0.68	0.20
Sig. of total mediating effect				6.15
Pct. of mediating effect: ROARISK				18.26
Sig. of mediating effect: ROARISK				3.79
Pct. of mediating effect: PDISSMAL				81.74
Sig. of mediating effect: PDISSMAL				6.80

Table 9: Alternative Relative Performance Evaluation Measure

This table presents the association between alternative relative performance evaluation measure and corporate tax avoidance measures for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variable *RPER* in Columns (1)–(3) is a dummy variable that equals one for firms that adopt RPE using 2-digit SIC code and zero otherwise. The main explanatory variable *RPER* in Columns (4)–(6) is a dummy variable that equals one for firms that adopt RPE using 50 industry code developed by Hoberg and Phillips (2016) and zero otherwise. We apply implicit RPE identification method following Gibbons and Murphy (1990). Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) TGETR	(2) CURRENTETR	(3) CASHRATIO	(4) TGETR	(5) CURRENTETR	(6) CASHRATIO
RPER	0.0203***	0.0250***	0.0409***	0.0169***	0.0215***	0.0307***
	(7.18)	(8.54)	(5.62)	(6.41)	(7.77)	(4.53)
ABS	0.0222***	0.0090**	-0.0062	0.0220***	0.0088**	-0.0067
	(6.63)	(2.52)	(-0.82)	(6.56)	(2.45)	(-0.88)
LNSIZE	-0.0129***	-0.0139***	-0.0073***	-0.0134***	-0.0144***	-0.0087***
	(-13.12)	(-14.26)	(-3.01)	(-13.76)	(-14.88)	(-3.70)
AGE	-0.0044***	-0.0024*	0.0027	-0.0048***	-0.0028**	0.0016
	(-3.63)	(-1.91)	(0.83)	(-3.97)	(-2.27)	(0.51)
LEV	0.0595***	0.0830***	0.1412***	0.0601***	0.0835***	0.1431***
	(10.32)	(14.76)	(8.46)	(10.39)	(14.85)	(8.57)
ROA	-0.1107***	-0.1002***	-0.0473***	-0.1106***	-0.1000***	-0.0474***
	(-26.66)	(-24.55)	(-2.65)	(-26.60)	(-24.46)	(-2.65)
MTB	0.0009***	0.0005***	-0.0015***	0.0009***	0.0005***	-0.0015***
	(7.01)	(4.05)	(-3.53)	(6.96)	(4.00)	(-3.58)
NOL	0.0272***	0.0396***	0.0275***	0.0271***	0.0396***	0.0274***
	(10.91)	(15.68)	(4.31)	(10.87)	(15.63)	(4.30)
FORINC	-0.1132***	-0.3586***	-0.6521***	-0.1176***	-0.3637***	-0.6606***
	(-3.02)	(-9.01)	(-7.00)	(-3.14)	(-9.15)	(-7.09)
EQINC	-0.3624	-0.2199	-2.6486***	-0.3709	-0.2311	-2.6571***
	(-1.16)	(-0.69)	(-2.67)	(-1.19)	(-0.73)	(-2.68)
PPE	0.0366***	0.0862***	0.0256	0.0362***	0.0857***	0.0244
	(3.50)	(8.74)	(1.00)	(3.46)	(8.69)	(0.95)
SPE	-0.0020	0.0088	-0.5247***	-0.0018	0.0090	-0.5231***
	(-0.13)	(0.70)	(-7.92)	(-0.12)	(0.71)	(-7.89)
CASH	0.1217***	0.0936***	0.0151	0.1216***	0.0934***	0.0141
	(15.91)	(12.93)	(0.65)	(15.88)	(12.91)	(0.61)
RD	0.0200**	0.0119	-0.0022	0.0201**	0.0121	-0.0027
	(2.05)	(1.30)	(-0.06)	(2.05)	(1.31)	(-0.07)
INTAN	0.0372***	0.0361***	-0.0500**	0.0365***	0.0353***	-0.0519**
	(4.02)	(3.87)	(-2.06)	(3.95)	(3.78)	(-2.14)
Industry FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Observations	69,200	69,200	59,861	69,200	69,200	59,861
Number of Firms	8,428	8,428	7,226	8,428	8,428	7,226
Adjusted R^2	0.20	0.20	0.02	0.20	0.20	0.02

Table 10: Alternative Sampling Criteria

This table presents the association between relative performance evaluation and tax avoidance for alternative samples of U.S. listed firms from 2006 to 2020. In Column (1), we exclude firms with negative income tax paid. In Column (2), we further exclude the firms with negative pre-tax income. In Column (3), we exclude the year in which the CEO becomes the firm's CEO. In Column (4), we exclude the firms from tax evasive industries including oil and gas extraction (2-digit SIC=13),insurance (2-digit SIC=63) and real estate (2-digit SIC=65). In Column (5), we exclude the sample from 1998 to 2005. The dependent variable is *TGETR*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt accounting-based relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) Txpd>0	(2) Txpd>0 & PtxInc>0	(3) Excl. CEO Start Year	(4) Excl. Tax Evasive Ind.	(5) Excl. 1998–2005
RPE	0.0217***	0.0118***	0.0232***	0.0272***	0.0179***
	(4.75)	(2.83)	(4.96)	(6.03)	(3.55)
ABS	0.0177***	0.0031	0.0168***	0.0177***	0.0144***
	(5.19)	(0.97)	(4.91)	(5.25)	(3.33)
LNSIZE	-0.0164***	-0.0048***	-0.0158***	-0.0153***	-0.0121***
	(-17.37)	(-4.52)	(-16.91)	(-16.28)	(-9.27)
AGE	-0.0067***	-0.0018	-0.0065***	-0.0054***	-0.0079***
	(-5.55)	(-1.37)	(-5.39)	(-4.49)	(-5.34)
LEV	0.0658***	0.0677***	0.0643***	0.0564***	0.0525***
	(11.32)	(7.56)	(11.10)	(9.61)	(6.92)
ROA	-0.1030***	0.5320***	-0.1088***	-0.1107***	-0.0885***
	(-24.76)	(18.80)	(-25.94)	(-25.31)	(-14.55)
MTB	0.0009***	-0.0007***	0.0009***	0.0009***	0.0007***
	(6.97)	(-2.90)	(7.02)	(6.84)	(4.28)
NOL	0.0267***	0.0152***	0.0275***	0.0299***	0.0277***
	(10.60)	(6.08)	(10.96)	(11.90)	(8.05)
FORINC	-0.1391***	-0.0385	-0.1404***	-0.1064***	-0.1206***
	(-3.65)	(-0.77)	(-3.74)	(-2.98)	(-2.91)
EQINC	-0.5277*	0.2562	-0.4186	-0.5384*	0.3612
	(-1.68)	(0.64)	(-1.32)	(-1.74)	(0.84)
PPE	0.0447***	0.0197	0.0377***	0.0409***	0.0549***
	(4.19)	(1.55)	(3.57)	(3.78)	(3.91)
SPE	-0.0307*	-1.4609***	-0.0014	-0.0078	-0.0378*
	(-1.93)	(-32.92)	(-0.09)	(-0.49)	(-1.71)
CASH	0.1233***	0.0090	0.1230***	0.1217***	0.1398***
	(16.09)	(0.89)	(16.00)	(15.86)	(13.52)
RD	0.0198**	0.2611***	0.0168*	0.0199**	0.0453***
	(2.03)	(7.68)	(1.72)	(2.02)	(3.52)
INTAN	0.0418***	0.0230**	0.0364***	0.0361***	0.0448***
	(4.49)	(2.15)	(3.89)	(3.88)	(3.57)
Inudstry FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
Observations	64,751	42,129	67,310	66,028	36,858
Number of Firms	8,355	5,760	8,417	8,042	5,018
Adjusted R^2	0.21	0.15	0.20	0.20	0.17

Table 11: Agency Conflict and Firm Value

This table presents the how the tax avoidance of RPE firms is related to agency cost and firm value for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *SGA*, *FCF*, *TOBINQ* and *TOTALQ*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. The tax avoidance measures is *TGETR*. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	Agency Conflict		Firm Value	
	(1) SGA	(2) FCF	(3) TOBINQ	(4) TOTALQ
RPE	-0.0040	-0.0349***	-0.0336	-0.0908**
	(-0.51)	(-5.16)	(-0.95)	(-2.27)
RPE*TGETR	-0.0664***	-0.0769***	0.1346*	0.1802**
	(-4.15)	(-4.49)	(1.73)	(2.12)
TGETR	0.0921***	0.0184**	-0.0157	-0.0451*
	(14.82)	(2.41)	(-0.63)	(-1.67)
ABS	0.0312***	-0.0129***	0.3574***	0.2387***
	(5.39)	(-2.59)	(12.69)	(7.48)
LNSIZE	-0.0257***	0.0030	-0.0207***	0.0799***
	(-15.01)	(1.15)	(-3.13)	(10.25)
AGE	-0.0088***	-0.0067	-0.0716***	-0.2330***
	(-3.74)	(-1.59)	(-7.94)	(-21.59)
LEV	-0.0639***	0.0222	0.2903***	0.0318
	(-5.28)	(0.54)	(4.75)	(0.54)
ROA	-0.3072***	1.1629***	-0.1556***	0.2136***
	(-25.33)	(9.10)	(-3.10)	(4.43)
MTB	0.0021***	0.0023***	0.0847***	0.0799***
	(6.30)	(4.27)	(34.03)	(29.72)
NOL	0.0147***	0.0029	-0.0945***	-0.1021***
	(3.61)	(0.39)	(-5.60)	(-5.37)
FORINC	-0.1504**	-0.1312	3.7443***	2.6070***
	(-2.05)	(-0.85)	(12.76)	(7.25)
EQINC	-0.5589	-1.3593*	0.7453	3.6858
	(-0.97)	(-1.66)	(0.32)	(1.30)
PPE	-0.0509***	0.2076***	-0.1839**	-0.6273***
	(-2.85)	(2.66)	(-2.57)	(-6.82)
SPE	0.2110***	-1.3934***	0.8409***	0.5536***
	(7.48)	(-4.99)	(7.96)	(5.35)
CASH	0.1819***	0.0657**	1.0012***	1.1935***
	(10.14)	(2.09)	(16.03)	(14.98)
RD	-0.3013***	-0.2006	1.5160***	-1.1784***
	(-8.33)	(-1.12)	(13.32)	(-10.71)
INTAN	0.1340***	0.1208**	-0.4663***	-0.4599***
	(7.97)	(2.52)	(-7.18)	(-5.47)
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	67,552	69,200	69,200	59,701
Number of Firms	8,133	8,428	8,428	7,767
Adjusted R^2	0.37	0.20	0.41	0.31

Table 12: Information Disclosure Quality

This table presents the association between the adoption of relative performance evaluation and information disclosure quality for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *EARNAGG*, *CSCORE*, *SYNCH*, and *IVOL*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) EARNAGG	(2) CSCORE	(3) SYNCH	(4) IVOL
RPE	-0.0111***	0.0207**	-0.1137***	0.0030**
	(-4.56)	(2.39)	(-3.61)	(2.40)
ABS	-0.0053**	-0.0228***	-0.0144	0.0008
	(-2.43)	(-4.28)	(-0.66)	(0.74)
LNSIZE	0.0000	-0.1124***	0.3156***	-0.0148***
	(0.02)	(-77.32)	(55.42)	(-39.69)
AGE	-0.0110***	0.0090***	0.0079	-0.0131***
	(-13.10)	(4.96)	(1.05)	(-20.44)
LEV	0.2006***	0.4947***	-0.3678***	0.0305***
	(32.14)	(45.28)	(-10.49)	(12.84)
ROA	0.0705***	-0.1116***	-0.0007	-0.0455***
	(14.80)	(-15.10)	(-0.02)	(-19.63)
MTB	0.0010***	-0.0032***	0.0054***	0.0002***
	(5.52)	(-10.19)	(5.38)	(2.90)
NOL	-0.0017	-0.0006	0.0433***	0.0105***
	(-1.14)	(-0.19)	(2.89)	(11.47)
FORINC	-0.0461**	-0.2403***	0.1874	-0.0475***
	(-2.02)	(-4.58)	(0.91)	(-4.11)
EQINC	-0.0431	1.1382**	-6.4431***	-0.1773*
	(-0.21)	(2.07)	(-3.14)	(-1.67)
PPE	-0.0722***	0.0377**	0.2725***	-0.0141***
	(-10.56)	(2.54)	(4.87)	(-3.42)
SPE	0.1150***	-0.0483**	-0.2424***	0.0182***
	(7.97)	(-2.33)	(-3.06)	(3.50)
CASH	-0.0140**	-0.0054	0.5744***	0.0154***
	(-2.57)	(-0.53)	(13.44)	(4.63)
RD	0.0492***	0.0434***	0.6525***	-0.0320***
	(4.99)	(2.69)	(10.40)	(-5.85)
INTAN	0.0150**	-0.0166	0.2220***	-0.0109***
	(2.31)	(-1.34)	(4.26)	(-2.95)
Industry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	68,316	60,976	68,795	58,806
Number of Firms	8,334	7,851	8,400	6,875
Adjusted R^2	0.08	0.36	0.29	0.48

Appendix to

Relative Performance Evaluation and Corporate Tax Avoidance

Table A1: Variable Definitions

Variable	Definitionzs
Dependent Variables	
TGETR	(-1) txt/(pi-spi),following the method of Dyreng et al. (2008)
CURRENTETR	(-1) times (txt–txdi)/(pi-spi)
CASHRATIO	(-1) times txpd/ (oancf+txpd-xidoc)
EQCOMP	The ratio of annual stock and option awards to total annual compensation for CEO, following Armstrong et al. (2012)
STKCOMP	The ratio of annual stock and option awards to total annual compensation for the CEO, following Desai and Dharmapala (2006).
CEOATAX	The sensitivity of CEO cash compensation to income tax expense estimated from a firm-level OLS regression, following Gaertner (2014)
Explanatory Variables	
RPE	Dummy that equals one for firms that adopt accounting-based relative performance evaluation and zero otherwise
PEER	Dummy that equals 1 for firms that adopt peer group as performance benchmark and 0 otherwise
INDEX	Dummy that equals 1 for firms that adopt index as performance benchmark and 0 otherwise
ACC	Dummy that equals 1 for firms that adopt accounting-based performance metrics and 0 otherwise
STK	Dummy that equals 1 for firms that adopt stock-based performance metrics and 0 otherwise
RPER	Dummy variable that equals 1 for firms that adopt relative performance evaluation and 0 otherwise following implicit approaches
ABS	Dummy that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise
LNSIZE	Natural logarithm of lagged market value of equity
AGE	Natural logarithm of number of years since initial public offerings
LEV	Long-term debt over total assets
ROA	Operating income over total assets
MTB	Market-to-book ratio of assets
NOL	Dummy that equals one if the loss carryforward is positive and zero otherwise
FORINC	Foreign income over total asset
EQINC	Equity income in earnings over total assets
PPE	Property, plant, and equipment over total assets
SPE	Special items over total assets
CASH	Cash and marketable securities over total assets
RD	R&D expenditure over net sales
INTAN	Intangible assets over total assets
Other Variables	
EARNAGG	management actions that lead to the tendency of delaying the recognition of losses and accelerating the income, calculated as (Δ CA- δCL- ΔCASH + ΔSTD-DEP+TA)/TA -1
CSCORE	accounting conservatism proxy measured as the incremental timeliness of bad news over good news from a regression, following Khan and Watts (2009)
SYNCH	R^2 statistic from the market model, following Roll (1988)
IVOL	The standard deviation of residuals from firm-specific regressions of daily returns on daily values of the three Fama and French (1993) factors and the Carhart (1997) momentum factor over years t to t-2
AEXP	The ratio of operating expenses to annual sales
RPEIND	The percentage of firms adopting RPE in the 2-digit SIC industry in a given year
NPEER	The number of peer firms in the 3-digit SIC industry

Table A2: Heckman Selection Model

This table presents the association between the adoption of relative performance evaluation and corporate tax avoidance for a sample of U.S. listed firms from 1998 to 2020. The dependent variables include *TGETR*, *CURRENTETR*, and *CASHRATIO*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). *RPEIND* is the percentage of firms adopting RPE in the 2-digit SIC industry in a given year. *NPEER* is the number of peer firms in the 3-digit SIC industry. All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) RPE	(2) TGETR	(3) CURRENTETR	(4) CASHRATIO
RPEIND	-0.0239***			
	(-8.35)			
NPEER	-0.0004***			
	(-2.95)			
RPE		0.0110**	0.0087*	0.0168*
		(2.38)	(1.93)	(1.92)
ABS	0.9136***	0.0894***	0.0590***	0.0511**
	(36.17)	(10.41)	(6.65)	(2.40)
LNSIZE	0.4053***	0.0192***	0.0091**	0.0176*
	(43.20)	(4.86)	(2.17)	(1.79)
AGE	0.1887***	0.0095***	0.0073***	0.0129**
	(15.48)	(4.49)	(3.29)	(2.41)
LEV	-0.1609**	0.0503***	0.0777***	0.1381***
	(-2.57)	(8.35)	(13.14)	(8.09)
ROA	0.4747***	-0.0620***	-0.0632***	-0.0055
	(3.99)	(-9.26)	(-9.17)	(-0.24)
MTB	-0.0043**	0.0005***	0.0002	-0.0018***
	(-2.32)	(3.69)	(1.47)	(-4.25)
NOL	0.0305	0.0294***	0.0414***	0.0296***
	(1.28)	(11.84)	(16.35)	(4.62)
FORINC	0.1216	-0.1370***	-0.3827***	-0.6763***
	(0.39)	(-3.70)	(-9.70)	(-7.30)
EQINC	-4.3561	-0.8162***	-0.5661*	-2.9937***
	(-1.58)	(-2.60)	(-1.74)	(-2.98)
PPE	0.6480***	0.0932***	0.1291***	0.0720**
	(6.91)	(7.54)	(10.67)	(2.35)
SPE	-0.5838**	-0.0538***	-0.0301**	-0.5613***
	(-2.22)	(-3.19)	(-2.13)	(-8.22)
CASH	-0.0667	0.1166***	0.0896***	0.0090
	(-0.61)	(15.18)	(12.30)	(0.38)
RD	1.5519***	0.1597***	0.1169***	0.1143**
	(7.19)	(8.71)	(6.17)	(2.09)
INTAN	0.2288**	0.0581***	0.0512***	-0.0329
	(2.53)	(6.06)	(5.31)	(-1.32)
IMR		0.0963***	0.0726***	0.0847***
		(9.14)	(6.49)	(3.15)
Inudstry FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	68,987	68,987	68,987	59,667
Number of Firms	8,402	8,402	8,402	7,202
Adjusted R^2		0.20	0.20	0.02

Table A3: Alternative Model Specifications

This table presents the association between relative performance evaluation and tax avoidance for a sample of U.S. listed firms from 2006 to 2020 with alternative model specifications. Columns (1) and (2) use 3-digit SIC or Fama-French 48 industry classifications. Columns (3) includes firm fixed effect. Columns (4) includes CEO characteristics. The dependent variable is *TGETR*. The main explanatory variable *RPE* is a dummy variable that equals one for firms that adopt accounting-based relative performance evaluation for CEO compensation and zero otherwise. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) TGETR	(2) TGETR	(3) TGETR	(4) TGETR
RPE	0.0239***	0.0236***	0.0092*	0.0079*
	(5.17)	(5.02)	(1.89)	(1.71)
ABS	0.0170***	0.0173***	0.0092**	0.0044
	(4.95)	(4.97)	(2.15)	(1.17)
LNSIZE	-0.0156***	-0.0158***	-0.0292***	-0.0003
	(-16.67)	(-16.74)	(-13.40)	(-0.16)
AGE	-0.0074***	-0.0078***	-0.0027	-0.0005
	(-6.22)	(-6.37)	(-1.11)	(-0.26)
LEV	0.0635***	0.0647***	0.0462***	0.0645***
	(10.70)	(10.71)	(6.71)	(5.99)
ROA	-0.1085***	-0.1096***	-0.0515***	-0.0900***
	(-25.79)	(-26.34)	(-11.07)	(-5.70)
MTB	0.0010***	0.0010***	0.0003**	0.0002
	(7.26)	(7.05)	(2.24)	(0.97)
NOL	0.0280***	0.0280***	0.0157***	0.0083**
	(11.00)	(10.87)	(5.44)	(2.48)
FORINC	-0.1468***	-0.1218***	-0.1774***	0.1085**
	(-4.02)	(-3.30)	(-3.84)	(2.06)
EQINC	-0.1845	-0.1321	-0.4028	0.3502
	(-0.58)	(-0.40)	(-1.14)	(0.80)
PPE	0.0462***	0.0501***	0.0210	0.0168
	(4.58)	(4.97)	(1.35)	(0.95)
SPE	-0.0027	-0.0036	-0.0272	-0.2502***
	(-0.17)	(-0.23)	(-1.57)	(-5.25)
CASH	0.1402***	0.1367***	0.0438***	0.0805***
	(18.69)	(17.51)	(4.39)	(5.31)
RD	0.0408***	0.0298***	-0.0402***	0.2648***
	(4.19)	(2.98)	(-3.54)	(8.05)
INTAN	0.0429***	0.0406***	0.0237*	0.0187
	(4.59)	(4.31)	(1.92)	(1.29)
Industry FE	Y	Y	N	Y
Year FE	Y	Y	Y	Y
Firm FE	N	N	Y	N
CEO Characteristics	N	N	N	Y
Observations	69,200	68,123	67,967	24,977
Number of Firms	8,428	8,192	7,195	2,246
Adjusted R^2	0.19	0.19	0.31	0.11

Table A4: Other Explanations

This table presents the effect of relative performance evaluation on firm performance and CEO risk-taking incentives for a sample of U.S. listed firms from 1998 to 2020. The dependent variables in Column (1) is corporate earnings management measures defined as absolute discretionary accruals estimated from modified Jones Model. The dependent variables in Column (2) is *TGRTR*. The main explanatory variable *RPE* equals one for firms that adopt relative performance evaluation for CEO compensation and zero otherwise. *PEERTAX* is the average TGRTR of peer firms. For non-RPE firms, we use the 2-digit SIC code to calculate peer firms's average TGRTR. For RPE firms, we use the disclosed peer firms to calculate peer firms's average TGRTR. Other control variables include *ABS* (a dummy variable that equals one for firms that adopt absolute performance evaluation for CEO compensation and zero otherwise), *LNSIZE* (natural logarithm of total assets), *AGE* (natural logarithm of number of years since initial public offerings), *LEV* (total debt over total assets), *ROA* (operating income over total assets), *MTB* (market-to-book ratio), *NOL* (a dummy variable that equals one if the loss carryforward is positive and zero otherwise), *FORINC* (foreign income over total assets), *EQINC* (equity in earnings from unconsolidated subsidiaries), *PPE* (property, plant, and equipment over total assets), *SPE* (special items over total assets), *CASH* (cash and marketable securities over total assets), *RD* (R&D expenditure over total assets), and *INTAN* (intangible assets over total assets). All regressions include the industry and year fixed effects. We use 3-digit SIC code for industry classification. The robust *t*-statistics clustered by the firm are reported in parentheses. The detailed variable definitions are presented in Table A1. ***, **, and * denote the significance at the 1%, 5%, and 10% levels, respectively.

	(1) EM	(2) TGETR
RPE	-1.1735***	0.0010
	(-6.03)	(0.06)
RPE*PEERTAX		-0.0870
		(-1.12)
PEERTAX		0.1065***
		(4.08)
ABS	-0.1316	0.0185***
	(-0.79)	(5.32)
LNSIZE	2.8095***	-0.0161***
	(34.59)	(-17.14)
AGE	-0.1889**	-0.0066***
	(-2.01)	(-5.50)
LEV	-0.8108**	0.0640***
	(-2.35)	(10.97)
ROA	-6.5193***	-0.1084***
	(-17.62)	(-25.81)
MTB	0.0052	0.0009***
	(0.57)	(6.66)
NOL	0.0797	0.0277***
	(0.53)	(11.00)
FORINC	-1.3294	-0.1250***
	(-0.72)	(-3.31)
EQINC	8.9074	-0.3557
	(0.53)	(-1.12)
PPE	2.7237***	0.0338***
	(3.84)	(3.21)
SPE	5.6663***	0.0021
	(7.42)	(0.13)
CASH	6.7336***	0.1205***
	(11.97)	(15.66)
RD	-1.2339	0.0186*
	(-1.42)	(1.90)
INTAN	5.0187***	0.0365***
	(8.29)	(3.90)
Industry FE	Y	Y
Year FE	Y	Y
Observations	63,067	68,153
Number of Firms	7,558	8,419
Adjusted R^2	0.31	0.20