THE EFFECT OF MEDIA ON CORPORATE TAX AVOIDANCE

CHIA-HSIANG WENG

PhD

The Hong Kong Polytechnic University

2018

The Hong Kong Polytechnic University
School of Accounting and Finance

The Effect of Media on Corporate Tax Avoidance

Chia-Hsiang Weng

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

March 2018

CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgment has been made in the text.

(Signed)

Chia-Hsiang Weng (Name of Student)

ABSTRACT

Recent studies have suggested the presence of an optimal tax avoidance level. Tax avoidance adds to shareholders' wealth, but with the increase of tax aggressiveness, the benefits may be offset by the agency, reputational, or enforcement costs. On the other hand, prior studies suggest that the media influences firms to improve their performance or correct misbehaviors through magnifying reputational costs and increasing stock price pressures. Accordingly, this study hypothesizes that the media, measured in the degrees of coverage and negative sentiment, motivates firms to adjust their tax avoidance levels down (up) if they were (were not) aggressive in avoiding taxes. Using the sample of U.S. public-listed firms for the period 2000 – 2016, I find that the effect of negative media sentiment on tax avoidance is consistent with my hypothesis, while I find no effect of media coverage on tax avoidance. In mediation analyses, I prove the reputational and enforcement costs mechanism through which negative media sentiment deters firms from tax aggressiveness. In cross-sectional analyses, I find that the effect of negative media sentiment on tax avoidance is more prominent for those firms who are more sensitive to reputational losses and capital market pressure. Finally, I hand-collect tax avoidance news articles and find that they have a deterrent effect on tax aggressiveness only when firms have negative media sentiment. Overall, the finding of this study suggests that the media serves a monitoring role in corporate tax avoidance.

Keywords: Tax Avoidance; Tax Aggressiveness; Media Coverage; Media Sentiment; Tax Avoidance News

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my chief supervisor Professor C.S. Agnes Cheng for her continuous and immense support and encouragement during my Ph.D. studies. I am extremely grateful for her guidance on research and many other important skills needed for becoming a successful scholar. Next, I thank the two external examiners, Dr. Ying Cao and Dr. Sidney Leung for their insightful and helpful comments and suggestions on this thesis. I also thank Dr. Yong Zhang, Dr. Wenli Huang, and Dr. Jingran Zhao for their comments for my confirmation paper, the foundation of this thesis. I would also like to thank my professors and doctoral student fellows at the School of Accounting and Finance, The Hong Kong Polytechnic University. Last but not least, I would like to thank my dear parents, families, and friends. Without their support throughout my years of study, my accomplishment would not have been possible.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1 INTRODUCTION

In recent years, the public media has paid much attention to the tax avoidance strategies, e.g., income shifting, of U.S. firms. Firms may adjust tax avoidance policy due to the pressure from the negative media coverage. For example, a news article from *Financial Times* in December 2012 reported that Starbucks agreed to pay 10 million GBP U.K. income taxes after a series of criticism by its customers and the media about its tax avoidance practices. Nevertheless, it is questionable whether the Starbucks's case can be generalized to other companies. In fact, the empirical evidence showing that the media may directly influence firms' tax avoidance is scarce in the literature. Dyreng, Hoopes, and Wilde (2016) provide the evidence that firms reduce the level of tax avoidance and the usage of the tax havens when receiving public pressure from outside activist groups. Given the media also shapes the publicity of a firm, I wonder whether it also imposes the pressure on firms' tax avoidance. This study attempts to examine whether and how the media coverage and the media sentiment change the firms' tax avoidance policy. If the effect of the media on tax avoidance is found, I will also examine the possible mechanism.

In this study, I argue that managers weigh the costs and benefits when deciding the level of tax avoidance and the media comes into play by affecting the managers' expectation of related costs. The costs of avoiding taxes too aggressively can be high. For instance, prior studies find that firms with aggressive tax avoidance experience negative market reaction (Hanlon and Slemrod 2009), potential loss of consumers (Hardeck and Hertl 2014; Austin and Wilson 2017), and forced CEO turnovers (Chyz and Gaertner 2018). The

results from the above studies suggest an adverse reputational consequences of aggressive tax avoidance. Moreover, aggressive tax avoidance can attract the IRS's attention, and hence have a higher likelihood of being audited (Mills 1998; Bozanic, Hoopes, Thornock, and Williams 2017) and incur a substantial amount of penalties (Wilson 2009). However, prior studies also show that tax avoidance can be beneficial to shareholders, as shareholders appreciate lower tax expenses and higher after-tax earnings performance. For example, Desai and Dharmapala (2009) show that tax avoidance increases firm value for well-governed firms. Cheng, Huang, Li, and Stanfield (2012) find that hedge fund activists influence firms' tax plannings to enhance their performance. Giving up these benefits is therefore costly. Cook, Moser, and Omer (2017) show that firms who pay taxes exceeding the expected level experience increases in the cost of capital. Chyz and Gaertner (2018) find that forced CEO turnovers are also more likely when firms pay higher taxes than their peer firms. Taken together, managers should trade-off the potential reputational and enforcement costs of tax avoidance against the costs of not saving taxes for shareholders when making the tax avoidance decisions.

The media then affects firms' decision by magnifying the related costs. Empirical studies show that the intensity and the tone of the news coverage increase the reputational costs and downward stock price pressures of firms' bad performance; therefore, the media serves a monitoring role in improving the corporate governance, the board's performance, and investment decisions (Dyck, Volchkova, and Zingales 2008; Joe, Louis, and Robinson 2009; Liu and McConnell 2013). Accordingly, I hypothesize that wider and more negative media coverage magnifies the costs for firms not having an optimal

tax avoidance level (i.e., paying too high or too low in taxes). Specifically, for firms who have avoided taxes aggressively, the media coverage or the media sentiment will force aggressive tax-avoiding firms to adjust the level of tax avoidance down. On the other hand, for firms who have not avoided taxes aggressively, the media coverage or the media sentiment will encourage them to engage in more tax avoidance to enhance performance.

The sample used in this study consists of U.S. public-listed firms for the period from 2000 through 2016. I obtain news data from RavenPack News Analytics. Following prior studies, media coverage is measured as the number of the news articles of a firm for the year; media sentiment is the average sentiment score (CSS from RavenPack) of the news articles of a firm over the year. I proxy tax avoidance using a common factor extracting from GAAP effective tax rate, cash effective tax rate, residual book-tax difference, and discretionary permanent book-tax difference.

The main finding is consistent with my hypotheses. I find that negative media sentiment but not media coverage influences aggressive tax-avoiding firms (non-aggressive tax-avoiding firms) to adjust the level of tax avoidance down (up). The relationship is also economically significant. I conduct several robustness tests, including using a different definition to identify aggressive tax-avoiding firms, adopting alternative tax avoidance measures, and controlling for CEO characteristics and earnings decreases. The results of the robustness tests are similar to my main finding. One exception is that the positive relationship between the negative media sentiment and tax avoidance for non-aggressive firms turns weaker after controlling for CEO characteristics and earnings decreases. Given the

previous study shows that younger CEOs have more incentives to maintain good performance (e.g., Andreou, Louca, and Petrou 2017) and firms with poor earnings performance have higher incentives to improve the future performance (e.g., Matsunaga and Park 2001; Osma and Young 2009), I interpret this result as positive media sentiment-tax avoidance relationship is possibly caused by financial accounting incentives of tax avoidance (i.e., increasing after-tax earnings), because the financial accounting incentives are captured by CEO characteristics and earnings decreases.

I also partition news articles into earnings-related and non-earnings-related news articles and calculate negative sentiment and news coverage measures separately. I find that the main result only holds for earnings-related news. There possible reasons are two-fold. First, firms with more negative earnings news would have stronger incentives to move up the subsequent after-tax earnings performance by using tax avoidance. Second, earnings performance is highly related to CEOs' reputation and compensation, so their tax avoidance decisions are more sensitive to earnings-related news.

Endogeneity is a potential concern of this study. There might be some omitted variable problems. For instance, some adverse events or time-variant firm characteristics may simultaneously affect media sentiment and tax avoidance incentives. I employ instrumental variable (IV) approach to address the endogeneity concern. First, I instrument media sentiment using an industry-level average measure following Cao and Wan (2014). Second, I instrument media coverage using S&P 500 membership, as S&P 500 additions are positively associated with media coverage (Dai, Parwada, and

Zhang 2015). I reperform the baseline model using the IV approach and find that the main result is qualitatively unchanged.

Additional analyses are conducted to verify my result further. First, I examine the channel (i.e., the reputational and enforcement costs) through which the media sentiment deter firms from aggressive tax avoidance. Following Gallemore, Maydew, and Thornock (2014), I proxy reputational costs using advertisement expenses and negative growth in sales revenue. I proxy enforcement costs using the IRS attention, which is developed by Bozanic, Hoopes, Thornock, and Williams (2017). The result of the mediation analyses reveals that the reputational and enforcement mechanisms explain around 25% of the relationship between the negative media sentiment and tax avoidance for aggressive tax-avoiding firms. Next, I conduct some cross-sectional analyses. The result suggests that the effect of the negative media sentiment on tax avoidance is only significant for firms in the high-competition industry, with higher transient institutional ownership, and without positive firm-initiated press releases. The results of the cross-sectional analyses suggest that firms are more likely to respond the media sentiment when they are more subject to reputational costs and capital market pressure.

Finally, I examine whether firms are more likely to respond to the negative media sentiment when their tax avoidance strategies have caught the media's attention. For this purpose, I hand-collect tax avoidance news for S&P 1500 firms for the period from 2000 through 2014 from the major national media outlets. Because the sample size of the firms with tax avoidance news is small, I match firms with tax avoidance news and firms

without tax avoidance news using the propensity-score matching and simple matching based on industry, size, ROA and media sentiment. The finding suggests that firms with tax avoidance news are more sensitive to the reputational-cost effect of the media sentiment. I find that tax avoidance news and negative media sentiment jointly affect firms' tax aggressiveness.

The contribution of this study is two-fold. First, this study contributes to the growing literature about the role of the media in corporate tax avoidance decision while the effect of the media on tax avoidance is still under debate. On the one hand, Chen, Powers, and Stomberg (2015) find that the effect of the media is more on the firm's tax disclosure policy than on the real changes in the firm's level of tax avoidance. Specifically, they do not find that firms demonstrate any increases in the effective tax rate and the cash effective tax rate after their tax avoidance issues are reported in the news. On the other hand, Dhaliwal, Goodman, Hoffman, and Schwab (2016) find that firms suffering from a reduction in media sentiment reduce tax avoidance level after the Occupy Wall Street period, while they argue the public scrutiny on tax avoidance is strong during this period. Different from their studies, I provide large-sample evidence showing that the media sentiment influences firms to adjust their tax avoidance policy. Most importantly, I find that the directions of the negative media sentiment-tax avoidance relationship are opposite for firms who have avoided taxes aggressively and for firms who have not. I also show that the tax avoidance news has a stronger deterrent effect on tax aggressiveness for firms with more negative media sentiment.

Second, the finding of this study is in line with the previous studies which suggest that there is an optimal level for tax avoidance (e.g., Kim,

Mcguire, Savoy, and Wilson 2015; Cook et al. 2017; Chyz and Gaertner 2018). Below the optimal level, avoiding more taxes would add to shareholders' wealth as well as justify managers' ability; however, above the optimal, avoiding more taxes would incur high agency, reputational, or enforcement costs, which might offset the benefits of tax avoidance. Accordingly, managers should weigh the benefits and the costs when determining the tax avoidance policy. This study provides a novel and important evidence that the negative media sentiment imposes costs on both firms with tax avoidance below the optimal level and firms with tax avoidance above the optimal level, thereby pressuring firms to adjust their tax avoidance to the optimal level.

The remainder of the paper is organized as follows. Chapter 2 provides a literature review and hypothesis development. Chapter 3 describes the data and research design. Chapter 4 presents the main empirical results and results of robustness tests. Chapter 5 provides results of the instrumental variable approach. Chapter 6 provides results of additional analyses. I conclude in Chapter 7.

CHAPTER 2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In this chapter, I first review the studies investigating the governance role of media in the accounting and finance literature. I then discuss the previous studies about the cost and benefit aspects of tax avoidance for prediction of how the media affects managers' decisions of tax avoidance. Finally, I discuss the development of my hypotheses.

2.1 The Governance Role of Media

The media collects and disseminates firms' information, reducing information asymmetries between firms and stakeholders. Several studies provide evidence showing that the media facilitates the process of information being incorporated into stock prices (e.g., Engelberg and Parsons 2011; Drake, Guest, and Twedt 2014; Bushman, Williams, and Wittenberg-Moerman 2017). The media also creates information by conducting its own analyses and investigations. One well-known example would be that the reporter of *Fortune Magazine* helped to uncover the problems of Enron. Using the event of accounting malpractices sanctioned by the SEC, Miller (2006) find that the media not only rebroadcasts information made by analysts, auditors, and lawsuits but also provides new information from its own analyses. Given the information intermediary feature and the strong influences of the media on the market, the literature (e.g., Gillan 2006) suggests that the media serves the role as one of the private sources of external corporate governance.

Dyck, Volchkova, and Zingales (2008) discuss the role of media in corporate governance in a theoretical framework. They argue that managers would pursue personal benefits if the benefits are greater than the sum of the

expected reputational costs and the expected penalties resulted from their actions. The expected reputational costs are the product of the probability the audience will receive the news and the size of reputational costs. The expected penalties are the product of the probability of enforcement and the punishment. The media then affects the cost side of this decision rule. On the one hand, the media not only increases the probability that firms' bad behaviors are known by the interested audience but also adds to the size of reputational costs of bad behaviors by disseminating and spinning the news. On the other hand, as a watchdog of public interest, the media can also increase the probability of enforcement. An anecdotal example shows that the SEC started to pay attention to the compensation practices of the NYSE board after the compensation of the NYSE chairman, Richard Grasso, went viral on the media channel. Finally, the media can also affect the size of the penalties by influencing the judgment of a jury. As a result, the media enhances managers' expectation of the reputational costs and penalties, causing managers to be more sensitive to those costs than they would otherwise be.

A number of studies provide empirical evidence supporting the governance theory. Farrell and Whidbee (2002) prove that the media will increase the likelihood of forced CEO turnover. They first identify forced-turnover firms and non-forced-turnover matched firms and collect several types of corporate announcements from *The Wall Street Journal* before the turnovers. They find that the number of announcements related to "bad decisions" such as asset sales, layoffs, and downsizing is significantly higher for the firms with subsequently forced CEO turnovers than for the matched firms, even though they have a similar firm performance around CEO

turnovers. This finding implies that the media may have a significant impact on firms' reputation or public perception of the firm; therefore, the board of directors in a firm with more negative news is more likely to fire the CEO.

Dyck et al. (2008) use Russia's data to directly examine whether the media catches corporate governance violations and whether the violations are stopped and readdressed after firms receive the media coverage. They find that the magnitude of violations is positively associated with the coverage by international media such as *Financial Times* and *The Wall Street Journal*. Furthermore, they find that the violations are more likely to be readdressed following the international media coverage, after controlling for the extent of foreign ownership and the involvement of international organizations.

Joe, Louis, and Robinson (2009) examine the economic consequences of media attention on board ineffectiveness. They argue that adverse publicity would put downward price pressure on firms, forcing firms' board to correct the wrongdoing and behave with more diligence. Using *Business Week*'s List of the Worst Corporate Boards nominated by institutional investors as the proxy for negative media exposure, they find that firms on the list will take more actions to improve their performance, compared to their industry-performance-matched peers. For example, they will change the CEO or the chairman and hire more outside directors. In addition, the tendency of firms to use staggered boards is reduced after being reported by *Business Week*. They also find that individual investors instead of institutional investors cause downward price pressure by reducing their holding of the firms' shares largely after the firms are chosen in the worst board list by *Business Week.*

The finding supports their hypothesis that negative publicity creates downward price pressure to firms.

Liu and McConnell (2013) investigate whether managers' acquisition decisions are made subject to or 'listen to' public news media. Given the function of the media to disseminate and shape the information, they argue that managers would suffer a more reputational loss on a value-decreasing acquisition when the media coverage is wider and more negative. Consistent with this prediction, they find that the manager is more likely to abandon a value-decreasing project if the firm receives more media coverage and more negative tone of the media before the announcement of the acquisition. Their result suggests that media coverage and media sentiment combined influence a manager's investment decision.

Dai, Parwada, and Zhang (2015) examine the information-intermediary role of the media in reducing insider trading and find that the profit of insider trading reduces with the degree of news coverage. In addition, the level of reduction is higher when the firm has more analyst forecast dispersion and is not audited by Big N accounting firms.

Furthermore, previous studies suggest that the media also forces firms to enhance the quality of disclosure and financial reporting. Given firms' environmental legitimacy (or reputation) assessed by the stakeholders such as customers and investors is affected by negative media coverage, Rupley, Brown, and Marshall (2012) argue that firms would alleviate the adverse effect of negative media coverage on their reputation through voluntary disclosure. They find empirical evidence showing that firms' quality of voluntary environmental disclosure is positively related to environmental

coverage by *The Wall Street Journal* and negative tone of the environmental media coverage. A recent study by Chen, Cheng, Li, and Zhao (2018) provide empirical evidence for the governance effect of the media on earnings management. Specifically, they find that both accrual earnings management and real earnings management decrease with the degree of media coverage and this relationship is more pronounced for firms with low audit quality and weak board monitoring.

Above studies provide evidence for the governance role of the media; however, there are still some studies casting doubt on the governance effectiveness of the media. In light of the media sensationalization, some studies suggest that the media provides little valuable information and may even provide biased information. Core, Guay, and Larcker (2008) find that while executives' excess annual pay is associated with more negative media coverage, CEOs with more option exercise is also associated with more negative media coverage as the media misinterprets stock option exercised as a component of the annual total payment. Importantly, they do not find evidence of reductions in excess pay or CEO turnovers after the negative media coverage. The literature also finds that the media would provide biased information to cater to the interests of its audiences. For example, the media tend to suppress the information that its partisan audience dislikes (Bernhardt, Krasa, and Polborn 2008). Firms may also alter their behaviors in response to the biased media coverage. Baloria and Heese (2017) show that firms with more slanted media coverage are less willing to release their negative news to the market, leading to a higher stock price crash risk.

Bednar (2012) proposes a behavioral perspective of the media and corporate governance. He argues that managers may please the media by changing the corporate governance at a minimum cost, because there is an information asymmetry between managers and the media and because the media over-relies on easily visible and symbolic governance metric. To test this argument, he investigates the degree of media's attention paid to two dimensions of board independence: 1) formal independence, which is symbolic, and 2) social independence, which is informal yet could hamper the governance effectiveness. He finds that the media reacts positively toward increases in formal independence but appears to overlook the changes in social independence. Overall, the studies on the sensational and biased media reporting and the study of Bednar (2012) raises some questions about the effectiveness of the governance role of the media.

2.2 The Cost and Benefit of Tax Avoidance

2.2.1 Implementation Costs

The required payments such as promoter and attorney fees for tax plannings can be costly. For instance, Wilson (2009) estimates that the total fees paid to implement the tax shelters on average account for around 8% of the federal tax savings generated from the sheltering activities. Using confidential data, Mills, Erickson, and Maydew (1998) find that tax planning costs (measured as the sum of tax department salaries, legal, accounting, and other tax-planning expenditures, scaled by SG&A expenses) are significantly higher for firms with more foreign operations, higher capital intensity, and higher number of entities than for other firms. This result suggests that those firms have more tax planning opportunities than other firms. On the other

hand, they find that large firms spend lower proportion in tax planning then small firms, consistent with the economies of scale theory. They further show that $1 increase in tax planning costs results in $4 decreases in tax liabilities after controlling for tax planning opportunities.

2.2.2 Agency Costs

The literature suggests that tax avoidance incurs agency costs. To gain tax benefits, tax avoidance activities usually involve some obfuscation of transactions. Desai and Dharmapala (2006) argue that such obfuscation (or information opacity) allows managers to engage in activities that facilitate diversions of assets from firms. Therefore, tax avoidance and managerial diversion can be a complementary relationship and reducing tax avoidance can alleviate agency concern. Desai and Dharmapala (2006) argue that incentive compensation that aligns the benefits between managers and firms would reduce tax shelters. Specifically, investors would predict that managers of high tax sheltering firms also conduct managerial diversion, which leads to massive discount in the firms' market prices. Incentive compensation, therefore, is effective to motivate managers to avoid negative stock returns due to aggressive tax avoidance. They provide empirical evidence that the high-powered incentive compensation (measured as the value of stock options granted divided by the total compensation) are negatively related to tax sheltering when the firms' corporate governance is weak.

On the other hand, agency problems may arise from managers' incentives to take the risk. Rego and Wilson (2012) argue that equity risk incentives (measured as the sensitivity of the stock option portfolio value to the change in stock return volatility, Vega) motivate managers to take risky

investment decisions with positive NPV, and this theory applies to risky tax planning. They use discretionary permanent book-tax difference (DTAX), the sheltering score, the five-year cash effective tax rate, and predicted unrecognized tax benefit (UTB) to measure risky tax avoidance and show that CEO and CFO equity risk incentives are positively related to risky tax avoidance proxies. In addition, they do not find that variations in corporate governance affect the result. Armstrong, Blouin, Jagolinzer, and Larcker (2015) find a similar result that equity risk incentives increase with tax aggressiveness. They also find no relationship between corporate governance and tax avoidance; however, by using quantile regression, they find that the corporate governance mechanisms take effect only for firms with high level of tax avoidance. The result suggests that when managers with risk-taking incentives engage in tax avoidance exceeding an optimal level, the agency costs of tax avoidance could be enormous.

Some studies investigate the wealth effect of tax avoidance, proving that agency costs of tax avoidance would be immense in cases when corporate governance is weak. For example, Wilson (2009) find that well-governed firms with high tax sheltering experience positive abnormal long-run stock returns, while poorly-governed firms with high tax sheltering experience negative abnormal long-run stock returns. Desai and Dharmapala (2009) find that tax avoidance is positively associated with firm value only under the situation of good corporate governance, suggesting that agency costs probably offset the benefits of tax avoidance exists in firms with weaker corporate governance. Kim, Li, and Zhang (2011) examine the firm-specific stock price crash risk associated with tax avoidance. Following the theory that

firms with aggressive tax planning have inferior information environment, they argue that managers are likely to hide and hoard diversion and other bad news to a tipping point and stock price crashes when the hidden bad news is released. Using a large sample of U.S. firms for the period from 1995 through 2008, the authors find that the tax aggressiveness (measured by 5-year Cash ETR, Shelter score, and BTD factor) predict the future stock price crash risk. However, strong outside monitoring (proxied by the institutional ownership, analyst coverage, and GINDEX) moderate the positive relation between tax avoidance and crash risks.

2.2.3 Reputational Costs

The public usually possesses negative view toward aggressive tax avoidance.[1] Empirical evidence also finds that aggressive tax avoidance is disfavored by shareholders. For example, Hanlon and Slemrod (2009) hand-collect firms' tax sheltering activities from news articles for the period from 1990 through 2004 and test the stock return to the initial announcement of the articles. They find that on average, tax shelters firms experience an abnormal stock return of -0.94%, after ruling out the confounding effect of earnings announcement and SEC filings issued in the same time window. In addition, firms with cash effective tax rate below median experience significant negative market reaction. They further show that the negative market reaction is stronger for retailing firms, suggesting that the market reaction can be a backlash of consumers. They interpret their result as reputational

[1] For example, a survey conducted by ComRes after the publication of the Paradise Papers finds that 9 out of 10 people believe tax avoidance by large companies in U.K. is morally wrong, even if it is legal (Pegg 2017). Big multinational companies, e.g., Google Inc., Apple Inc., and General Electronic, were widely criticized by the major news outlets while EU probes their income shifting schemes in 2014.

consequences of aggressive tax avoidance. Nevertheless, they cannot rule out other explanations, e.g., political costs or agency costs.

Many studies attempt to find evidence for whether reputation is a determinant of tax aggressiveness. Chen, Chen, Cheng, and Shevlin (2010) look into the tax avoidance by family firms and argue that the benefit of tax aggressiveness to family owners could be large because of their high ownership and high controlling power. However, family owners would also care about the family names and the long-term value. In other words, reputation loss concern could be substantial to family owners. Consistent with this prediction, they show that family firms tend to be less aggressive in tax avoidance.

Gallemore, Maydew, and Thornock (2014) identify firms engaging in aggressive tax shelters and examine whether they are associated with reputational losses. They proxy the reputational costs using the stock market reaction, CEO/CFO turnovers, and the likelihood of losing reputation with IRS (proxied by ETR). However, they do not find sufficient evidence showing that aggressive tax avoidance incurs high reputational costs. Also, they do not find that firms with good reputation (on the list of *Fortune* "Most Admired Companies") are less likely to engage in tax shelters. While tax shelters represent more aggressive tax avoidance activities and should lead to greater reputational outcomes, Graham, Hanlon, Shevlin, and Shroff (2014) indicate a possible limitation on the empirical studies adopting tax sheltering events (e.g., Gallemore et al. 2014). Since tax sheltering events can be identified by the researchers only if they were caught by the IRS or the media, the ex-ante reputational concern of tax planning may not be entirely captured.

Several studies show the reputational concern related to tax avoidance in different approaches or relatively large sample. Hardeck and Hertl (2014) provide a conceptual framework for the link between corporate tax strategies and consumer purchasing intention. A responsible corporate tax strategy (meaning that firms are paying the fair share of taxes) would then lead to a positive effect on reputation and consumers' purchase intention. They conduct a laboratory experiment and show that aggressive tax strategies harm firms' success with consumers, while responsible tax strategies enhance it. Moreover, they find that consumers' morale and attitude toward tax avoidance are essential factors for this relationship.

Graham et al. (2014) survey 600 firms' tax executives to investigate the incentives and disincentives for tax avoidance. Their result shows that executives rank "potential harm to your company reputation" as the second most important factor in making tax planning decisions, followed by "risk of detection by the IRS" and "risk of adverse media attention." Furthermore, the result reveals that companies in the retail industry and firms with more analyst following are more concerned about the adverse reputation consequences of tax planning. They further find that firms with reputational concern are associated with higher cash effective tax rates and lower tax sheltering likelihood. Austin and Wilson (2017) show that firms with greater exposure to reputational losses among consumers, i.e., firms with more valuable brands, have higher effective tax rate and industry-adjusted cash effective tax rates than matched control firms. However, they find no evidence that firms with more valuable brands are less likely to operate in tax havens. Chyz and Gaertner (2018) look into whether CEO's personal reputational concern

drives corporate tax avoidance. They find that firms with extremely high level of tax avoidance (measured as the lowest quintiles of ETR and cash ETR) experience high probability of forced CEO turnover, consistent with the prediction that CEOs face reputational losses due to avoiding too much tax. Moreover, they also find that CEOs pay too much in tax (measured as the highest quintiles of ETR and cash ETR) are also more likely to lose their jobs. According to this finding, CEOs' ability to implement an effective tax planning may also contribute to their personal reputation.

2.2.4 Costs Related to Tax Audit and Enforcement

Aggressive tax avoidance would lead to higher probability of IRS audits or enforcement. Mills (1998) shows that firms with higher book-tax differences are subject to higher IRS audit adjustments. Bozanic, Hoopes, Thornock, and Williams (2017) exploit the EDGAR server log file to identify the IP address of IRS and identify the IRS attention (measured as the number of time IRS download the firm's 10-K filing). Using this novel data, they show that the IRS pay more attention to firms with more risky tax planning (measured as lower GAAP ETR and higher uncertain tax benefits). In addition to the IRS enforcement, Kubick, Lynch, Mayberry, and Omer (2016) find that tax avoidance (measured as ETR and permanent book-tax differences) increases the likelihood of receiving SEC tax-related comment letters, consistent with the prior theory that tax avoidance is positively related to information opacity and thereby extensive tax avoidance creates additional enforcement costs.

The economic consequences of tax audits can be nontrivial. Using hand-collected tax shelters sample, Wilson (2009) estimates that on average,

the interest and the penalties represent about 40% and 9% of the tax savings from the tax sheltering activities, respectively.

2.2.5 Benefit of Tax Avoidance

The direct benefits from tax avoidance are the increasing of cash flows. Accordingly, the prior studies suggest that firms with tax avoidance can reduce reliance on debt financing. Investigating 44 tax-sheltering sample firms, Graham and Tucker (2006) find that the debt ratio of tax-sheltering firms is on average 8% lower than that of similar control firms. They argue that tax avoidance is a substitute for debt financing in two-fold function. Firstly, by saving tax expenses, firms have more cash flow on hand, thereby relieving demands of debt financing. Secondly, they examine whether the magnitude of tax shelters can replace the tax benefit of leverage. If that is the case, firms would have more incentives to use tax shelters rather than raising debt for tax purpose since raising more debt involves stronger external monitors and higher cost of capital. They find that the reduction in tax liabilities due to tax shelters is three times larger than a tax deduction of debt interest. Graham and Tucker (2006) further find that the credit rating is improved after tax shelters, suggesting that tax avoidance increases financial slack and reduces default risk.

Moreover, previous studies show that tax saving adds to shareholders' wealth. Desai and Dharmapala (2009) find that firm value increases with tax avoidance when the firm is owned by more institutional investors. Cheng, Huang, Li, and Stanfield (2012) provide evidence that firms experience an improvement of tax efficiency after hedge fund intervention. They find that hedge funds with experience and knowledge associated with tax issues

influence the target firms' tax strategies and tax avoidance levels, while they do not find that target firms engage in more aggressive tax planning, i.e., tax shelters. Their finding suggests that an appropriate tax planning does increase firms' value given hedge fund managers have strong incentive to engage in active monitoring. Consistently, Khan, Srinivasan, and Tan (2017) find that increases in the ownership of quasi-indexer are associated with higher level of tax avoidance. They argue that quasi-indexers are also more likely to influence target firms' strategy by "say on pay." Managers of target firms therefore are incentivized to increase after-tax performance in order to justify their compensation to the shareholders. Given Dhaliwal, Gleason, and Mills (2004) find that tax avoidance can be used to increase after-tax earnings performance, they also find that the increases in quasi-indexers' holdings are associated with significant increases in profit margins and the likelihood of meeting or beating earnings targets. Furthermore, Cook, Moser, and Omer (2017) show that for firms paying too more in taxes (GAAP ETR is higher than the expected GAAP ETR), increasing tax avoidance can lower down the ex-ante cost of capital. Overall, these studies support the view that tax avoidance increases shareholders' value. Their findings imply that when related costs of tax avoidance (e.g., agency costs) are not high enough to offset the benefits, shareholders enjoy more tax savings.

2.3 Development of Hypotheses

The prior studies suggest that there would be an optimal level of tax avoidance. For example, investigating commercial banks' tax policy regarding investment and financing decisions, Scholes, Wilson, and Wolfson (1990) find that banks tradeoff benefits of tax-related balance-sheet

restructuring against nontax costs (e.g., regulatory costs). Cook et al. (2017) find that the ex-ante cost of equity capital is higher when the firm's tax avoidance is either below or above the expected level. Kim, Mcguire, Savoy, and Wilson (2015) find that firms adjust their tax avoidance level toward target levels at a rapid speed (69 percent per year). Besides, they find that firms with tax avoidance below the target level adjust in a significantly higher speed than firms with tax avoidance above the target level, implying that the costs of not meeting the expected level of tax avoidance could be higher. According to this empirical evidence, to have an optimal level of tax avoidance, a manager should weigh the benefits against the costs when planning tax avoidance.

For firms who are too aggressive in avoiding taxes, the costs may outweigh the benefits from incremental tax avoidance. They may incur sizeable agency costs (Desai and Dharmapala 2006; Kim et al. 2011), reputational costs (Hanlon and Slemrod 2009; Chyz and Gaertner 2018) and penalties (Mills 1998; Wilson 2009). The media then comes into play to heighten related reputational costs and penalties by disseminating and spinning the firms' malpractices. For instance, empirical evidence shows that the media coverage and negative media tone influence managers to readdress their corporate governance violations and to correct their investment decisions (e.g., Dyck et al. 2008; Liu and McConnell 2013). The negative media coverage also places downward pressures on stock prices, forcing the board of directors to act responsibly (e.g., Joe et al. 2009). Similarly, the media should also have deterrent effect on firms' aggressive tax avoidance. For example, Dhaliwal, Goodman, Hoffman, and Schwab (2016) find that

during the Occupy Wall Street (OWS) period when the public scrutiny is stronger, high tax avoidance is associated with negative media sentiment and decreasing firm value. Furthermore, they show that firms experiencing the greater reputational damage (reduction in media sentiment) reduce the level of tax avoidance more after the OWS period. Their finding suggests that the tax-related reputational costs are amplified by negative media coverage when more public's attention is paid to tax avoidance issues.

Taken together, I predict that wider and more negative media coverage magnifies the reputational costs and penalties of tax avoidance if the level of tax avoidance has exceeded the optimal level and reached the aggressive level. To the extent that the costs exceed the benefits of tax avoidance due to the effect of media, the manager will adjust the tax avoidance down. The hypothesis is described in the alternative form as follows:

H1*: Aggressive tax-avoiding firms' tax avoidance will decrease with media coverage or negative media sentiment.*

However, shareholders value an appropriate tax avoidance positively as it adds to their wealth (e.g., Desai and Dharmapala 2009; Cheng et al. 2012; Khan et al. 2017). Evidence also shows that the costs of paying too much taxes would be high. These costs could include managers' career and reputational losses. For example, Chyz and Gaertner (2018) find that forced CEO turnovers are both more likely when CEOs are avoiding too much and too less in taxes. This finding indicates that a CEO's reputational losses depend on whether the CEO can implement an optimal tax planning. Reputational losses due to inefficient tax planning can be higher when

managers receive more public attention. Duan, Ding, Hou, and Zhang (2018) find that CEO with more intensive public attention (measured by the search volume of CEO's name and firms' tickers on Google) engage in more tax avoidance to increase after-tax earnings. These two studies suggest that CEOs have incentives (either compensation incentives or reputational concern) to increase after-tax performance through tax avoidance, and the incentives increase with public attention.

The prior studies also show that media coverage and media sentiment enhance CEOs' performance by increasing the likelihood of turnover of poorly-performed CEOs (Farrell and Whidbee 2002) or by placing downward price pressures (Joe et al. 2009). Given tax avoidance can be used as a way to enhance after-tax performance (Dhaliwal et al. 2004), I predict that the pressure from the media will stimulate firms to engage in more tax avoidance as long as the tax avoidance is not too aggressive. When the tax avoidance is too aggressive, firms will incur additional agency costs, reputational costs, or penalties that will offset the benefits. Therefore, my second hypothesis is that under wider and more negative media coverage, non-aggressive tax-avoiding firms will engage in more tax avoidance.

H2: *Non-aggressive tax-avoiding firms' tax avoidance will increase with media coverage or negative media sentiment.*

CHAPTER 3 RESEARCH DESIGN

In this chapter, I first describe the sources of the data used in this study and the process of sample selection. Then, I explain the measurements of the variables of interest, including media coverage, media sentiment, and tax avoidance. Finally, I specify the regression model for the empirical analysis.

3.1 Data and Sample Selection

I obtain data of media coverage and sentiment of U.S. public-listed firms from RavenPack News Analytics database. RavenPack is a global media database that has been widely used in recent accounting and finance studies (e.g., Drake et al. 2014; Lai et al. 2014; Dai et al. 2015; Dang et al. 2015; Bushman et al. 2017). It covers news articles from primary national news providers, including Dow Jones Newswires, regional editions of *The Wall Street Journal*, *Barron's* and *MarketWatch*, and press releases from PR Newswire for the period beginning from 2000 to the most recent year. One limitation of RavenPack could be that it does not have complete coverage of news provided by local news providers. Nevertheless, the focus of this study is the public's attention and opinion, and it is reasonable to assume that the public can easily access news from national providers. Several studies in finance and accounting areas have also argued that news coverage provided by DJ Newswire or WSJ is highly correlated with news coverage of other sources (Drake et al. 2014) and WSJ-based samples for corporate news items can be representative of non-WSJ samples (Yau, Ferri, and Sugrue 1994). Therefore, whether to include news from other local sources should not make a difference to this study.

The initial sample consists of firm-year observations with news data from RavenPack. I then merge them with Compustat database to obtain financial data. As the coverage of RavenPack starts from 2000, my sample is composed of U.S. public-listed firms from 2000 to 2016. The process of the sample selection is described as follows. Firms in the financial service industry (two-digit SIC code 60~69) and utility industry (two-digit SIC code 49) are deleted. Firms who are incorporated outside the U.S. are also excluded, as those firms are taxed differently.[2] In addition, firm-year observations with a missing book value of common equity or with total assets smaller than one million dollars are also excluded. Following the prior literature, observations with negative pre-tax income are deleted, because this study examines the effect of media on firms' motive of tax avoidance, but loss firms may show less motive of tax avoidance and may also create errors in measuring tax avoidance. Finally, firm-year observations without media coverage and media sentiment information are deleted. After the above sample-selection process, the final sample ends up with 13,890 firm-year observations on 2,764 firms for estimating the baseline model. To mitigate outlier effect, I winsorize all continuous variables at both top and bottom 1% level.

3.2 Measures of Media Coverage and Media Sentiment

To construct the media coverage variable, I follow the prior studies and count only news articles with a relevance score greater than or equal to 75, which means that the firm mentioned is significantly relevant to the news

[2] For example, the income of U.S. tax residents is taxed on the worldwide basis; however, the income of foreign-incorporated firms (non-U.S. tax residents) is taxed on the territorial basis.

article.[3] This restriction ensures that potential noises (e.g., firms are mentioned in the articles only for reference purposes) are minimized. Next, I limit the news articles with full-size body text. Specifically, I count the number of news articles that RavenPack categorizes as Full-Article, which is composed of both a headline and at least one paragraphs of textual material.[4] I do not count the press releases articles, as they are usually disclosures of information or announcements firms deliberately communicate to media outlets. Finally, I measure the media coverage (*NEWSCNT*) as the natural logarithm of one plus the number of news articles for a firm during the year.

To measure the media sentiment, I utilize RavenPack's Composite Sentiment Score (CSS), which determines the sentiment of a given story using various textual analysis methods and real-time market responses (refer to Appendix A for a more detailed description of CSS scores). The CSS score ranges from 0 to 100, with a score above (below) 50 indicating positive (negative) news. In this study, the CSS score is transformed by (CSS-50)/50, so that the transformed CSS score ranges from -1 to 1, with 0 equals neutral sentiment. To construct the media sentiment measure, I also limit the news articles that have a relevance score greater than or equal to 75 and that are categorized as Full-Article by RavenPack. I then measure the negative media sentiment (*NegSentiment*) by taking the average of the transformed CSS scores of news articles for a given firm over the year and multiplying -1.

[3] RavenPack assigns each pair of firm-article a relevance score ranging from 0 to 100, while a score of 100 suggests that the firm has the strongest relevance with the article. Most of the prior studies using RavenPack limit the data to firm-articles with a relevance score of at least 75 (e.g. Drake et al. 2014; Dai et al. 2015; Ng et al. 2016; Bushman et al. 2017).

[4] RavenPack classifies all news articles into Hot-News-Flash, News-Flash, Full-Article, Press-Releases, and Tabular-Material.

I also construct the negative sentiment measure for firm-initiated press releases (*NegSentiment_PR*). Following Bushman et al. (2017), I define firm-initiated press releases as press releases articles with a relevance score of 90 or greater, as the firm in a press release article with relevance score below 90 is often only mentioned in the press release article of other firms. Similarly, *NegSentiment_PR* is calculated as the average of transformed CSS scores of press releases for a given firm over the year and multiplying -1.

3.3 Measures of Tax Avoidance

For the main tax avoidance measure used throughout this study, factor analysis is conducted to extract a common factor (*TAXFACTOR*) from the following commonly used tax avoidance measures:

i) GAAP Effective Tax Rate.

The first measure used in this study is GAAP effective tax rate (GAAP ETR) multiplied by -1. The measure is computed as follows:

$$NegETR_{it} = -\left(\frac{Total\ Tax\ Expenses_{it}}{Pretax\ Income_{it} - Special\ Items_{it}}\right),$$

where the numerator is the total tax expenses, including both current and deferred tax expenses. The denominator, pre-tax book income, is adjusted by the special items because the special items are nonrecurring charges that may result in volatile ETR measures (Dyreng et al. 2008; Cheng et al. 2012). For easy interpretation, I multiply ETR by -1, so that the higher value of the measure indicates more tax avoidance. GAAP ETR captures only the permanent book-tax difference. In other words, items such as different depreciation methods for book and tax purposes do not reflect on GAAP ETR.

GAAP ETR is widely used in the prior literature to measure firms' tax avoidance. Using confidential survey data on firms' tax planning, Mills et al. (1998) document that investment in tax planning significantly reduces GAAP ETR. However, it is noteworthy that GAAP ETR reflects not only tax avoidance outcomes but also other items such as changes in valuation allowance, permanently reinvested foreign earnings and tax contingency reserves, which can be used for earnings management purposes (Hanlon and Heitzman 2010).

ii) Cash Effective Tax Rate.

The second measure is the cash effective tax rate (CETR) multiplied by -1. The measure is computed as follows:

$$NegCETR_{it} = -\left(\frac{Cash\ Taxes\ Paid_{it}}{Pretax\ Income_{it} - Special\ Items_{it}}\right),$$

where the numerator is the actual cash taxes paid disclosed in the statement of cash flows and the denominator is the pre-tax book income minus the special items. For easy interpretation, I multiply CETR by -1, so that the higher value of the measure indicates more tax avoidance. Unlike GAAP ETR, CETR measures both permanent and temporary book-tax differences. CETR also has the advantage that it is not subject to managers' discretion on the estimation of valuation allowance or tax contingency reserves (Dyreng, Hanlon, and Maydew 2008). Moreover, it avoids the inconsistency in the treatment of employee stock options between financial and tax purposes before SFAS 123R (Chen, Chen, Cheng, and Shevlin 2010; Cheng, Huang, Li, and Stanfield 2012).

iii) Residual Book-Tax Difference.

The third measure is the residual book-tax difference (*BT_DD*) used by Desai and Dharmapala (2006). The measure is the residual from the following regression model:

$$BT\_MP_{it} = \beta_1 TA_{it} + \varepsilon_{it}, \quad (1)$$

where *BT_MP* is the Manzon and Plesko (2002) book-tax difference, which measures total book-tax differences and calculated as follows:

$$\begin{aligned} BT\_MP_{it} = \{&Domestic\ Income_{it} \\ &-(Current\ Federal\ Income\ Tax\ Expenses_{it}/0.35) \\ &-State\ and\ Other\ Income\ Tax\ Expenses_{it} \\ &-Equity\ Income_{it}\}/Total\ Assets_{it}. \end{aligned}$$

TA is the total accruals measured using the cash flow method. Regression (1) is estimated with firm fixed effects to obtain the residual. One advantage of *BT_DD* is also that it mitigates the impact of earnings management on book-tax differences so that the tax avoidance incentive can be isolated. The level of tax avoidance is higher when the value of *BT_DD* is higher.

iv) Discretionary Permanent Book-Tax Difference.

The fourth measure is the discretionary permanent book-tax difference (*DTAX*) developed by Frank et al. (2009). *DTAX* is the residual from the following regression of permanent book-tax differences on nondiscretionary items that cause permanent differences, estimated by each year and each two-digit SIC industry:

$$\begin{aligned} PERMDIFF_{it} = {} & \beta_0 + \beta_1 INTANG_{it} + \beta_2 UNCON_{it} + \beta_3 MI_{it} \\ & + \beta_4 CSTE_{it} + \beta_5 \Delta NOL_{it} + \beta_6 PERMDIFF_{i,t-1} + \varepsilon_{it}, \quad (2) \end{aligned}$$

where *PERMDIFF* is the permanent book-tax difference, computed as pre-tax income – (current federal and foreign income tax expenses/0.35) – (deferred tax expenses/0.35). *INTANG* is goodwill and other intangible

assets. *UNCON* is equity income. *MI* is income (loss) attributable to minority interest. *CSTE* is current state income tax expenses. *ΔNOL* is the change in net operating loss carryforwards. All variables are scaled by lagged total assets.

Frank et al. (2009) argue that permanent book-tax difference can be used to measure tax aggressiveness for several reasons mainly because temporary book-tax difference could be affected by accruals management. In addition, the literature indicates that the ideal tax shelters are those that can create permanent book-tax differences rather than temporary book-tax differences (Frank et al. 2009; Hanlon and Heitzman 2010). They validate *DTAX* measures by showing its significant predicting power of the tax shelters events. Specifically, they show that *DTAX* performs better than *BT_DD* and *ETR* in predicting tax shelters.

As discussed above, the four measures capture the different dimensions of tax avoidance activities. Hence, using a common factor that extracts common underlying tax avoidance tendencies could be advantageous over individual measure (Kim, Li, and Zhang 2011). Several prior studies also adopt the common factor to measure tax avoidance including Chen et al. (2010), Kim et al. (2011), and Lennox et al. (2013).

I implement a principal-component factor analysis of the above four tax avoidance variables. The eigenvalues of the first factor and the second factor are 1.57 and 1.22, respectively. Hence, I use the first factor in my main tests and use the second factor for a robustness check. The summary statistics and correlation among the four tax avoidance measures and the common factor measures are described in Table 1. The average CETR and ETR of the

sample are about 26% and 30%. These statistics are comparable to those of recent studies, which cover the recent period in their samples, e.g., Huseynov, Sardarli, and Zhang (2017), Bird, Edwards, and Ruchti (2017), and Duan, Ding, Hou, and Zhang (2018). The correlation coefficients between the first factor (*TAXFACTOR*) and the four variables are 0.43 (*NegCETR*), -0.19 (*NegETR*), 0.79 (*BT_DD*), and 0.81 (*DTAX*), respectively. On the other hand, the correlation coefficients between the second factor (*TAXFACTOR2*) and the four variables are 0.72 (*NegCETR*), 0.87 (*NegETR*), 0.13 (*BT_DD*), and -0.13 (*DTAX*), respectively. Notably, *NegETR* is negatively related to *DTAX*. This result suggests that, indeed, these four measures are picking up different aspects of tax avoidance or may contain measurement errors. For example, *NegETR* would be affected by earnings management largely compared to other measures. As a result, the first factor puts less weight on *NegETR* and more weight on *BT_DD* and *DTAX*, while the second factor puts more weight on *NegETR* and *NegCETR* and less weight on *BT_DD* and *DTAX*. To triangulate my results, I also estimate the main regression using the four tax avoidance measures individually for a robustness check.

[Insert Table 1 Here]

3.4 Empirical Model

To test my hypothesis, I estimate the following cross-sectional regression:

$$\begin{aligned} TAXFACTOR_{it} = {} & \beta_0 + \beta_1 NegSENTIMENT_{i,t-1} \\ & + \beta_2 AGGRESSIVE_{i,t-1} * NegSENTIMENT_{i,t-1} \\ & + \beta_3 NEWSCNT_{i,t-1} + \beta_4 AGGRESSIVE_{i,t-1} * NEWSCNT_{i,t-1} \\ & + \beta_5 AGGRESSIVE_{i,t-1} + \gamma' CONTROLS \\ & + YearDummies + IndustryDummies + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

where the dependent variable and the independent variables are defined in the previous sections. Estimating regression (3), I examine the effect of media sentiment or media coverage of firm *i* in year t-1 on the tax avoidance level of firm *i* in year t. The dummy variable, *AGGRESSIVE*, is added in the regression to isolate the effect of media on the firms who have avoided taxes aggressively from those who have not in the past year. *AGGRESSIVE* is set to one if the shelter score (*SHELTER*) estimated from Wilson's (2009) model is above the median shelter score in the same industry for the year, and zero otherwise.[5] The coefficients (β_2 and β_4) on the interaction terms with *AGGRESSIVE* then represent the incremental effect of media on tax avoidance for aggressive firms.

Following prior studies such as Chen et al. (2010) and Cheng et al. (2012), I control for several firm characteristics that determine tax avoidance. On the one hand, several studies suggest that large firms and multinational firms have more tax avoidance opportunities and better tax planning strategies than small firms as they often engage in more business activities and financial transactions (Mills et al. 1998; Rego 2003; Dyreng et al. 2008) and that growing firms may invest in more tax-favored assets (Chen, Chen, Cheng, and Shevlin 2010). The literature also argues that higher pre-tax income may give firms more incentive to avoid taxes and documents a

[5] Wilson (2009) uses several firm characteristics to estimate the tax sheltering likelihood, including book-tax differences, discretionary accruals, leverage, size, profitability, foreign income, and R&D. Wilson (2009) finds that his model has more than 70% of the accuracy for predicting tax shelters. Predicted sheltering likelihood is commonly used in the literature for the purpose of measuring tax aggressiveness. For example, Kim et al. (2011) argue that sheltering likelihood could be the measure most likely to cause negative outcome, i.e. future stock price crashes. Hoi, Wu, and Zhang (2013) adopt the sheltering likelihood measure to examine the relation between CSR and tax aggressiveness. Chyz (2013) uses the sheltering likelihood in the study examining the relation between manager-level and corporate-level tax aggressiveness.

positive relationship between profitability and tax avoidance activities (Wilson 2009). On the other hand, firm size and media coverage are highly correlated. Studies also find that the media may have significant impacts on firm performance through governing firms' capital allocation decisions and correcting corporate governance violations (Dyck, Volchkova, and Zingales 2008; Liu and McConnell 2013). Hence, I include the market value of equity (MVE_{t-1}) to capture the firm size effect; the return on asset (*ROA*), the net operating loss carryforward (*NOL* and *ChgNOL*) to capture the profitability; the absolute value of foreign income (*FI*) to capture foreign operations; the market-to-book ratio (MB_{t-1}) to capture the growth option.

I also control for items that directly affect firms' tax liabilities such as the depreciation and amortization expenses and interest expenses, which are deductible from the taxable income; the equity income, which is not included in taxable income. Accordingly, the property, plant, and equipment (*PPE*), the intangible assets (*INTANG*), financial leverage (*LEV*), and equity income in earnings (*EQUIC*) are included in the set of control variables.

The final set of control variables capture the effect of firms' information environment. Following Bushee et al. (2010), I control for the firm's analyst coverage (*ANALYST*), and the fraction of outstanding shares held by institutional investors (*INSTOWN*). The reason is two-fold. First, these two factors relate to firms' information transparency and the media coverage. Fang and Peress (2009) show that analyst coverage and media coverage are substitutes regarding the information intermediary. Several studies also argue that individual investors and institutional investors react differently to the news media. For instance, Nofsinger (2001) find that the

length of news influences individual investors' rather than institutional investors' trading behavior. Joe et al. (2009) provide evidence showing that individual investors overreact to media coverage of bad news, leading to downward price pressure on firms. Second, institutional ownership is related to tax avoidance incentives. The previous studies suggest that tax avoidance is more beneficial when firms are held by more institutional ownership (e.g., Desai and Dharmapala 2009; Kim et al. 2011) and that tax efficiency is enhanced by hedge fund activists (Cheng, Huang, Li, and Stanfield 2012). Given that institutional investors demonstrate a relationship with media and tax avoidance distinct from individual investors, institutional ownership may be a crucial factor that drives the result. Furthermore, following Bushman et al. (2017), I control for an alternative information source, the press release sentiment (*NegSentiment_PR*$_{t-1}$), which is related to a firm's strategic disclosure decisions. Bushman et al. (2017) argue that firms may issue positive press releases accompanied by negative events to walk up stock prices. In addition, controlling for press release sentiment can mitigate its direct effects on the news media.

Industry (defined by the two-digit SIC) fixed effects and year fixed effects are included in equation (3). The detailed definitions of all variables are provided in Appendix A.

CHAPTER 4 EMPIRICAL RESULTS

4.1 Descriptive Statistics

The summary statistics result is presented in Table 2. Because we exclude firm-year observations without any media coverage, the average media coverage (*NEWSCNT*) is 3.73, which is equivalent to about 41 articles. The average media sentiment (*NegSENTIMENT*) is -0.0048, which is higher than the average firm-initiated press release sentiment (*NegSENTIMENT_PR*) of -0.0342. This result is predictable as firms are less likely to issue press releases using more negative tone. The other firm characteristics controls have the statistics similar to earlier studies, e.g., Hoi, Wu, and Zhang (2013) and Watson (2015). For example, average firm size is 6.66; average net operating loss carryforward is 46%; average leverage is 0.17; average foreign operation is 0.02; average institutional ownership is 63%.

[Insert Table 2 Here]

Table 3 reports the correlation coefficients for all variables in the baseline model. The result shows that media coverage ($NEWSCNT_{t-1}$) and negative media sentiment ($NegSENTIMENT_{t-1}$) are associated with lower tax avoidance (*TAXFACTOR*) in the next year (Pearson correlation coefficients are -0.06 and -0.02, respectively). The aggressiveness ($AGGRESSIVE_{t-1}$) is negatively correlated with subsequent tax avoidance level (*TAXFACTOR*) (Pearson correlation coefficient is -0.04), suggesting that some firms may not easily maintain tax aggressiveness level. In addition, the aggressiveness ($AGGRESSIVE_{t-1}$) is highly correlated with news coverage ($NEWSCNT_{t-1}$), firm size (MVE_{t-1}), and analyst coverage (*ANALYST*) (Pearson correlation coefficients are 0.31, 0.62, 0.51, respectively). This result is consistent with

the economies of scale theory that larger firms have more resources to invest in tax plannings. I conduct a variation inflation factor test to examine the potential multicollinearity problem. I find that the largest variance inflation factor is 4.41 for *MVE*, meaning that firm size is correlated to at least one variable. For example, it is highly correlated with media coverage and analyst coverage. The Pearson correlation coefficients are 0.53 and 0.48, respectively. However, the variance inflation factors for other variables are all less than 4, so the multicollinearity problem should be moderate (i.e., VIF<10).

[Insert Table 3 Here]

4.2 Result of Baseline Model

To test the hypotheses whether media coverage or media sentiment influences firms to adjust the level of their tax avoidance, I estimate regression (3) to regress tax avoidance level on lagged media coverage, lagged negative media sentiment, and their interactions with the dummy variable of an aggressive avoider. Table 4 shows the result. First, I test the relation between the negative media sentiment and tax avoidance. In column (1), the coefficient on stand-alone *NegSENTIMENT* is insignificantly different from zero (0.2847, t=1.30); however, after including an interaction term between *NegSENTIMENT* and *AGGRESSIVE* in column (2), I find that the coefficient on stand-alone *NegSENTIMENT* is significant and positive (0.7403, t=1.72) and the coefficient on the interaction term is significant and negative (-0.8897, t= -1.84). In addition, the Wald Test of the coefficients rejects $NegSENTIMENT_{t-1} + NegSENTIMENT_{t-1} * AGGRESSIVE_{t-1} = 0$ at 1% significance level, meaning that for aggressive tax-avoiding firms, negative media sentiment leads to lower tax avoidance.

In columns (3) and (4), I examine the effect of media coverage on tax avoidance. However, I find that the coefficients are insignificantly different from zero for *NEWSCNT* (0.0060, t=0.35) and its interaction term with *AGGRESSIVE* (-0.0019, t= -0.20). The possible explanation for this result could be that without knowing the content of news articles, media coverage can be with a positive tone, neutral tone, or negative tone, but only the negative coverage has a significant impact on firms' tax avoidance strategies. In column (5), I find a similar result when putting media coverage and media sentiment in the same regression.

The sign of coefficients on control variables is as predicted in the prior studies. For example, *ROA* is positively associated with tax avoidance, meaning that profitable firms have higher tax avoidance incentives than non-profitable firms. *NOL*, *ChgNOL*, *PPE*, and *INTANG* are positively associated with tax avoidance, as they are related to deduction of taxable income. One exception is the negative sign of the coefficient on *FI*, which is puzzled as the earlier studies argue that firms with more foreign operations (i.e., MNCs) have better tax planning strategies and more tax avoidance opportunities (Mills et al. 1998). However, Dyreng and Lindsey (2009) also provide some evidence that U.S. firms with more foreign operations in tax havens have a higher federal effective tax rate on their foreign income as firms are not able to fully enjoy the foreign tax credits against their taxable income.

Overall, the baseline result is consistent with my hypotheses that for non-aggressive tax-avoiding firms, more negative media sentiment would encourage them to avoid more taxes. In contrast, for aggressive tax-avoiding

firms, more negative media sentiment pressures firms to adjust their tax avoidance down.

[Insert Table 4 Here]

4.3 Robustness Tests

I also perform the following tests to verify the robustness of my baseline results:

4.3.1 Alternative Measures for Tax Avoidance

In the beginning, I use several alternative ways to define the dummy variable indicating whether the firm is aggressive or non-aggressive tax-avoiding firms (*AGGRESSIVE_ALT*). Panel A of Table 5 reports the result. First of all, in Column (1), I define *AGGRESSIVE_ALT* as equal to one if the firm's *SHELTER* is above the highest quintile for each industry and year, and zero otherwise. The result is similar to, but stronger than, the baseline result. I find that the coefficient is positive on *NegSENTIMENT* and negative on the interaction term of *NegSENTIMENT* and *AGGRESSIVE_ALT*. To further verify my hypothesis, in Column (2), I estimate the regression with the dummy variable for low aggressiveness (*LowAGGRESSIVE*), which is equal to one if the firm's *SHELTER* is below the lowest quintile for each industry and year, and zero otherwise. If my hypothesis holds, then firms with lower aggressive likelihood should respond to negative sentiment by raising subsequent tax avoidance level up. Consistently, the result shows that the coefficient on the interaction term between *NegSENTIMENT* and *LowAGGRESSIVE* is positive and statistically significant. Besides, In Column (3), I define *AGGRESSIVE_ALT* as equal to one if the firm's cash effective tax rate averaged over year t-2 through t is in the bottom quintile of

the sample in each industry-year, and zero otherwise. Based on this definition, the average three-year cash effective tax rate is around 8%, which is extremely low. In column (4), I define *AGGRESSIVE_ALT* as equal to one if the firm's *DTAX* in year t-1 is in the top quintile of the sample in each industry-year. Again, I find a similar result, suggesting that negative media sentiment influences aggressive (non-aggressive) tax-avoiding firms to adjust their tax avoidance down (up).

[Insert Table 5 Here]

Next, I adopt alternative measures for tax avoidance in the test. As I use the first common factor extracted from *NegCETR*, *NegETR*, *BT_DD*, and *DTAX* to measure tax avoidance in the main test, to triangulate my results, I show the results of testing these four tax avoidance measures individually. In addition, I also employ the second common factor (*TAXFACTOR2*) extracted from these four measures, as explained in section 3.3.

The results are shown in Panel B of Table 5. Except for the result for *NegCETR*, I find that the results for other alternative tax avoidance measures are similar to the baseline result. Compared to *NegCETR*, the effect of the media sentiment is stronger for *NegETR*, which is consistent with Dhaliwal et al. (2004) and Graham et al. (2014) who argue that GAAP ETR is directly related to financial accounting incentives (i.e., to report higher accounting earnings). Graham et al. (2014) find survey evidence that firms view GAAP ETR as a more important metric than cash ETR when under higher public scrutiny such as being publicly-traded, owned by more institutional investors, and covered by more analysts. Note that GAAP ETR also reflects the outcome of earnings management. Accordingly, if the media pressures

managers to report higher after-tax earnings, we can expect that managers should try to reduce GAAP tax expenses rather than cash taxes paid. As discussed in section 3.3, *TAXFACTOR2* captures more component from *NegETR*, so I find a similar result for *TAXFACTOR2*.

I show the economic significance of the relationship between media sentiment and tax avoidance using the result for *NegETR*. For non-aggressive tax-avoiding firms, one standard deviation increase in negative media sentiment leads to a decrease of 0.7 percentage point in GAAP ETR, which is equivalent to a reduction of $3 million in total tax expenses on average.[6]

4.3.2 Earnings-Related vs. Non-Earnings-Related News Articles

Next, I separate the news articles into earnings-related firms and non-earnings-related firms based on the news categories provided by RavenPack. Earnings-related news articles focus on earnings guidance, earnings releases, and earnings revision and account for one of the largest proportions of news articles in RavenPack. Negative sentiment could be related to poor earnings performance or other negative news (e.g., lawsuits and insider trading). Accordingly, if the adjustment of tax avoidance level is driven by the incentives related to after-tax earnings performance, I expect that the sentiment of earnings-related news would have stronger effect on tax avoidance. For example, firms with negative earnings news may have incentives to use tax avoidance to boost up the after-tax earnings in the next period. In addition, as earnings news is more connected to managers' reputation or compensation, managers' tax avoidance decision would then be more sensitive to the negative earnings news. For the statistics, I partition my

[6] 0.7 % ≅ S.D. of *NegSENTIMENT* 0.0391×0.1832.
$3 million ≅ 0.7%×average pretax income $425 million.

sample into firms with negative sentiment of their earnings-related news and other firms. I find that the former firms on average have lower earnings levels than the latter firms. In addition, the former firms experience negative changes in earnings, while the latter firms experience positive changes in earnings. Moreover, the changes in earnings of the former firms become less negative in the next period. This result suggests that firms with negative earnings news may take some actions to improve the earnings performance in the next period.

The result of the negative earnings news on tax avoidance level is presented in Panel C of Table 5. *NegSENTI_EARN* (*NEWSCNT_EARN*) is the *NegSENTIMENT* (*NEWSCNT*) calculated using only earnings-related news articles of the firm. In contrast, *NegSENTI_NONEARN* (*NEWSCNT_NONEARN*) is the *NegSENTIMENT* (*NEWSCNT*) calculated using non-earnings-related news articles of the firm. The result suggests that only negative sentiment from earnings-related news has impacts on firms' tax avoidance. Consistent with the main finding, non-aggressive tax-avoiding firms adjust subsequent tax avoidance up when receiving more negative earnings news sentiment. However, for the total effects of the negative sentiment for aggressive tax-avoiding firms, the Wald-test does not reject the null hypothesis that *NegSENTI_EARN + NegSENTI_ EARN *AGGRESSIVE* = 0. This result is different from the main finding (which use all news articles to measure sentiment), given the main finding shows a significantly negative total effect of negative media sentiment for aggressive tax-avoiding firms. This result is then consistent with the prediction that negative earnings-related

news articles are more associated with firms' incentives to increase after-tax earnings performance by using tax avoidance than are other news.

4.3.3 Additional Controls – CEO Characteristics

In this and the next section, I identify some possible omitted variables that would simultaneously affect both the independent and dependent variables. The first concern is that the CEO characteristics may drive the result. To be specific, Dyreng, Hanlon, and Maydew (2010) show that CEOs play a dominant role in making tax avoidance decisions. The gender of the CEO can determine firms' tax aggressiveness. Huang and Kisgen (2013) suggest that male executives are more over-confident than female executives in financial and investment decisions. Chyz, Gaertner, Kausar, and Watson (2018) further find that over-confident CEOs are more likely to engage in tax shelters.[7] Empirical evidence also shows that the market's perception of the firm's performance differs between male and female CEOs. For example, Krefting (2002) find that some U.S. business press possesses a negative perception of female CEOs' competence and likeability and their impact on social order, while this phenomenon does not exist for male CEOs. Lee and James (2007) find that the appointments of female CEOs are surrounded by more negative market returns. It is thus reasonable to predict that female CEOs are more sensitive to media sentiment than male CEOs.

In addition, Goldman, Powers, and Williams (2017) show that in early years of the CEO's tenure, the firm reports lower GAAP and cash ETR. In the final year of the CEO's tenure, the firm also reports lower GAAP ETR.

[7] To my best knowledge, no direct empirical evidence shows that female CEOs have an impact on tax avoidance. However, previous works find that female CFOs are less aggressive in avoiding taxes (Francis, Hasan, Wu, and Yan 2014) and firms with at least one woman sitting on the board avoid less in taxes (Richardson, Taylor, and Lanis 2016).

Their finding suggests that newer CEOs and CEOs in their later tenure would try to please the market with better after-tax earnings performance.

Finally, empirical evidence shows that younger CEOs have more reputational and career concerns, which lead them to be more sensitive to the public scrutiny (Andreou, Louca, and Petrou 2017). On the other hand, Rego and Wilson (2012) show that younger CEOs are more likely to be awarded the risk incentive compensation, and the risk incentive compensation motivates managers to engage in riskier tax avoidance strategies.

Therefore, I include the gender, the tenure, and the age of the CEO in the regression to control for the CEO's attitude to aggressive tax avoidance. Column (1) of Table 6 reports the result. The definitions of the CEO variables are in Appendix A. Consistent with the prior studies, my finding suggests that young CEOs are positively associated with tax avoidance, while female CEOs and CEO tenure do not have a significant impact on tax avoidance. After controlling for these CEO characteristics, the coefficient on *NegSENTIMENT* becomes insignificant. The reason could be the incentives of increasing after-tax earnings are taken by the CEO characteristics. On the other hand, the coefficient on the interaction term of *NegSENTIMENT* and *AGGRESSIVE* remains significant and negative. I further include the interaction terms between my independent variables and *FEMALE_CEO* and *YOUNG_CEO*, respectively; however, the coefficients on the interaction terms are insignificant. This result (untabulated) suggests that the effect of negative sentiment does not vary with CEO genders and CEO ages.

[Insert Table 6 Here]

4.3.4 Additional Controls – Earnings Decrease

Next, I consider the possibility that adverse earnings performance drives both the negative media coverage and incentives of tax avoidance. Specifically, I predict that bad news about accounting earnings will be covered by the media press in a more negative tone. For example, earnings announcement with decreases in earnings or earnings missing the market's expectation is likely to be covered in negative news articles (e.g., DiStaso 2012). On the other hand, managers with negative earnings news may have more job-security or compensation incentives to increase after-tax earnings to show an improved financial performance in the next period. For example, Matsunaga and Park (2001) find that CEO annual bonuses decrease when firms' earnings fall short of the prior-year earnings and Osma and Young (2009) show that negative earnings or earnings decreases motivate managers to strategically cut R&D spending in the next period to increase accounting earnings. Dhaliwal, Gleason, and Mills (2004) further show that firms lower their ETRs when their earnings would otherwise miss the benchmark. Column (2) of Table 6 shows the result. I find that the coefficient on $EARN\_DEC_{t-1}$ is positive and significant, consistent with my prediction that earnings decreases in the previous year motivate managers to engage in more tax avoidance. The significance of the coefficient on *NegSENTIMENT* also disappears after I control for earnings decreases. This is another supporting evidence showing that the positive relationship between negative media sentiment and tax avoidance is due to the financial accounting incentives. When earnings decreases that capture the financial accounting incentives are controlled, the effect of negative media sentiment is taken away. In contrast, I still find that the deterrent effect of media sentiment on tax avoidance

remains for aggressive tax-avoiding firms, meaning that the reputational or agency costs of aggressive tax avoidance are greater than the benefits of tax avoidance. Similarly, I estimate the same regression with interaction terms between the independent variables and *EARN_DEC*. The result (untabulated) also suggests that the effect of negative media sentiment does not vary between the sample with earnings increases and the sample with earnings decreases.

CHAPTER 5 INSTRUMENTAL VARIABLE APPROACH

In this study, there is a potential endogeneity problem due to the omitted variable problem, which may not be entirely addressed by including additional control variables. For example, some adverse events can impact media coverage and tax avoidance incentives. Therefore, I adopt the instrumental variable (IV) approach to address the endogeneity problem.

5.1 IV for Media Sentiment

Following the prior studies (e.g., Cao and Wan 2014), I use an industry-level measure (i.e., *Ind_NegSENTIMENT*)[8] to instrument the firm's negative media sentiment. I first test the strength of the IV. The Weak Instrumental Variable test strongly rejects the null hypothesis of weak IV.[9] In addition, the coefficient on *Ind_NegSENTIMENT* in the first stage (column (1) of Table 7 Panel A) are significantly positive, suggesting that the firm's media sentiment is highly correlated to the industry-level average media sentiment. This IV satisfies the relevance requirement. In addition, there is no apparent reason to suspect that the industry-level media sentiment is directly related to firms' tax avoidance.

In the second stage, I regress tax avoidance on instrumented media sentiment estimated from the first-stage regression. The result of the second-stage regression is reported in column (2) of Table 7 Panel A. The coefficient on *NegSENTIMENT* is still positive and significant (6.2695, t=1.74); the coefficient on the interaction of *NegSENTIMENT* and *AGGRESSIVE* is still

[8] All firms but the firm itself are included calculating the average *NegSentiment* for the industry and the year.
[9] The F-statistic for the Cragg-Donald weak identification test is 859.96.

negative and significant (-3.3302, t=-2.73) after controlling for potential endogeneity problem.

[Insert Table 7 Here]

5.2 IV for Media Coverage

I also implement the IV approach to address the endogeneity issue in media coverage and tax avoidance. I adopt the S&P 500 membership (*S&P500*) to instrument the media coverage. Dai, Parwada, and Zhang (2015) document that S&P 500 additions are positively associated with media coverage, suggesting that the public's demand for news is high for S&P 500 firms than other firms. I also test the strength of the IV. The Weak Instrumental Variable test rejects the null hypothesis of weak IV.[10] Again, the coefficient on *S&P500* is significantly positive in the first-stage regression (Column (1) of Table 7 Panel B). This suggests that the IV, *S&P500*, satisfies the relevance requirement. In addition, there should be no concern that S&P 500 additions have direct impact on firms' tax avoidance.

The result of the second-stage IV regression is shown in column (2) of Table 7 Panel B. Similar to the baseline result, I find no significant relationship between media coverage and tax avoidance.

[10] The F-statistic for the Cragg-Donald weak identification test is 7.24.

CHAPTER 6 ADDITIONAL ANALYSES

6.1 The Channel Tests

The first hypothesis in this study argues that the negative media coverage discourages aggressive tax-avoiding firms to avoid more taxes, as the media magnifies the related reputational or enforcement costs. To further verify the possible mechanism of reputational costs and penalties, I implement the mediation analysis, the research design used in prior studies (e.g., He and Tian 2013). The objective is to see whether the media sentiment has an incremental effect on tax avoidance after controlling for proxies for reputational costs and enforcement costs (the mediators) and whether some effect of the media sentiment on tax avoidance is through the effect of the mediators.

Following Gallemore et al. (2014), I proxy reputational costs using the advertisement expenses (*ADEXP*) and negative growth in sales revenue (*NegGSALES*). Gallemore et al. (2014) examine ex post reputational costs that managers would bear when engaging in tax sheltering, arguing that these ex post measures integrate the perceptions held by interested stakeholders and real consequence aspects. For example, when the tax aggressiveness increases, more advertising costs may be needed to counter adverse reputational damage and consumer losses. Similarly, negative growth in sales revenue reflects the consequence of reputational damage. Next, I proxy enforcement costs using the IRS attention to the firm's SEC 10-K filings (*IRS_ATTEN*). Bozanic et al. (2017) develop this measure and show that firms tax avoidance can predict the IRS attention.

In Panel A of Table 8, I show the relationship between the negative media sentiment at year t-1 and my proxies for reputational costs and enforcement costs. The coefficients are all positive and significant across three columns, suggesting that more negative media sentiment causes higher advertisement expenses, more negative growth in sales, and higher attention of IRS in the next period.

[Insert Table 8 Here]

Next, I add these three variables into tax avoidance regression. Column (1) and column (2) of Table 8 Panel B presents the results before and after including reputational cost variables, respectively. The coefficients on *NegSENTIMENT* and *NegSENTIMENT*AGGRESSIVE* are all significant and consistent with the hypothesis. However, the total effect of the negative media sentiment for aggressive tax-avoiding firms weakens from -0.2129 to -0.1858 after including *ADEXP* and *NegGSALES*.[11] This result suggests that reputational costs explain about (0.1858-0.2129)/(-0.2129) ≅ 13% of the total effect of the negative media sentiment on tax avoidance.

I further add the enforcement cost proxy into the regression. Column (3) and Column (4) presents the regression results before and after inclusions of *ADEXP*, *NegGSALES*, and *IRS_ATTEN*, respectively. Again, I find that the total effect of negative media sentiment on tax avoidance for aggressive tax-avoiding firms remains significant but weakens from -0.1138 to -0.0851 after including the mediators. This result suggests that reputational and enforcement costs together explain about (0.0851-0.1138)/(-0.1138) ≅ 25% of the total effect of the negative media sentiment on tax avoidance.

[11] For example, -0.2129 = 0.8983-1.1112; -0.1858 = 0.9122-1.0980.

Overall, the finding of the mediation analyses confirms my hypothesis that aggressive tax-avoiding firms reduce tax avoidance, partially because the related reputational costs and enforcement costs are increased by the negative media coverage.

6.2 Cross-Sectional Analyses

In this section, I conduct some cross-sectional analyses to further verify the effect of the media on firms' tax avoidance. I first examine whether the media sentiment-tax avoidance relationship varies with product market competition. Firms in the high-competition industry could be more sensitive to reputational losses. For example, Hörner (2002) suggests that competition may create the threat of exit from the customer, leading firms to put more effort to protect their reputation. Cusumano, Kahl, and Suarez (2008) show that higher competition forces firms to engage in better corporate social responsibility activities to enhance their relationship with stakeholders. As a result, I predict that firms in the high-competition industry are more likely to respond to the negative media coverage that may undermine firms' reputation. In Table 9, I separate the sample into the high- and low-competition subsamples in column (1) and column (2), respectively. I measure product market competition using Herfindahl– Hirschman Index (HHI). One industry is defined as high competition when its HHI is below the median for the year.[12] I reperform the regression (3) for each subsample. Consistent with my prediction, I find that the coefficients on *NegSENTIMENT* and

[12] The statistics and univariate analysis between the two subsamples are reported in Panel A of Appendix B. The result suggests that the tax avoidance level, media sentiment, media coverage, ROA and firm size have no significant difference between the two subsamples. However, high-competition firms consist of a higher proportion of aggressive tax-avoiding firm and have higher extent of foreign operation, higher level of intangible assets, and lower level of leverage, compared to low-competition firms.

*NegSENTIMENT*AGGRESSIVE* are only significant for the subsample in high-competition industry. The Wald Tests also suggest that these two coefficients are significantly different between high- and low-competition subsamples.

[Insert Table 9 Here]

Next, I predict that the media sentiment-tax avoidance relationship varies with types of institutional ownership. Prior studies suggest that short-term institutional investors are more likely to trade against the released information. For example, Joe et al. (2009) document that transient institutional investors, like the arbitrageurs, purchase more of the firm's stock when the firm has negative news, while dedicated institutional investors do not change their holdings around the release of bad news. Also, previous studies also suggest that short-term investors create pressure on firms' short-term performance (Bushee 2001). Accordingly, I expect that firms held by more transient investors are more sensitive to the effect of negative media sentiment. I obtain the institutional ownership data from Thomson's 13F database and the institutional investor classification data from Brian Bushee's website.[13] I separate the sample into two groups: High Transient & Low Dedicated; Low Transient & High Dedicated. For example, the High Transient & Low Dedicated group consists of firms with transient ownership above the median and dedicated ownership below the median in each industry-year.[14] Columns (3) and (4) report the result. Consistent with my

[13] The website is accessible at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html.
[14] The statistics and univariate analysis between the two subsamples are presented in Panel B of Appendix B. The result suggests that the tax avoidance level is significantly higher for High Transient & Low Dedicated group than for Low Transient & High Dedicated group, which is consistent with the finding of Khurana and Moser (2013). However, the media sentiment and media coverage do not have significant difference between the two subsamples.

prediction, I find that the effect of negative media sentiment is significant only for the High Transient & Low Dedicated group, compared to the Low Transient & High Dedicated group. The Wald Tests also suggest that these two coefficients are significantly different across the two subsamples.

Finally, I separate the sample into two groups based on the sentiment of firm-initiated press releases. The concept is that press releases can be used as a strategic disclosure channel for firms to communicate to the public or the media (Bushman et al. 2017). Therefore, I predict that firms can issue positive press releases to balance the tone of the public media. Hence, the media sentiment-tax avoidance relationship should be weaker for firms with the higher press-release sentiment than for firms with the negative or neutral press-release sentiment.[15] The result is shown in columns (5) and (6) of Table 9. Indeed, I do not find a significant effect of negative media sentiment on tax avoidance for firms with the positive average press-release sentiment. In contrast, the effect is found for firms with negative or neutral press-release sentiment.

6.3 The Effect of Tax Avoidance News

In this section, I consider the media's reporting of firms' aggressive tax avoidance issues. Specifically, with the media disseminating and spinning firms' tax avoidance, the reputational costs of tax avoidance can be higher. If the firm's tax avoidance strategies have caught the media's attention, it is expected to be more sensitive to the deterrent effect of the media sentiment.

[15] The statistics and univariate analysis are reported in Panel C of Appendix B. I find that more than 94% of our sample has positive press-release sentiment. This result is reasonable as firms typically issue press releases with positive tone (Bushman et al. 2017). The tax avoidance levels are not significantly different between the two subsamples.

To test this prediction, I hand-collect tax avoidance news articles of S&P 1500 firms for the period from 2000 through 2014 on Factiva. The detailed process of identifying tax avoidance news is described in Appendix C. I then construct the dummy variable, *L3TAXNEWS*, which equals one if the firm has at least one tax avoidance news over the past three years, and zero otherwise. To examine the determinant of media coverage, I follow the prior literature (e.g., Core et al. 2008; Drake et al. 2014; Chen et al. 2015) and estimate the following probit model:

$$\begin{aligned} Pr(L3TAXNEWS_i = 1) = {} & \beta_0 + \beta_1 L3MVE_i + \beta_2 L3ROA_i \\ & + \beta_3 L3FI_i + \beta_4 L3ANALYST_i + \beta_5 L3INSTOWN_i \\ & + \beta_6 L3NEWSCNT_i + \beta_7 L3NegSENTIMENT_i \\ & + YearDummies + InudstryDummies + \varepsilon_{it}, \end{aligned} \quad (4)$$

where all determinant variables are as defined in regression (3) but averaged over the past three years. The result is reported in Panel A of Table 10. I find that firm size (*L3MVE*), foreign operations (*L3FI*), and media coverage (*L3NEWSCNT*) are positively associated with the likelihood of tax avoidance issues being reported by the media. However, analyst coverage (*L3ANALYST*) and institutional ownership (*L3INSTOWN*) are negatively associated with the likelihood of tax avoidance issues being reported by the media, which may suggest that the media caters to individuals rather than institutional investors (Fang and Peress 2009; Chen et al. 2015) and analysts serve a substitutional information intermediary.

[Insert Table 10 Here]

To test whether the deterrent effect of negative media sentiment on tax aggressiveness is stronger when the media reports the firm's tax avoidance, I estimate the following regression:

$$TAXFACTOR_{it} = \beta_0 + \beta_1 L3TAXNEWS_i + \beta_2 NegSENTIMENT_{i,t-1}$$

$$+\beta_3 L3TAXNEWS_i * NegSENTIMENT_{i,t-1} + \gamma' CONTROLS + YearDummies + IndustryDummies + \varepsilon_{it}, \quad (5)$$

where all control variables in regression (3) are included here, and all variables are as defined above. To deal with the sample selection bias, I match firms with tax avoidance news and firms without tax avoidance news using the following two methods: 1) propensity-score matching and 2) simple matching.

For the propensity-score matching, I match firms based on the likelihood of tax avoidance issues being reported, which is the predicted value from estimating regression (4). Specifically, I match firm-year observations with the nearest likelihood in the same industry without replacement. Following the suggestion of Shipman, Swanquist, and Whited (2016), I require common support by dropping 1 percent of the treatment observations where the propensity score density of the control observations is the lowest. Panel B1 of Table 10 shows the statistics of the treatment sample and the matched sample. I obtain a rather successful matching result given that the tax avoidance level, media sentiment, and most of the firm characteristics between these two samples do not have significant differences. Some exceptions are that treatment sample consists of firms with slightly larger size, higher leverage, and more foreign operations, compared to control sample.

The result of regression (5) with propensity-score matching is reported in columns (1) and (2) of Table 10 Panel C. The coefficient on the stand-alone *L3TAXNEWS* is insignificantly different from zero, consistent with the finding of previous studies (e.g., Chen et al. 2015; Lee 2015) who find no evidence that tax avoidance news have impact on firms' level of tax

avoidance and quality of tax disclosure. On the other hand, the coefficient is insignificant on *NegSENTIMENT* but significantly negative on the interaction term of *L3TAXNEWS* and *NegSENTIMENT*.

For the second matching method, I match firm-year observations with tax avoidance news and observations without tax avoidance news based on simple characteristics including industry membership, firm size, ROA, and media sentiment. Specifically, for the sample in each industry-year, I sort firm into three size groups based on the lagged market value of equity. Next, for each size group, I further sort firms into three groups based on the lagged ROA. Finally, I identify the matched control sample with the nearest media sentiment in the same industry-size-ROA group. Panel B2 of Table 10 shows the statistics of treatment sample and control sample based on this simple matching method. Similarly, I obtain the matched sample with tax avoidance level and media sentiment similar to treatment sample. However, I still find the size, leverage, and analyst coverage are significantly higher for the treatment firms than for matched firms. Columns (3) and (4) of Table 10 Panel C report the regression result with simple matching method. The result is similar to the result using propensity-score matching.

Overall, this finding supports my prediction that firms with tax avoidance news are more sensitive to the reputational costs resulted from the negative media sentiment. It also complements the finding of previous studies by providing the evidence that tax avoidance news and negative media sentiment jointly affect firms' tax avoidance.

CHAPTER 7 CONCLUSION

This study investigates the role of media in corporate tax avoidance. Anecdotal evidence (e.g., Starbucks Co.) shows that firms' tax planning strategies may be influenced by negative media coverage. However, the empirical evidence is scarce in the literature. In this study, I fill the gap in the literature by examining whether media coverage and media sentiment would pressure firms to adjust their tax avoidance strategies.

Many previous studies suggest that the media serves as an external corporate governance role by increasing CEOs' or directors' reputational loss concern or expectation of penalties. Previous studies also find that firms who are sensitive to reputational losses avoid taxes less aggressively than other firms. Accordingly, I argue that for firms who have been aggressively avoiding taxes in the past years, more negative media coverage may impose higher costs on managers, forcing them to reduce tax avoidance. On the other hand, previous studies find that the costs of paying too much taxes are also high, increasing managers' financial accounting incentives to engage in more taxes. I, therefore, predict that firms who have not been avoiding too much taxes will engage in more tax avoidance when the media coverage is greater and media sentiment is more negative.

Using the sample consists of U.S. public-listed firms for the period from 2000 through 2016, I find that for aggressive tax-avoiding firms more negative media sentiment in last year is associated with lower tax avoidance in the current year. However, the result does not apply to non-aggressive tax-avoiding firms. Instead, I find some evidence showing that for firms paying more taxes in the past, more negative sentiment encourages them to avoid

more taxes. Different from the media sentiment, I find no significant relationship between media coverage and tax avoidance.

I conduct several robustness checks. First, I find that the result still holds if I adopt an alternative definition of aggressive avoider and alternative tax avoidance measures. Second, I control for possible omitted variables, including CEO characteristics and earnings decreases. Finally, I implement the instrumental variable method to address endogeneity problem. The results from these robustness analyses are similar to my main finding.

I then implement the mediation analysis to show the mechanism through which negative media sentiment reduce firms' tax aggressiveness. I find that negative media coverage increases reputational costs (proxied by advertisement costs and negative growth in sales) and attention the IRS pays to firms' financial statements, thereby pressuring firms to reduce tax avoidance level.

I also conduct cross-sectional analyses to further verify my result. I find that the result is more pronounced for firms in the industry with high product market competition, for firms with high transient institutional ownership and low dedicated institutional ownership, and for firms with negative firm-initiated press releases. This result suggests that the media sentiment-tax avoidance relationship is more pronounced for firms who are more subject to reputational costs and capital market pressure.

Finally, I focus on a small subsample in which firms with negative tax avoidance news and condition the effect of tax avoidance news on tax avoidance strategies on media sentiment. While prior studies fail to find tax avoidance news deter firms from avoiding taxes, I find that tax avoidance

news reduces a firm's future tax avoidance only when the firm's media sentiment is negative.

Overall, this study contributes to an understanding of the literature on the corporate governance mechanism of the media and provides the first evidence that the media sentiment influences firms to adjust their tax avoidance level. The finding of this study echoes the prior studies that suggest the existence of the optimal tax avoidance level. Finally, this study can also be of interest to investors or stakeholders since tax avoidance issues have drawn much attention of the media and the general public in recent years.

In terms of limitation and future research, while this study suggests that there should be an optimal tax avoidance level and the media pushes firms to move toward it, this study does not empirically identify the optimal tax avoidance level. Instead, I follow previous studies (e.g., Cook et al. 2017; Chyz and Gaertner 2018) using industry average or quintile as the benchmark to which the current tax avoidance level is adjusted. Hence, we should be careful when interpreting the result of this study. In addition, this study measures the average sentiment of all news articles firms receive over the year without considering the possibilities that different contents of news articles may have different effects on firms' tax avoidance. I do separately examine the effect of earnings-related news sentiment and non-earnings-related news sentiment on tax avoidance in this study. As some specific contents of news articles can relate to managers incentives and provide more insights, to further break down the types of news articles and investigate the different effects of news articles on tax avoidance could be potential future research.

APPENDIX A. VARIABLE DEFINITION

Variable		Definition
Measures for Tax Avoidance		
NegCETR	:	The firm's cash effective tax rate, calculated as cash tax paid divided by (pre-tax income - special items) and multiplied by -1. This variable is winsorized to have a range from 0 to 1. *NegCETR* is set as missing when the denominator is negative.
NegETR	:	The firm's worldwide GAAP effective tax rate, calculated as total tax expenses divided by (pre-tax income - special items) and multiplied by -1. This variable is winsorized to have a range from 0 to 1. *NegETR* is set as missing when the denominator is negative.
BT_DD	:	The residual book-tax difference, which is the residual from firm-specific regression: $BTD = \beta_1 TA_{i,t} + \mu_i + \varepsilon_{i,t}$, following Desai and Dharmapala (2006). BTD is Manzon and Plesko (2002) book-tax difference measuring the gap between *Book Income* and *Tax Income*. *Book Income* is U.S. domestic pre-tax book income, scaled by lagged assets. *Tax Income* is calculated as U.S. domestic taxable income minus state income taxes minus other income taxes minus equity in earnings, divided by lagged assets, where U.S. domestic taxable income is estimated as the current federal tax expense divided by the highest statutory corporate income tax rate 35%. TA is the total accruals, calculated as income before extraordinary items minus net cash flows from operating activities, divided by lagged total assets.
DTAX	:	The discretionary permanent book-tax difference, which is the residual from the regression of Frank et al. (2009), estimated annually for each industry. The regression model is as follows: $PERMDIFF_{i,t} = \alpha_0 + \alpha_1 INTANG_{i,t,} + \alpha_2 ESUB_{i,t} + \alpha_3 MII_{i,t} + \alpha_4 TXS_{i,t} + \alpha_5 \Delta NOL + \alpha_6 LAGPERM + \varepsilon_{i,t}$. *PERMDIFF* is permanent book-tax difference, measured as Pretax book income − (Current federal and foreign tax expenses/Statutory tax rate) − (Deferred tax expense/Statutory tax rate). *INTANG* is goodwill and other intangibles. *ESUB* is equity in earnings. *MII* is income attributable to minority interest. *TXS* is current state income tax expenses. *ΔNOL* is change in net operating loss carryforwards. *LAGPERM* is *PERMDIFF* at year *t* – 1. All variables are scaled by lagged total assets.
TAXFACTOR	:	The first common factor extracted from the following tax avoidance measures using factor analysis: *NegCETR*, *NegETR*, *BT_DD*, and *DTAX*.
TAXFACTOR2	:	The second common factor extracted from the following tax avoidance measures using factor analysis: *NegCETR*, *NegETR*, *BT_DD*, and *DTAX*.
SHELTER	:	Tax sheltering score measured based on the determinant model of Wilson (2009): $Shelter = -4.86 + 5.20 * BTD + 4.08 * DAP - 1.41 * LEV + 0.76 * SIZE + 3.51 * ROE + 1.72 * Foreign\ Income + 2.43 * R\&D,$ where *BTD* is the difference between pre-tax book income and taxable income; *DAP* is the discretionary accruals from the performance-adjusted modified cross-sectional Jones

Variable		Definition
		model; *LEV* is long-term debt divided by beginning of year total assets; *SIZE* is the log of total assets; *ROE* is pre-tax return on equity; *Foreign Income* is an indicator variable set equal to 1 for firm observations reporting foreign income and zero otherwise; *R&D* is R&D expense, divided by lagged total assets.
AGGRESSIVE	:	The dummy variable equal to one if the firm's *SHELTER* score is above the median *SHELTER* score in the same industry for the year, and zero otherwise.
AGGRESSIVE_ALT	:	The three alternative definitions of aggressive tax avoider. The first one is the dummy variable equal to one if the firm's *SHELTER* score is above the highest quintile in the same industry for the year, and zero otherwise. The second one is the dummy variable equal to one if the firm's three-year average cash effective tax rate is below the first quintile three-year average cash effective tax rate in the same industry for the year, and zero otherwise. The third one is the dummy variable equal to one if the firm's lagged *DTAX* is above the top quintile *DTAX* in the same industry for the year, and zero otherwise.
Low_AGGRESSIVE	:	The dummy variable equal to one if the firm's *SHELTER* score is below the lowest quintile in the same industry for the year, and zero otherwise.
Measures for Media Sentiment and Coverage		
NEWSCNT	:	The news coverage of a given firm, which is calculated as the natural logarithm of (1+*Number of News Articles*).
NegSENTIMENT	:	The average Composite Sentiment Score (CSS) for the news articles of a given firm over the year. Firm-initiated press releases are excluded from this estimation. CSS is derived from RavenPack News Analytics database. CSS combines five sentiment scores provided by PEQ, BEE, BMQ, BCA, and BAM classifier. The five classifiers give sentiment score based on the specialization in identifying positive and negative words and phrases in articles about global equities, in news stories about earnings evaluations, in short commentary and editorials on global equity markets, in reports on corporate action announcements, and in news stories about mergers, acquisitions and takeovers, respectively. CSS ranges from 0 to 100. CSS=50 represents neutral sentiment; CSS>50 represents positive sentiment; CSS<50 represents negative sentiment. *NegSENTIMENT* = the average of - (CSS-50/50), so that the value ranges from -1 to 1, with value>0 being negative sentiment.
NegSENTIMENT_PR	:	The average CSS for firm-initiated press releases with a relevance score greater than 90, estimated over the year. *NegSENTIMENT_PR* = the average of - (CSS-50/50), so that the value ranges from -1 to 1, with value>0 being negative sentiment.
NegSENTI_EARN	:	The *NegSENTIMENT* calculated using only earnings-related news articles. The earnings-related news are identified based on the category in RavenPack.

Variable		Definition
NegSENTI_NONEARN	:	The *NegSENTIMENT* calculated using non-earnings-related news articles. The earnings-related news are identified based on the category in RavenPack.
Control Variables		
ROA	:	Return on assets, calculated as income before extraordinary items divided by total assets.
EQUIC	:	The firm's equity income, calculated as earnings from subsidiaries divided by total assets.
MVE	:	The natural logarithm of the firm's market value of equity.
NOL	:	Dummy variable equal to one if the firm has a positive net operating loss carryforward, and zero otherwise.
ChgNOL	:	The change in net operating loss carryforward divided by total assets.
LEV	:	The firm's leverage, calculated as long-term debt divided by total assets.
FI	:	The absolute value of pre-tax income from foreign operations divided by total assets.
PPE	:	The gross property, plant, and equipment divided by total assets.
INTANG	:	The intangible assets divided by total assets.
MB	:	The market-to-book ratio, calculated as market value of equity divided by book value of equity.
INSTOWN	:	The fraction of the firm's shares owned by institutional owner, averaged over one year. The fraction is based on Schedule 13F filing by large institutional investors (from Thomson Reuters database).
ANALYST	:	The natural logarithm of one plus the average number of distinct analysts providing EPS estimates for a given firm-year (from I/B/E/S database).
FEMALE_CEO	:	The dummy variable set to one if the firm's CEO is female. The information of CEO is obtained from ExecuComp.
CEO_TENURE	:	The tenure of the firm's CEO, calculated as the logarithm of the number of years the CEO is in the position of the firm.
YOUNG_CEO	:	The dummy variable set to one if the CEO's age is less than 55 year, and zero otherwise.
EARN_DEC	:	The dummy variable set to one if the firm's pretax income for the year is lower than the pretax income for the previous year.
Ind_NegSENTIMENT	:	The average *NegSENTIMENT* of all firms (except the firm itself) in the same industry for the year.
SP500	:	The dummy variable set to one if the firm is included in the S&P 500 Index for the year, and zero otherwise.
ADEXP	:	The advertisement expense, scaled by total assets.
NegGSALES	:	The growth in sales revenue, multiplied by (-1).
IRS_ATTEN	:	The IRS attention used in Bozanic et al. (2017), which is measured as the log of the number of times in year t that an IRS IP address downloaded one company's 10-K filings related to any fiscal year. The measure is downloaded from Dr. Jeffrey Hoopes's website: http://www.jeffreyhoopes.com/data/irsattentiondata.html.

APPENDIX B. STATISTICS FOR CROSS-SECTIONAL ANALYSES

Panel A: Product Market Competition

	High			Low			Wilcoxon Test
	Mean	Median	S.D.	Mean	Median	S.D.	(p-value)
TAXFACTOR	0.0019	-0.0339	1.04	-0.0055	-0.0543	0.94	(0.2607)
NegSENTIMENT $_{t-1}$	-0.0048	-0.0067	0.04	-0.0047	-0.0076	0.04	(0.3075)
NegSENTIMENT_PR $_{t-1}$	-0.0349	-0.0343	0.02	-0.0335	-0.0330	0.02	(0.0002)***
NEWSCNT $_{t-1}$	3.7446	3.8286	1.43	3.7188	3.7842	1.43	(0.1804)
AGGRESSIVE $_{t-1}$	0.5842	1.0000	0.49	0.5600	1.0000	0.50	(0.0039)***
ROA	0.0715	0.0641	0.06	0.0692	0.0629	0.06	(0.1147)
EQUIC	0.0008	0.0000	0.00	0.0010	0.0000	0.00	(<0.001)***
MVE $_{t-1}$	6.6341	6.6590	1.87	6.6880	6.6894	1.86	(0.2206)
NOL	0.5019	1.0000	0.50	0.4165	0.0000	0.49	(<0.001)***
ChgNOL	0.0929	0.0002	0.28	0.0637	0.0000	0.21	(<0.001)***
LEV	0.1496	0.1044	0.16	0.1948	0.1731	0.17	(<0.001)***
PPE	0.3572	0.2717	0.29	0.5861	0.5229	0.38	(<0.001)***
INTANG	0.2231	0.1776	0.20	0.1709	0.0927	0.19	(<0.001)***
MB $_{t-1}$	3.4311	2.5758	3.07	2.9995	2.2045	2.81	(<0.001)***
FI	0.0236	0.0070	0.04	0.0157	0.0000	0.03	(<0.001)***
ANALYST	2.0261	2.1972	0.98	2.0582	2.1972	1.00	(0.0089)***
INSTOWN	0.6337	0.7285	0.29	0.6280	0.7224	0.29	(0.1743)
N	7468			6422			

Panel B: Institutional Investor Type

	High Transient & Low Dedicated			Low Transient & High Dedicated			Wilcoxon Test
	Mean	Median	S.D.	Mean	Median	S.D.	(p-value)
TAXFACTOR	0.0166	-0.0187	1.05	-0.0568	-0.0695	0.85	(0.0015)***
NegSENTIMENT $_{t-1}$	-0.0054	-0.0069	0.04	-0.0033	-0.0061	0.04	(0.1487)
NegSENTIMENT_PR $_{t-1}$	-0.0345	-0.0340	0.02	-0.0342	-0.0335	0.02	(0.3805)
NEWSCNT $_{t-1}$	3.7006	3.8501	1.26	3.7655	3.7842	1.49	(0.5051)
AGGRESSIVE $_{t-1}$	0.5747	1.0000	0.49	0.6887	1.0000	0.46	(<0.001)***
ROA	0.0718	0.0653	0.06	0.0699	0.0645	0.06	(0.6746)
EQUIC	0.0007	0.0000	0.00	0.0015	0.0000	0.01	(<0.001)***
MVE $_{t-1}$	6.6384	6.6265	1.23	7.4539	7.3435	2.12	(<0.001)***
NOL	0.4747	0.0000	0.50	0.4251	0.0000	0.49	(0.0002)***
ChgNOL	0.0776	0.0000	0.24	0.0563	0.0000	0.21	(<0.001)***
LEV	0.1653	0.1255	0.17	0.1875	0.1705	0.16	(<0.001)***
PPE	0.4359	0.3346	0.35	0.4876	0.4004	0.34	(<0.001)***
INTANG	0.2114	0.1536	0.20	0.2158	0.1606	0.19	(0.0185)**
MB $_{t-1}$	3.2313	2.4611	2.86	3.4219	2.5513	3.09	(0.0462)**
FI	0.0179	0.0005	0.03	0.0252	0.0069	0.04	(<0.001)***
ANALYST	2.2593	2.3026	0.70	2.2255	2.3979	0.99	(0.0111)**
INSTOWN	0.7221	0.8035	0.26	0.6701	0.7213	0.22	(<0.001)***
N	3299			2409			

Panel C: Press Release sentiment

	Positive			Negative & Neutral			Wilcoxon Test
	Mean	Median	S.D.	Mean	Median	S.D.	(p-value)
TAXFACTOR	-0.0012	-0.0423	1.00	-0.0081	-0.0647	1.03	(0.3273)
NegSENTIMENT $_{t-1}$	-0.0060	-0.0080	0.04	0.0170	0.0100	0.05	(<0.001)***
NegSENTIMENT _PR$_{t-1}$	-0.0369	-0.0350	0.02	0.0128	0.0075	0.01	(<0.001)***
NEWSCNT $_{t-1}$	3.7542	3.8286	1.43	3.3560	3.2189	1.37	(<0.001)***
AGGRESSIVE $_{t-1}$	0.5767	1.0000	0.49	0.5087	1.0000	0.50	(0.0003)***
ROA	0.0708	0.0636	0.06	0.0626	0.0596	0.06	(0.0002)***
EQUIC	0.0009	0.0000	0.00	0.0010	0.0000	0.00	(0.2418)
MVE $_{t-1}$	6.6775	6.6851	1.85	6.3351	6.4690	2.02	(0.0001)***
NOL	0.4662	0.0000	0.50	0.3965	0.0000	0.49	(0.0002)***
ChgNOL	0.0794	0.0000	0.25	0.0790	0.0000	0.27	(0.0007)***
LEV	0.1694	0.1388	0.17	0.1891	0.1569	0.18	(0.0214)**
PPE	0.4566	0.3613	0.35	0.5755	0.4819	0.40	(<0.001)***
INTANG	0.2022	0.1423	0.20	0.1425	0.0710	0.17	(<0.001)***
MB $_{t-1}$	3.2421	2.4171	2.93	3.0470	2.1310	3.43	(<0.001)***
FI	0.0202	0.0015	0.03	0.0149	0.0000	0.03	(<0.001)***
ANALYST	2.0538	2.1972	0.98	1.8156	1.9459	1.09	(<0.001)***
INSTOWN	0.6344	0.7288	0.29	0.5731	0.6813	0.31	(<0.001)***
N	13141			749			

*, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

APPENDIX C. IDENTIFYING TAX AVOIDANCE NEWS

To identify media coverage of a given firm's tax avoidance issues, I follow Hanlon and Slemrod (2009) and Lee (2015) and conduct a full-text search in Factiva using the following keywords for S&P 1500 firms from 2000 to 2014 and from the sources of Dow Jones Newswires, Major News and Business Sources, Business Wires, Business Wire Regulatory Disclosure, PR Newswire and Reuters Newswires:

> "tax shelter" OR "tax shelters" OR "tax sheltering" OR "tax avoidance" OR "tax evasion" OR "tax loophole(s)" OR "tax haven(s)" OR "tax transparency" OR "aggressive tax planning".

The search results are then manually matched with RavenPack using the firm name and the headline to acquire news attributes. For the matched tax avoidance news with relevance score higher than 75 and with full-text body, I further read through all articles and delete articles that are not about the corporate tax avoidance strategies of the firm. Table C1 describes the process of sample selection. I finally have 470 firm-article observations of 339 distinct news articles.

Figure C1 shows the number of firm-article observations for tax avoidance news by year. In 2002, there was a huge burst of tax avoidance news. The U.S. Congress brought up a discussion and debate by issuing a House Bill, the "American Competitiveness and Corporate Accountability Act of 2002," of which the purpose is mainly to prevent U.S. firms from reincorporation to tax havens and to create an economic substance test to crack down tax shelter practices. During that time, many firms caught the media's eye. For example, the votes made by shareholders of Stanley Black & Decker Inc. and Nabors Industries Ltd. on whether their companies should reincorporate in Bermuda drew numerous media attention on the overseas tax avoidance issue. Since 2012, there have been a lot of discussion on multinational companies such as Google Inc., Apple Inc., and Starbucks Co., who have been shifting income to low-tax countries in Europe. Panel A of Figure C2 further breaks down the tax avoidance news into articles specially mentioning tax shelters and articles discussing general tax avoidance issues.

The latter has been increasing over the past decade, suggesting that the media use “shelter” to describe firms’ tax avoidance less frequently in later periods. In Panel B of Figure C2, I categorize news articles by topic. It appears that tax avoidance news is centered on the issue about offshore subsidiaries and tax havens, which roughly accounts for 38% of the sample.

Table C2 documents the observations of tax avoidance news among each two-digit SIC industry. More than 40% of the observations are within the top three industries, Electronic & Other Electric Equipment, Industrial Machinery & Equipment, and Business Services, which are all high-tech industries. Table C3 lists top 20 companies that have the greatest number of tax avoidance news. Most of those companies are either big or renowned companies in the U.S. This reflects the fact that more public attention is paid to tax avoidance of large multinational companies.

Figure C1: Number of Tax Avoidance News by Year

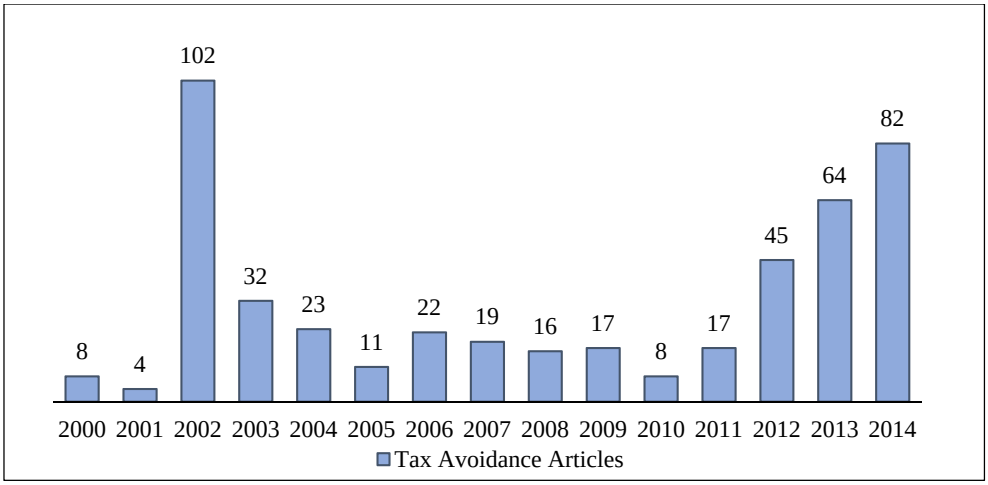
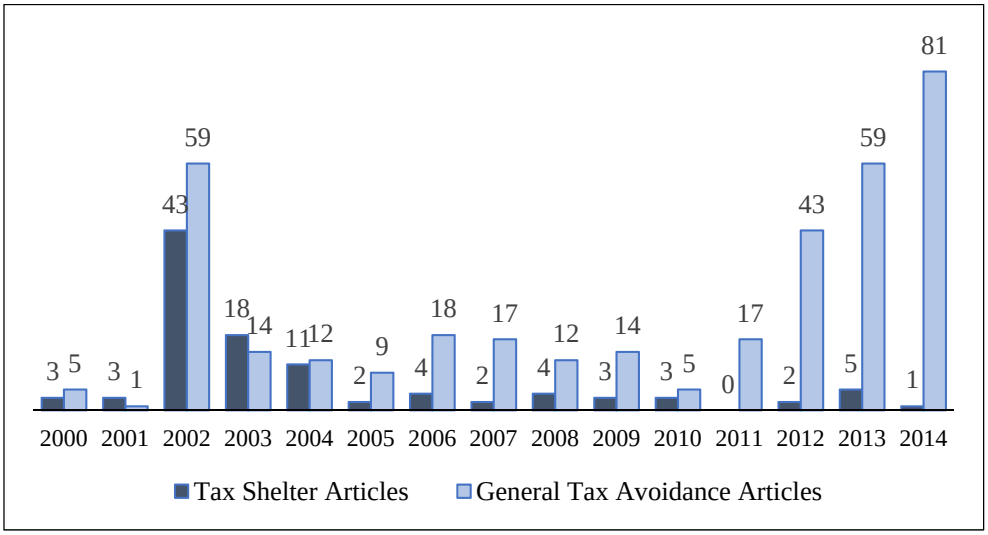


Figure C2: Number of Tax Avoidance News by Topic

Panel A: Number of observations per year



Panel B: Number of observation by topic

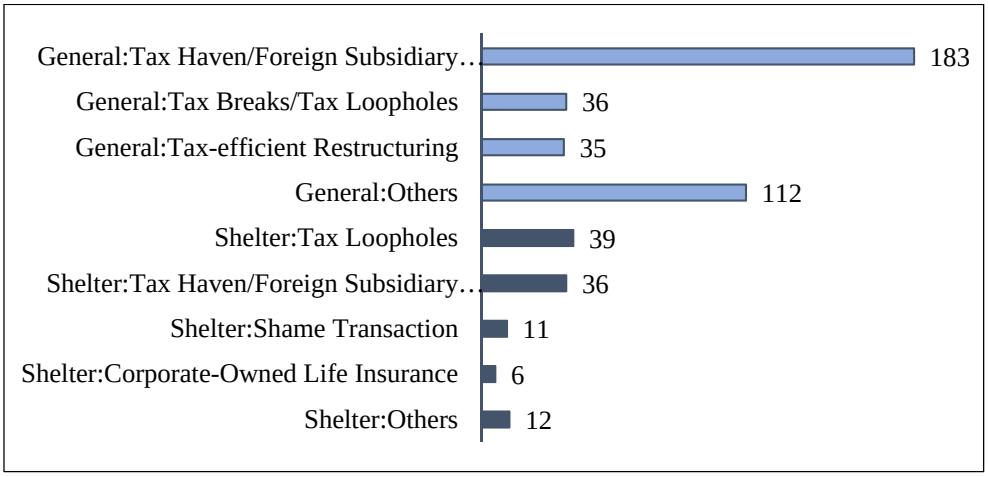


Table C1 Sample Selection of Tax Avoidance News Articles

	Observation (firm-articles)
Tax-avoidance-related firm-articles searched from Factiva, matched with RavenPack (excluding Finance and Utility industries)	952
Less: firm-articles not about corporate tax avoidance of the firm (manually checked)	447
Less: Observations with missing data	35
Remaining observations for final sample (with 339 unique news articles)	470

Table C2 Number of Tax Avoidance News by Industry

Rank	2-digit SIC	Industry Name	N of Obs.	Percentage
1	36	Electronic & Other Electric Equipment	90	19.15%
2	35	Industrial Machinery & Equipment	59	12.55%
3	73	Business Services	57	12.13%
4	13	Oil & Gas Extraction	42	8.94%
5	28	Chemical & Allied Products	37	7.87%
6	58	Eating & Drinking Places	34	7.23%
7	37	Transportation Equipment	30	6.38%
8	99	Non-Classifiable Establishments	18	3.83%
9	29	Petroleum & Coal Products	14	2.98%
10	38	Instruments & Related Products	14	2.98%
11	21	Tobacco Products	11	2.34%
12	53	General Merchandise Stores	11	2.34%
13	26	Paper & Allied Products	9	1.91%
14	48	Communications	9	1.91%
15	87	Engineering & Management Services	7	1.49%
16	20	Food & Kindred Products	6	1.28%
17	16	Heavy Construction, Except Building	4	0.85%
18	45	Transportation by Air	4	0.85%
19	1	Agricultural Production - Crops	2	0.43%
20	10	Metal, Mining	2	0.43%
21	23	Apparel & Other Textile Products	1	0.21%
22	27	Printing & Publishing	1	0.21%
23	30	Rubber & Miscellaneous Plastics Products	1	0.21%
24	33	Primary Metal Industries	1	0.21%
25	42	Trucking & Warehousing	1	0.21%
26	50	Wholesale Trade - Durable Goods	1	0.21%
27	51	Wholesale Trade - Nondurable Goods	1	0.21%
28	52	Building Materials & Gardening Supplies	1	0.21%
29	54	Food Stores	1	0.21%
30	59	Miscellaneous Retail	1	0.21%

Table C3 Top20 Firms with Tax Avoidance News

Rank	Company Name	N of Articles	Percentage
1	APPLE INC	47	10.00%
2	STANLEY BLACK & DECKER INC	30	6.38%
3	MICROSOFT CORP	26	5.53%
4	STARBUCKS CORP	25	5.32%
5	ALPHABET INC (GOOGLE)	20	4.26%
6	TYCO INTERNATIONAL PLC	19	4.04%
7	GENERAL ELECTRIC CO	18	3.83%
8	BOEING CO	16	3.40%
9	PFIZER INC	16	3.40%
10	CATERPILLAR INC	13	2.77%
11	COOPER INDUSTRIES PLC	12	2.55%
12	NABORS INDUSTRIES LTD	12	2.55%
13	ALTRIA GROUP INC	11	2.34%
14	WAL-MART STORES INC	11	2.34%
15	GENERAL MOTORS CO	8	1.70%
16	HALLIBURTON CO	8	1.70%
17	KIMBERLY-CLARK CORP	8	1.70%
18	ACCENTURE PLC	7	1.49%
19	CHEVRON CORP	7	1.49%
20	EXXON MOBIL CORP	7	1.49%
Others		149	31.70%
Total		470	100.00%

REFERENCES

Andreou, P. C., C. Louca, and A. P. Petrou. 2017. CEO age and stock price crash risk. *Review of Finance* 21 (3): 1287–1325.

Armstrong, C. S., J. L. Blouin, A. D. Jagolinzer, and D. F. Larcker. 2015. Corporate governance, incentives, and tax avoidance. *Journal of Accounting and Economics* 60 (1): 1–17.

Austin, C. R., and R. J. Wilson. 2017. An Examination of Reputational Costs and Tax Avoidance: Evidence from Firms with Valuable Consumer Brands. *The Journal of the American Taxation Association* 39 (1): 67–93.

Baloria, V. P., and J. Heese. 2017. The Effects of Media Slant on Firm Behavior The Effects of Media Slant on Firm Behavior. *Working Paper, Havard Business School*.

Bednar, M. K. 2012. Watchdog or lapdog? A behavioral view of the media as a corporate governance mechanism. *Academy of Management Journal* 55 (1): 131–150.

Bernhardt, D., S. Krasa, and M. Polborn. 2008. Political polarization and the electoral effects of media bias. *Journal of Public Economics* 92 (5–6): 1092–1104.

Bird, A., A. Edwards, and T. G. Ruchti. 2017. Taxes and Peer Effects. *The Accounting Review, Forth Coming*.

Bozanic, Z., J. L. Hoopes, J. R. Thornock, and B. M. Williams. 2017. IRS Attention. *Journal of Accounting Research* 55 (1): 79–114.

Bushee, B. J. 2001. Do Institutional Investors Prefer Near-Term Earnings over Long-Run Value? *Contemporary Accounting Research* 18 (2): 207–246.

Bushee, B. J., J. E. Core, W. Guay, and S. J. W. Hamm. 2010. The role of the business press as an information intermediary. *Journal of Accounting Research* 48 (1): 1–19.

Bushman, R. M., C. D. Williams, and R. Wittenberg-Moerman. 2017. The Informational Role of the Media in Private Lending. *Journal of Accounting Research* 55 (1): 115–152.

Cao, S., and C. Wan. 2014. Stock Liquidity and Tax Avoidance: Evidence from Natural Experiments. *Working Paper*.

Chen, S., X. Chen, Q. Cheng, and T. Shevlin. 2010. Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics* 95 (1): 41–61.

Chen, S., K. Powers, and B. Stomberg. 2015. Examining the role of the media in influencing corporate tax avoidance and disclosure. *Working Paper*.

Chen, Y., C. S. A. Cheng, S. Li, and J. Zhao. 2018. The Monitoring Role of Media: Evidence from Earnings Management. *Working Paper*.

Cheng, C. S. A., H. H. Huang, Y. Li, and J. Stanfield. 2012. The effect of hedge fund activism on corporate tax avoidance. *The Accounting Review* 87 (5): 1493–1526.

Chyz, J. A. 2013. Personally tax aggressive executives and corporate tax sheltering. *Journal of Accounting and Economics* 56 (2–3): 311–328.

Chyz, J. A., and F. B. Gaertner. 2018. Can paying "too much" or "too little" tax contribute to forced CEO turnover? *Accounting Review* 93 (1): 103–130.

Chyz, J., F. B. Gaertner, A. Kausar, and L. Watson. 2018. Overconfidence and Aggressive Corporate Tax Policy. *Working Paper*.

Cook, K. A., W. J. Moser, and T. C. Omer. 2017. Tax avoidance and *ex ante* cost of capital. *Journal of Business Finance & Accounting* 44 (7–8): 1109–1136.

Core, J. E., W. Guay, and D. F. Larcker. 2008. The power of the pen and executive compensation. *Journal of Financial Economics* 88 (1): 1–25.

Cusumano, M. A., S. j Kahl, and F. F. Suarez. 2008. Services, industry evolution, and the copetitive strategies of product firms. *Academy of Management Journal* 51 (2): 315–334.

Dai, L., J. T. Parwada, and B. Zhang. 2015. The governance effect of the media's news dissemination role: Evidence from insider trading. *Journal of Accounting Research* 53 (2): 331–366.

Dang, T. L., F. Moshirian, and B. Zhang. 2015. Commonality in news around the world. *Journal of Financial Economics* 116 (1): 82–110.

Desai, M. A., and D. Dharmapala. 2006. Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics* 79 (1): 145–179.

———. 2009. Corporate Tax Avoidance and Firm Value. *Review of Economics and Statistics* 91 (3): 537–546.

Dhaliwal, D. S., C. a Gleason, and L. F. Mills. 2004. Last-Chance Earnings Management: Using the Tax Expense to Meet Analysts' Forecasts. *Contemporary Accounting Research* 21 (2): 431–460.

Dhaliwal, D. S., T. H. Goodman, P. J. Hoffman, and C. M. Schwab. 2016. The Incidence, Valuation, and Management of Tax-related Reputational Costs: Evidence from Negative Media Attention during Periods Characterized by High Scrutiny of Corporate Tax Avoidance. *Working Paper*.

DiStaso, M. W. 2012. The Annual Earnings Press Release's Dual Role: An Examination of Relationships with Local and National Media Coverage and Reputation. *Journal of Public Relations Research* 24 (2): 123–143.

Drake, M. S., N. M. Guest, and B. J. Twedt. 2014. The media and mispricing: The role of the business press in the pricing of accounting information. *The Accounting Review* 89 (5): 1673–1701.

Duan, T., R. Ding, W. Hou, and J. Z. Zhang. 2018. The burden of attention:

The impact of CEO publicity on tax avoidance. *Journal of Business Research* 87: 90–101.

Dyck, A., N. Volchkova, and L. Zingales. 2008. The Corporate Governance Role of the Media: Evidence from Russia. *The Journal of Finance* 63 (3): 1093–1135.

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

———. 2010. The effects of executives on corporate tax avoidance. *The Accounting Review* 85 (4): 1163–1189.

Dyreng, S. D., J. L. Hoopes, and J. H. Wilde. 2016. Public Pressure and Corporate Tax Behavior. *Journal of Accounting Research* 54 (1): 147–186.

Dyreng, S. D., and B. P. Lindsey. 2009. Using financial accounting data to examine the effect of foreign operations located in tax havens and other countries on U.S. multinational firms' Tax rates. *Journal of Accounting Research* 47 (5): 1283–1316.

Engelberg, J. E., and C. A. Parsons. 2011. The Causal Impact of Media in Financial Markets. *Journal of Finance* 66 (1): 67–97.

Fang, L., and J. Peress. 2009. Media Coverage and the Cross-Section of Stock Returns. *The Journal of Finance* 64 (5): 2023–2052.

Farrell, K. A., and D. A. Whidbee. 2002. Monitoring by the financial press and forced CEO turnover. *Journal of Banking and Finance* 26 (12): 2249–2276.

Francis, B. B., I. Hasan, Q. Wu, and M. Yan. 2014. Are Female CFOs Less Tax Aggressive? Evidence from Tax Aggressiveness. *The Journal of the American Taxation Association* 36 (2): 171–202.

Frank, M. M., L. J. Lynch, and S. O. Rego. 2009. Tax Reporting Aggressiveness to Aggressive and Its Relation Financial Reporting. *The Accounting Review* 84 (2): 467–496.

Gallemore, J., E. L. Maydew, and J. R. Thornock. 2014. The Reputational Costs of Tax Avoidance. *Contemporary Accounting Research* 31 (4): 1103–1133.

Gillan, S. L. 2006. Recent Developments in Corporate Governance: An Overview. *Journal of Corporate Finance* 12 (3): 381–402.

Goldman, N. C., K. Powers, and B. M. Williams. 2017. How does CEO tenure affect corporate income tax and financial reporting decisions? *Working Paper*.

Graham, J. R., M. Hanlon, T. Shevlin, and N. Shroff. 2014. Incentives for Tax Planning and Avoidance: Evidence from the field. *The Accounting Review* 89 (3): 991–1023.

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

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

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

Hardeck, I., and R. Hertl. 2014. Consumer Reactions to Corporate Tax Strategies: Effects on Corporate Reputation and Purchasing Behavior. *Journal of Business Ethics* 123 (2): 309–326.

He, J. (Jack), and X. Tian. 2013. The dark side of analyst coverage: The case of innovation. *Journal of Financial Economics* 109 (3): 856–878.

Hoi, C. K., Q. Wu, and H. Zhang. 2013. Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities. *The Accounting Review* 88 (6): 2025–2059.

Hörner, J. 2002. Reputation and competition. *American Economic Review* 92 (3): 644–663.

Huang, J., and D. J. Kisgen. 2013. Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics* 108 (3): 822–839.

Huseynov, F., S. Sardarli, and W. Zhang. 2017. Does Index Addition Affect Corporate Tax Avoidance? *Journal of Corporate Finance* 43: 241–259.

Joe, J. R., H. Louis, and D. Robinson. 2009. Managers and investors responses to media exposure of board ineffectiveness. *Journal of Financial and Quantitative Analysis* 44 (3): 579–605.

Khan, M., S. Srinivasan, and L. Tan. 2017. Institutional Ownership and Corporate Tax Avoidance: New Evidence. *The Accounting Review* 92 (2): 101–122.

Khurana, I. K., and W. J. Moser. 2013. Institutional Shareholders' Investment Horizons and Corporate Tax Avoidance. *The Journal of the American Taxation Association* 35 (1): 111–134.

Kim, J. B., Y. Li, and L. Zhang. 2011. Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics* 100 (3): 639–662.

Kim, J., S. Mcguire, S. Savoy, and R. Wilson. 2015. How Quickly Do Firms Adjust to Target Levels of Tax Avoidance? *Working Paper*.

Krefting, L. A. 2002. Re-presenting women executives: valorization and devalorization in US business press. *Women in Management Review* 17 (3/4): 104–119.

Kubick, T. R., D. P. Lynch, M. A. Mayberry, and T. C. Omer. 2016. The Effects of Regulatory Scrutiny on Tax Avoidance: An Examination of SEC Comment Letters. *The Accounting Review* 91 (6): 1751–1780.

Lai, S., L. Ng, and B. Zhang. 2014. Does PIN affect equity prices around the world? *Journal of Financial Economics* 114 (1): 178–195.

Lee, P. M., and E. H. James. 2007. She'-e-os: gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal* 28 (3): 227–241.

Lee, S. 2015. News Media Coverage of Corporate Tax Avoidance and Corporate Tax Reporting. *WU International Taxation Research Paper Series, WU Vienna University of Economics and Business* 2015–16.

Lennox, C., P. Lisowsky, and J. Pittman. 2013. Tax Aggressiveness and Accounting Fraud. *Journal of Accounting Research* 51 (4): 739–778.

Liu, B., and J. J. McConnell. 2013. The role of the media in corporate governance: Do the media influence managers' capital allocation decisions? *Journal of Financial Economics* 110 (1): 1–17.

Manzon, G. B., and G. A. Plesko. 2002. The Relation Between Financial and Tax Reporting Measures of Income. *Tax Law Review* 55 (2).

Matsunaga, S. R., and C. W. Park. 2001. The Effect of Missing a Quarterly Earnings Benchmark on the CEO's Annual Bonus. *Accounting Review* 76 (3): 313–332.

Miller, G. S. 2006. The press as a watchdog for accounting fraud. *Journal of Accounting Research* 44 (5): 1001–1033.

Mills, L., M. M. Erickson, and E. L. Maydew. 1998. Investments in tax planning. *Journal of the American Taxation Association* 20 (1): 1–20.

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

Ng, J., F. P. Vasvari, and R. Wittenberg-Moerman. 2016. Media Coverage and the Stock Market Valuation of TARP Participating Banks. *European Accounting Review* 25 (2): 347–371.

Nofsinger, J. R. 2001. The impact of public information on investors. *Journal of Banking & Finance* 25 (7): 1339–1366.

Osma, B. G., and S. Young. 2009. R&D expenditure and earnings targets. *European Accounting Review* 18 (1): 7–32.

Pegg, D. 2017. Tax avoidance by big firms is morally wrong, say nine out of 10 in UK. *The Guardian*. https://www.theguardian.com/business/2017/nov/27/tax-avoidance-by-big-firms-is-morally-wrong-say-nine-out-of-10-in-uk.

Rego, S. O. 2003. Tax-Avoidance Activities of U . S . Multinational Corporations. *Contemporary Accounting Research* 20 (4).

Rego, S. O., and R. Wilson. 2012. Equity Risk Incentives and Corporate Tax Aggressiveness. *Journal of Accounting Research* 50 (3): 775–810.

Richardson, G., G. Taylor, and R. Lanis. 2016. Women on the board of directors and corporate tax aggressiveness in Australia. *Accounting Research Journal* 29 (3): 313–331.

Rupley, K. H., D. Brown, and R. S. Marshall. 2012. Governance, media and

the quality of environmental disclosure. *Journal of Accounting and Public Policy* 31 (6): 610–640.

Scholes, M. S., G. P. Wilson, and M. A. Wolfson. 1990. Tax Planning, Regulatory Capital Planning, and Financial Reporting Strategy for Commercial Banks. *The Review of Financial Studies* 3 (4): 625–650.

Shipman, J. E., Q. T. Swanquist, and R. L. Whited. 2016. Propensity Score Matching in Accounting Research. *Accounting Review* 92 (1): forthcoming.

Watson, L. 2015. Corporate Social Responsibility, Tax Avoidance, and Earnings Performance. *The Journal of the American Taxation Association* 37 (2): 1–21.

Wilson, R. J. 2009. An examination of corporate tax shelter participants. *Accounting Review* 84 (3): 969–999.

Yau, J., M. G. Ferri, and T. F. Sugrue. 1994. An Analysis of the Wall Street Journal's Coverage of Corporate News and the Research Design of Event Studies. *Journal of Financial Research* 17 (2): 161–173.

Table 1 Descriptive Statistics of Tax Avoidance Measures

Panel A: Summary Statistics

Variable	Mean	S.D.	P25	P50	P75
NegCETR	-0.2564	0.1919	-0.3424	-0.2448	-0.1216
NegETR	-0.2984	0.1569	-0.3731	-0.3251	-0.2333
BT_DD	0.0844	0.0838	0.0475	0.0778	0.1146
DTAX	0.0216	0.1189	-0.0235	0.0191	0.0683
TAXFACTOR	-0.0015	0.9975	-0.4533	-0.0436	0.4192
TAXFACTOR2	0.0098	0.9998	-0.4718	-0.0516	0.4811
N=13,890					

Panel B: Correlation

	Variable	1	2	3	4	5	6
1	*NegCETR*		0.33***	0.34***	0.26***	0.49***	0.76***
2	*NegETR*	0.30***		-0.06***	-0.04***	-0.15***	0.79***
3	*BT_DD*	0.28***	-0.00		0.35***	0.77***	0.15***
4	*DTAX*	0.18***	-0.12***	0.37***		0.76***	0.01
5	*TAXFACTOR*	0.43***	-0.19***	0.79***	0.81***		0.13***
6	*TAXFACTOR2*	0.72***	0.87***	0.13***	-0.13***	-0.00	

This table presents the statistics of the four tax avoidance measures and the two common factors. Panel A reports the summary statistics. Panel B reports Pearson (lower diagonal) and Spearman (upper diagonal) correlation coefficients. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 2 Summary Statistics

Variable	Mean	S.D.	P25	P50	P75
TAXFACTOR	-0.0015	0.9975	-0.4533	-0.0436	0.4192
NEWSCNT $_{t-1}$	3.7327	1.4295	2.7081	3.8067	4.7707
NegSENTIMENT $_{t-1}$	-0.0048	0.0391	-0.0275	-0.0072	0.0134
NegSENTIMENT_PR $_{t-1}$	-0.0342	0.0216	-0.0455	-0.0337	-0.0221
ROA	0.0704	0.0615	0.0354	0.0635	0.0989
EQUIC	0.0009	0.0040	0.0000	0.0000	0.0000
MVE $_{t-1}$	6.6590	1.8632	5.4675	6.6743	7.8346
NOL	0.4624	0.4986	0.0000	0.0000	1.0000
ChgNOL	0.0794	0.2534	0.0000	0.0000	0.0436
LEV	0.1705	0.1692	0.0034	0.1396	0.2772
PPE	0.4630	0.3520	0.1847	0.3682	0.6586
INTANG	0.1989	0.1979	0.0289	0.1377	0.3246
MB $_{t-1}$	3.2316	2.9601	1.5667	2.3895	3.7810
FI	0.0199	0.0340	0.0000	0.0013	0.0264
ANALYST	2.0409	0.9898	1.3863	2.1972	2.7726
INSTOWN	0.6311	0.2899	0.4477	0.7258	0.8623
N=13,890					

This table reports the summary statistics of the variables in the baseline regression model. The sample period is from 2000 through 2016. All variables are defined in Appendix A.

Table 3 Correlation

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	*TAXFACTOR*		-0.03***	-0.07***	-0.02**	-0.02**	0.15***	-0.06***	-0.01	0.04***	0.08***	-0.02**	0.12***	-0.04***	0.08***	-0.11***	0.04***	-0.00
2	*AGGRESSIVE* $_{t-1}$	-0.04***		0.30***	-0.03***	0.06***	0.07***	0.17***	0.64***	0.16***	0.11***	0.14***	-0.02**	0.18***	0.16***	0.49***	0.52***	0.32***
3	*NEWSCNT* $_{t-1}$	-0.06***	0.31***		0.03***	0.09***	0.06***	0.10***	0.52***	0.21***	0.16***	0.08***	-0.04***	0.15***	0.15***	0.28***	0.49***	0.26***
4	*NegSENTIMENT* $_{t-1}$	-0.02**	-0.03***	-0.00		0.24***	-0.12***	-0.02**	-0.06***	-0.00	0.02*	-0.02**	0.02**	-0.05***	-0.06***	-0.01	-0.03***	-0.00
5	*NegSENTIMENT_PR* $_{t-1}$	-0.02**	0.06***	0.07***	0.24***		-0.14***	0.05***	0.08***	0.07***	0.07***	0.11***	0.04***	0.03***	-0.11***	0.03***	0.07***	0.06***
6	*ROA*	0.21***	0.04***	0.04***	-0.12***	-0.12***		0.01	0.17***	-0.13***	-0.16***	-0.30***	0.03***	-0.18***	0.46***	0.08***	0.11***	0.03***
7	*EQUIC*	-0.07***	0.12***	0.08***	-0.00	0.05***	0.04***		0.20***	0.03***	0.01*	0.15***	0.12***	0.05***	-0.00	0.10***	0.11***	0.05***
8	*MVE* $_{t-1}$	-0.02**	0.62***	0.53***	-0.08***	0.08***	0.13***	0.15***		0.12***	0.03***	0.22***	0.04***	0.23***	0.44***	0.37***	0.83***	0.47***
9	*NOL*	0.03***	0.16***	0.20***	-0.00	0.06***	-0.12***	0.00	0.11***		0.93***	0.10***	-0.10***	0.17***	-0.02**	0.24***	0.10***	0.10***
10	*ChgNOL*	0.09***	-0.06***	-0.01	0.04***	0.03***	-0.06***	-0.03***	-0.17***	0.34***		0.07***	-0.11***	0.14***	-0.03***	0.21***	0.04***	0.04***
11	*LEV*	-0.03***	0.10***	0.08***	0.00	0.10***	-0.30***	0.06***	0.17***	0.09***	-0.04***		0.19***	0.30***	-0.03***	0.01	0.15***	0.08***
12	*PPE*	0.13***	-0.03***	-0.04***	0.03***	0.05***	0.00	0.09***	0.02***	-0.09***	-0.05***	0.17***		-0.40***	-0.07***	-0.13***	-0.02**	-0.06***
13	*INTANG*	-0.05***	0.14***	0.13***	-0.05***	0.03***	-0.21***	-0.04***	0.19***	0.15***	-0.01	0.29***	-0.41***		0.01	0.16***	0.18***	0.20***
14	*MB* $_{t-1}$	0.06***	0.09***	0.12***	-0.05***	-0.05***	0.35***	0.01*	0.30***	-0.01	0.04***	0.06***	-0.06***	-0.05***		0.13***	0.38***	0.13***
15	*FI*	-0.07***	0.35***	0.22***	-0.04***	0.00	0.18***	0.06***	0.32***	0.14***	0.02**	-0.06***	-0.08***	-0.02**	0.14***		0.25***	0.21***
16	*ANALYST*	0.01	0.51***	0.48***	-0.04***	0.08***	0.07***	0.06***	0.82***	0.11***	-0.12***	0.13***	-0.02***	0.18***	0.25***	0.21***		0.48***
17	*INSTOWN*	-0.02**	0.33***	0.27***	-0.02***	0.06***	-0.00	0.01	0.49***	0.10***	-0.10***	0.06***	-0.04***	0.17***	0.05***	0.14***	0.53***	

This table reports the Pearson (lower diagonal) and Spearman (upper diagonal) correlation coefficients for the variables in the baseline regression model. All variables are defined in Appendix A. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 4 The Effect of Media on Tax Avoidance

	(1)	(2)	(3)	(4)	(5)
NegSENTIMENT $_{t-1}$	**0.2847**	**0.7403***			**0.7348***
	(1.30)	**(1.72)**			**(1.68)**
NegSENTIMENT $_{t-1}$					
****AGGRESSIVE*** $_{t-1}$		**-0.8897***			**-0.8885***
		(-1.84)			**(-1.83)**
NEWSCNT $_{t-1}$			**0.0050**	**0.0060**	**0.0040**
			(0.27)	**(0.35)**	**(0.23)**
NEWSCNT $_{t-1}$					
****AGGRESSIVE*** $_{t-1}$				**-0.0019**	**-0.0017**
				(-0.20)	**(-0.19)**
AGGRESSIVE $_{t-1}$		0.0325		0.0426	0.0385
		(1.58)		(0.99)	(0.92)
ROA	4.4304***	4.4364***	4.4121***	4.4217***	4.4381***
	(7.59)	(7.59)	(7.61)	(7.59)	(7.63)
EQUIC	-21.2489***	-21.3424***	-21.2743***	-21.3606***	-21.3535***
	(-6.86)	(-6.88)	(-6.91)	(-6.96)	(-6.93)
MVE $_{t-1}$	-0.0239	-0.0296*	-0.0260	-0.0309	-0.0303
	(-1.21)	(-1.67)	(-1.12)	(-1.43)	(-1.39)
NOL	0.1095***	0.1063***	0.1093***	0.1065***	0.1062***
	(6.56)	(6.37)	(6.58)	(6.40)	(6.36)
ChgNOL	0.3279***	0.3270***	0.3282***	0.3258***	0.3269***
	(5.22)	(5.20)	(5.17)	(5.14)	(5.15)
LEV	0.1150*	0.1088	0.1140*	0.1081	0.1088
	(1.73)	(1.62)	(1.71)	(1.61)	(1.62)
PPE	0.4092***	0.4092***	0.4101***	0.4093***	0.4097***
	(7.38)	(7.35)	(7.66)	(7.66)	(7.57)
INTANG	0.2021***	0.2039***	0.1995***	0.2028***	0.2042***
	(3.48)	(3.54)	(3.57)	(3.62)	(3.59)
MB $_{t-1}$	-0.0055	-0.0049	-0.0054	-0.0049	-0.0049
	(-0.77)	(-0.67)	(-0.77)	(-0.68)	(-0.69)
FI	-3.6356***	-3.7250***	-3.6345***	-3.7082***	-3.7255***
	(-9.76)	(-9.36)	(-9.87)	(-9.59)	(-9.58)
ANALYST	0.0526	0.0533	0.0522	0.0521	0.0525
	(1.51)	(1.53)	(1.62)	(1.62)	(1.61)
INSTOWN	-0.0057	-0.0056	-0.0051	-0.0059	-0.0059
	(-0.12)	(-0.12)	(-0.11)	(-0.12)	(-0.12)
NegSENTIMENT_PR$_{t-1}$	-0.4800	-0.4837	-0.3612	-0.3683	-0.4859
	(-1.09)	(-1.08)	(-0.81)	(-0.82)	(-1.09)
INTERCEPT	-0.9562***	-0.8874***	-0.9619***	-0.9196***	-0.8943***
	(-11.37)	(-11.78)	(-12.55)	(-11.73)	(-11.13)
Year FE	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y
N	13890	13890	13890	13890	13890
adj. R-sq	0.1476	0.1481	0.1475	0.1477	0.1481
Wald Test (p-value) for H_0: *NegSENTIMENT* + *NegSENTIMENT *AGGRESSIVE*=0		(0.0739)*			(0.0637)*

This table presents the result of regression of tax avoidance on media sentiment and media coverage. The dependent variable is *TAXFACTOR*. All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 level.

Table 5 Alternative Measures

Panel A: Alternative Definition of Aggressiveness Indicator

	(1)	(2)	(3)	(4)
NegSENTIMENT $_{t-1}$	**0.8988*** **	**0.3143**	**0.7593***	**0.9601*** **
	(2.65)	**(1.07)**	**(1.78)**	**(2.67)**
NegSENTIMENT $_{t-1}$				
****AGGRESSIVE_ALT*** $_{t-1}$	**-1.3533*** **		**-0.8897***	**-1.3676** **
	(-3.32)		**(-1.77)**	**(-2.30)**
NEWSCNT $_{t-1}$	**0.0072**	**0.0109**	**0.0051**	**0.0131**
	(0.36)	**(0.53)**	**(0.20)**	**(0.67)**
NEWSCNT $_{t-1}$				
****AGGRESSIVE_ALT*** $_{t-1}$	**0.0059**		**0.0093***	**-0.0007**
	(0.47)		**(1.76)**	**(-0.05)**
AGGRESSIVE_ALT $_{t-1}$	0.0643		0.8684***	0.2019***
	(1.11)		(15.12)	(3.06)
NegSENTIMENT $_{t-1}$				
****LowAGGRESSIVE*** $_{t-1}$		**0.9073*** **		
		(2.68)		
NEWSCNT $_{t-1}$				
****LowAGGRESSIVE*** $_{t-1}$		**0.0182**		
		(1.22)		
Low_AGGRESSIVE $_{t-1}$		-0.0462		
		(-0.90)		
ROA	4.2573***	4.2499***	4.7743***	4.2368***
	(9.40)	(9.26)	(8.98)	(9.42)
EQUIC	-17.4313***	-17.1538***	-18.1673***	-16.6900***
	(-5.60)	(-5.56)	(-5.74)	(-5.40)
MVE $_{t-1}$	-0.0532**	-0.0403*	0.0032	-0.0334
	(-2.07)	(-1.69)	(0.13)	(-1.38)
NOL	0.1355***	0.1388***	0.0791***	0.1282***
	(6.17)	(5.96)	(3.88)	(5.81)
ChgNOL	0.5210***	0.5304***	0.2853***	0.5043***
	(7.55)	(7.60)	(4.85)	(7.37)
LEV	0.2397***	0.2645***	0.1166*	0.2470***
	(2.83)	(3.14)	(1.74)	(3.02)
PPE	0.3455***	0.3441***	0.4551***	0.3387***
	(5.48)	(5.47)	(6.93)	(5.63)
INTANG	0.1720***	0.1513**	0.3763***	0.1691***
	(2.74)	(2.41)	(5.58)	(2.82)
MB $_{t-1}$	-0.0003	-0.0017	-0.0116	-0.0044
	(-0.04)	(-0.25)	(-1.39)	(-0.67)
FI	-3.2033***	-3.0352***	-2.4905***	-3.0423***
	(-7.40)	(-6.88)	(-5.39)	(-7.14)
ANALYST	0.1102***	0.1045***	0.0300	0.0991***
	(3.07)	(2.87)	(0.82)	(2.84)
INSTOWN	-0.0504	-0.0633	0.0134	-0.0613
	(-1.05)	(-1.32)	(0.23)	(-1.39)
NegSENTIMENT_PR $_{t-1}$	-0.3025	-0.3145	-0.3051	-0.2837
	(-0.64)	(-0.67)	(-0.61)	(-0.60)
INTERCEPT	-1.0145***	-1.1251***	-0.8736***	-0.5086**
	(-7.81)	(-9.24)	(-6.67)	(-2.05)
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
N	13890	13890	12371	13890
adj. R-sq	0.1659	0.1641	0.2646	0.1727

Panel B: Alternative Tax Avoidance Measures

	(1) *NegCETR*	(2) *NegETR*	(3) *BT_DD*	(4) *DTAX*	(5) *TAXFACTOR2*
NegSENTIMENT $_{t-1}$	**0.0449**	**0.1832*** **	**0.0690***	**0.0976*** **	**0.9826*** **
	(0.72)	**(4.65)**	**(1.74)**	**(3.22)**	**(3.52)**
NegSENTIMENT $_{t-1}$					
****AGGRESSIVE*** $_{t-1}$	**-0.0343**	**-0.1467*** **	**-0.0838***	**-0.1139** **	**-0.7830** **
	(-0.49)	**(-2.96)**	**(-1.71)**	**(-2.27)**	**(-2.28)**
NEWSCNT $_{t-1}$	**0.0067** **	**-0.0046**	**0.0011**	**-0.0042*** **	**0.00002**
	(2.52)	**(-1.39)**	**(0.47)**	**(-3.30)**	**(0.00)**
NEWSCNT $_{t-1}$					
****AGGRESSIVE*** $_{t-1}$	**0.0017**	**0.0065*** **	**-0.0007**	**0.0015**	**0.0374*** **
	(0.71)	**(3.35)**	**(-0.59)**	**(1.14)**	**(3.18)**
AGGRESSIVE $_{t-1}$	0.0326***	-0.0057	0.0111**	-0.0087*	-0.0032
	(3.41)	(-0.72)	(2.02)	(-1.79)	(-0.06)
ROA	0.4543***	0.0631	0.4092***	0.3344***	0.6433*
	(8.35)	(1.09)	(8.24)	(3.69)	(1.80)
EQUIC	0.5776	0.3649	-2.1574***	-1.8454***	3.7052
	(1.13)	(0.85)	(-6.99)	(-14.61)	(1.22)
MVE $_{t-1}$	-0.0188***	-0.0057**	-0.0039	0.0004	-0.0662***
	(-6.59)	(-2.22)	(-1.39)	(0.27)	(-4.13)
NOL	0.0220***	0.0017	0.0048***	0.0081***	0.0813***
	(5.46)	(0.47)	(2.91)	(3.54)	(3.46)
ChgNOL	0.0725***	0.0800***	0.0227***	0.0420***	0.5102***
	(10.12)	(6.99)	(2.73)	(3.85)	(6.84)
LEV	0.1005***	0.0608***	-0.0112*	0.0306***	0.3269***
	(5.81)	(3.60)	(-1.80)	(3.60)	(2.70)
PPE	-0.0048	-0.0057	0.0525***	0.0117***	-0.0555
	(-0.50)	(-0.89)	(8.97)	(2.64)	(-1.16)
INTANG	-0.0191	-0.0130	0.0372***	-0.0127**	-0.0545
	(-1.18)	(-1.03)	(6.26)	(-2.14)	(-0.61)
MB $_{t-1}$	0.0007	0.0001	0.0012***	-0.0023***	0.0102*
	(0.71)	(0.17)	(2.71)	(-2.61)	(1.74)
FI	-0.3151***	0.0826	-0.4991***	-0.0701*	0.1660
	(-3.86)	(1.27)	(-8.93)	(-1.77)	(0.31)
ANALYST	0.0263***	0.0143***	0.0057	0.0015	0.1331***
	(4.64)	(3.37)	(1.53)	(0.55)	(5.27)
INSTOWN	-0.0095	-0.0308***	-0.0024	-0.0011	-0.1146***
	(-1.36)	(-3.70)	(-0.56)	(-0.18)	(-2.89)
NegSENTIMENT_PR $_{t-1}$	0.0499	0.1815***	0.0392	-0.0481	0.2797
	(0.65)	(3.01)	(0.81)	(-1.05)	(0.70)
INTERCEPT	-0.2386***	-0.2852***	0.0198	0.0348***	-0.3086**
	(-5.57)	(-10.16)	(1.23)	(3.66)	(-2.18)
Year FE	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y
N	18145	18627	18067	14346	13890
adj. R-sq	0.1038	0.0821	0.1889	0.0635	0.0818

Panel C: Disentangling Earnings-related News and Non-earnings-related News

	(1)
NegSENTI_EARN $_{t-1}$	**0.8543*** **
	(3.99)
AGGRESSIVE $_{t-1}$ **** NegSENTI_EARN*** $_{t-1}$	**-0.9793*** **
	(-4.44)
NEWSCNT_EARN $_{t-1}$	**-0.0133**
	(-0.62)
AGGRESSIVE $_{t-1}$ **** NEWSCNT_EARN*** $_{t-1}$	**0.0279**
	(1.02)
NegSENTI_NONEARN $_{t-1}$	**-0.7878**
	(-1.17)
AGGRESSIVE $_{t-1}$ **** NegSENTI_NONEARN*** $_{t-1}$	**0.7244**
	(0.92)
NEWSCNT_NONEARN $_{t-1}$	**0.0112**
	(0.45)
AGGRESSIVE $_{t-1}$ **** NEWSCNT_NONEARN*** $_{t-1}$	**-0.0076**
	(-0.47)
AGGRESSIVE $_{t-1}$	-0.0230
	(-0.39)
ROA	4.1760***
	(6.90)
EQUIC	-20.8361***
	(-6.74)
MVE $_{t-1}$	-0.0120
	(-0.45)
NOL	0.1299***
	(7.34)
ChgNOL	0.2581***
	(3.26)
LEV	0.0744
	(0.99)
PPE	0.4171***
	(7.20)
INTANG	0.1860**
	(2.42)
MB $_{t-1}$	0.0041
	(0.50)
FI	-3.4984***
	(-7.21)
ANALYST	0.0001
	(0.00)
INSTOWN	-0.0109
	(-0.22)
NegSENTIMENT_PR $_{t-1}$	-0.4611
	(-1.06)
INTERCEPT	-0.7503***
	(-6.51)
Year FE	Y
Industry FE	Y
N	10776
adj. R-sq	0.1461

This table presents robustness checks for the regression result of media sentiment and media coverage on tax avoidance. Panel A reports the result with an alternative definition for aggressive tax-avoiding firms. Panel B reports the result with alternative tax avoidance measures. Panel C reports the result with alternative media sentiment measures. The dependent variable is *TAXFACTOR* in Panel A and C. All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 6 Additional Controls

	(1) *TAXFACTOR*	(2) *TAXFACTOR*
NegSENTIMENT $_{t-1}$	**0.4302**	**0.6111**
	(1.00)	**(1.36)**
NegSENTIMENT $_{t-1}$ ****AGGRESSIVE*** $_{t-1}$	**-0.7659***	**-0.9154***
	(-1.80)	**(-1.89)**
NEWSCNT $_{t-1}$	**0.0145**	**0.0046**
	(0.87)	**(0.26)**
NEWSCNT $_{t-1}$ ****AGGRESSIVE*** $_{t-1}$	**0.0070**	**-0.0023**
	(0.98)	**(-0.25)**
AGGRESSIVE $_{t-1}$	-0.0444	0.0469
	(-1.30)	(1.09)
FEMALE_CEO	0.0105	
	(0.11)	
CEO_TENURE	-0.0018	
	(-0.14)	
YOUNG_CEO	0.0494*	
	(1.92)	
EARN_DEC $_{t-1}$		0.0715***
		(3.12)
ROA	3.5844***	4.5183***
	(8.01)	(7.64)
EQUIC	-19.7701***	-21.4882***
	(-5.51)	(-6.95)
MVE $_{t-1}$	-0.0353*	-0.0302
	(-1.91)	(-1.39)
NOL	0.0589**	0.1067***
	(2.35)	(6.35)
ChgNOL	0.8157***	0.3282***
	(4.24)	(5.12)
LEV	-0.0239	0.1065
	(-0.35)	(1.59)
PPE	0.4822***	0.4078***
	(7.59)	(7.57)
INTANG	0.3621***	0.2089***
	(4.43)	(3.72)
MB $_{t-1}$	-0.0044	-0.0043
	(-0.66)	(-0.61)
FI	-2.6691***	-3.7511***
	(-7.33)	(-9.61)
ANALYST	0.0918***	0.0527
	(3.45)	(1.60)
INSTOWN	-0.0247	-0.0069
	(-0.58)	(-0.14)
NegSENTIMENT_PR $_{t-1}$	1.3801***	-0.6151
	(2.70)	(-1.33)
INTERCEPT	-1.1198***	-0.9058***
	(-7.22)	(-11.42)
Year FE	Y	Y
Industry FE	Y	Y
N	6382	13888
adj. R-sq	0.1647	0.1491

This table reports the result of regression of media sentiment and media coverage on tax avoidance controlling for CEO characteristics or past-year earnings decreases. All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 7 Instrumental Variable Method

Panel A: Regressions with IVs for Media Sentiment

	First-stage	Second-stage
	(1)	(2)
	NegSENTIMENT $_{t-1}$	*TAXFACTOR*
Ind_NegSENTIMENT $_{t-1}$	0.2406***	
	(5.39)	
NegSENTIMENT $_{t-1}$		**6.2695***
		(1.74)
NegSENTIMENT $_{t-1}$ ****AGGRESSIVE*** $_{t-1}$		**-3.3302*****
		(-2.73)
AGGRESSIVE $_{t-1}$	0.0012	0.0185
	(1.52)	(0.85)
ROA	-0.0730***	4.7605***
	(-11.31)	(10.91)
EQUIC	0.0070	-21.2881***
	(0.09)	(-8.81)
MVE $_{t-1}$	-0.0028***	-0.0191
	(-7.14)	(-1.32)
NOL	-0.0005	0.1088***
	(-0.79)	(6.07)
ChgNOL	0.0022	0.3156***
	(1.38)	(5.21)
LEV	-0.0028	0.1218*
	(-1.21)	(1.89)
PPE	0.0004	0.4060***
	(0.27)	(10.90)
INTANG	-0.0109***	0.2490***
	(-5.12)	(3.68)
MB $_{t-1}$	0.0002*	-0.0060
	(1.73)	(-1.00)
FI	0.0143	-3.8296***
	(1.47)	(-12.39)
ANALYST	0.0026***	0.0426**
	(3.83)	(2.02)
INSTOWN	0.0012	-0.0059
	(0.85)	(-0.17)
NegSENTIMENT_PR $_{t-1}$	0.4347***	-2.3750
	(26.14)	(-1.50)
INTERCEPT	-0.0024	-0.4895***
	(-0.17)	(-3.63)
Year FE	Y	Y
Industry FE	Y	Y
N	13890	13890
adj. R-sq	0.1455	0.1440

Panel B: Regressions with IV for Media Coverage

	First-stage	Second-stage
	(1)	(2)
	NEWSCNT $_{t-1}$	*TAXFACTOR*
SP500	0.2658***	
	(14.51)	
NEWSCNT $_{t-1}$		**-0.0232**
		(-0.22)
NEWSCNT *AGGRESSIVE $_{t-1}$		**0.0045**
		(0.34)
AGGRESSIVE $_{t-1}$	0.0086	0.0202
	(0.67)	(0.38)
ROA	-0.5254***	4.4058***
	(-5.00)	(13.11)
EQUIC	5.1579***	-21.2314***
	(3.81)	(-8.72)
MVE $_{t-1}$	0.2259***	-0.0246
	(30.27)	(-0.74)
NOL	0.0268**	0.1072***
	(2.33)	(5.93)
ChgNOL	0.0423	0.3273***
	(1.63)	(5.38)
LEV	0.0184	0.1086*
	(0.47)	(1.72)
PPE	-0.1644***	0.4052***
	(-7.18)	(10.36)
INTANG	-0.0898**	0.1996***
	(-2.48)	(3.56)
MB $_{t-1}$	0.0000	-0.0048
	(0.02)	(-0.83)
FI	0.5942***	-3.6962***
	(3.48)	(-12.52)
ANALYST	0.2441***	0.0585**
	(22.09)	(2.15)
INSTOWN	-0.0221	-0.0056
	(-1.03)	(-0.15)
NegSENTIMENT_PR $_{t-1}$	1.1296***	-0.3360
	(4.28)	(-0.83)
INTERCEPT	-0.7228**	-0.5854***
	(-2.19)	(-3.22)
Year FE	Y	Y
Industry FE	Y	Y
N	13890	13890
adj. R-sq	0.8258	0.1433

This table reports the baseline results using instrumental variables for media sentiment in Panel A and the instrumental variable for media coverage in Panel B. All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 8 Possible Channels – The Mediation Analysis

Panel A: Relationship between Media Sentiment and Reputational Costs (or IRS Attention)

	(1) *ADEXP*	(2) *NegGSALES*	(3) *IRS_ATTEN*
NegSENTIMENT $_{t-1}$	**0.0250*** **	**0.2138*** **	**0.3838** **
	(3.40)	**(3.83)**	**(2.43)**
ROA	0.0249***	-0.4532***	-0.7402***
	(3.00)	(-9.46)	(-4.63)
EQUIC	-0.2410***	1.8466***	6.1648***
	(-3.33)	(2.84)	(3.08)
MVE $_{t-1}$	-0.0012**	0.0216***	0.2658***
	(-2.41)	(9.57)	(11.29)
NOL	0.0008	-0.0105***	-0.0110
	(0.89)	(-2.76)	(-0.69)
ChgNOL	-0.0005	-0.0171*	0.0199
	(-0.40)	(-1.77)	(0.60)
LEV	-0.0017	-0.0240**	0.0742
	(-0.55)	(-1.98)	(1.23)
PPE	-0.0038	0.0549***	0.0503
	(-1.62)	(5.98)	(1.42)
INTANG	-0.0076**	-0.0446**	-0.0056
	(-2.47)	(-2.34)	(-0.09)
MB $_{t-1}$	0.0005***	-0.0034***	-0.0092***
	(2.92)	(-4.68)	(-3.30)
FI	0.0462**	0.0745	1.6721***
	(2.18)	(0.88)	(3.99)
ANALYST	0.0026***	-0.0396***	-0.0871***
	(2.81)	(-11.05)	(-3.74)
INSTOWN	-0.0016	0.0096	-0.1346**
	(-1.26)	(1.11)	(-2.50)
NegSENTIMENT_PR $_{t-1}$	-0.0358**	0.2536***	0.7699**
	(-2.37)	(4.02)	(2.32)
SENSITIVE	-0.0102***	-0.0415***	-0.0003
	(-2.72)	(-2.75)	(-0.01)
INTERCEPT	0.0162***	-0.1129***	-0.8144***
	(3.37)	(-3.30)	(-3.49)
Year FE	Y	Y	Y
Industry FE	Y	Y	Y
N	21478	21474	15257
adj. R-sq	0.2237	0.1277	0.4257

Panel B: Regressions of Tax Avoidance on Media Sentiment and Mediators

	(1) *TAXFACTOR*	(2) *TAXFACTOR*	(3) *TAXFACTOR*	(4) *TAXFACTOR*
NegSENTIMENT $_{t-2}$	**0.8983*** **	**0.9122*** **	**0.9922** **	**1.0052** **
	(2.73)	**(2.77)**	**(2.21)**	**(2.25)**
NegSENTIMENT $_{t-2}$ ***** ***AGGRESSIVE*** $_{t-1}$	**-1.1112*** **	**-1.0980*** **	**-1.1060*** **	**-1.0903*** **
	(-2.91)	**(-2.92)**	**(-2.63)**	**(-2.62)**
NEWSCNT $_{t-2}$	0.0103	0.0136	0.0113	0.0154
	(0.55)	(0.72)	(0.49)	(0.67)
NEWSCNT$_{t-2}$ * *AGGRESSIVE*$_{t-1}$	0.0053	0.0058	-0.0008	0.0029
	(0.43)	(0.47)	(-0.04)	(0.15)
AGGRESSIVE $_{t-1}$	0.0139	0.0106	0.0455	0.0299
	(0.26)	(0.20)	(0.49)	(0.33)
ADEXP $_{t-1}$		**-0.9150*** **		**-0.9953*** **
		(-2.85)		**(-2.68)**
NegGSALES $_{t-1}$		**-0.0507** **		**-0.0716** **
		(-1.99)		**(-2.51)**
IRS_ATTEN $_{t-1}$				**-0.0180***
				(-1.90)
ROA	4.3542***	4.3657***	4.3519***	4.3550***
	(7.09)	(7.12)	(5.80)	(5.79)
EQUIC	-21.1023***	-21.1927***	-22.4027***	-22.3525***
	(-6.49)	(-6.51)	(-5.68)	(-5.67)
MVE $_{t-1}$	-0.0287	-0.0306	-0.0175	-0.0154
	(-1.24)	(-1.34)	(-0.65)	(-0.57)
NOL	0.1039***	0.1041***	0.1049***	0.1050***
	(5.56)	(5.61)	(4.89)	(4.90)
ChgNOL	0.3044***	0.3045***	0.2969***	0.2992***
	(4.37)	(4.36)	(3.43)	(3.47)
LEV	0.0986	0.0921	0.1092	0.1020
	(1.28)	(1.19)	(1.27)	(1.18)
PPE	0.4033***	0.4028***	0.4228***	0.4251***
	(7.48)	(7.66)	(6.45)	(6.60)
INTANG	0.2013***	0.1943***	0.2127**	0.2059**
	(3.36)	(3.27)	(2.50)	(2.44)
MB $_{t-1}$	0.0003	0.0008	-0.0007	-0.0007
	(0.04)	(0.10)	(-0.08)	(-0.08)
FI	-3.8778***	-3.8044***	-3.7130***	-3.6213***
	(-9.34)	(-9.26)	(-7.41)	(-7.26)
ANALYST	0.0372	0.0370	0.0102	0.0082
	(1.06)	(1.06)	(0.25)	(0.21)
INSTOWN	-0.0075	-0.0063	-0.0214	-0.0223
	(-0.15)	(-0.12)	(-0.38)	(-0.39)
NegSENTIMENT_PR $_{t-1}$	-0.6318	-0.6053	-0.5207	-0.4509
	(-1.47)	(-1.39)	(-1.13)	(-0.97)
SENSITIVE	-0.0693	-0.0808	-0.0959	-0.1077
	(-1.18)	(-1.35)	(-1.33)	(-1.47)
INTERCEPT	-0.5252***	-0.5241***	-0.3331	-0.3347
	(-3.18)	(-3.29)	(-1.45)	(-1.54)
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
N	12525	12524	9835	9834
adj. R-sq	0.1513	0.1523	0.1483	0.1500

Panel A reports the relationship between the media sentiment and the mediator variables. Panel B reports the regression results of tax avoidance on media sentiment after adding the mediator variables. The sample period is from 2000 through 2016 for column (1) and (2) and from 2004 through 2015 for column (3) and (4). All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 9 Cross-Sectional Tests

	Product Market Competition		Institutional Ownership by Type		Press Release Sentiment	
	High	Low	High Transient & Low Dedicated	Low Transient & High Dedicated	Positive	Negative & Neutral
	(1) *TAXFACTOR*	(2) *TAXFACTOR*	(3) *TAXFACTOR*	(4) *TAXFACTOR*	(5) *TAXFACTOR*	(6) *TAXFACTOR*
NegSENTIMENT $_{t-1}$	**1.5867*** **	**-0.1843**	**1.5600** **	**-0.3132**	**0.4030**	**3.8117** **
	(2.99)	**(-0.36)**	**(2.19)**	**(-0.34)**	**(1.12)**	**(2.50)**
NegSENTIMENT $_{t-1}$ ****AGGRESSIVE*** $_{t-1}$	**-2.0095*** **	**0.2550**	**-1.8530***	**1.1008**	**-0.4932**	**-5.0575*** **
	(-3.42)	**(0.38)**	**(-1.90)**	**(1.08)**	**(-1.27)**	**(-3.63)**
NEWSCNT $_{t-1}$	**-0.0223**	**0.0384***	**-0.0050**	**0.0436**	**0.0031**	**-0.0046**
	(-0.86)	**(1.95)**	**(-0.14)**	**(1.29)**	**(0.17)**	**(-0.06)**
NEWSCNT $_{t-1}$ ****AGGRESSIVE*** $_{t-1}$	**-0.0112**	**0.0069**	**-0.0003**	**0.0450**	**-0.0085**	**0.1216*** **
	(-0.59)	**(0.33)**	**(-0.01)**	**(1.51)**	**(-0.78)**	**(2.82)**
AGGRESSIVE $_{t-1}$	0.0872	-0.0130	-0.0069	-0.0285	0.0689	-0.4102**
	(0.99)	(-0.16)	(-0.06)	(-0.27)	(1.45)	(-2.13)
ROA	4.3501***	4.5443***	3.0075***	5.9212***	4.3302***	6.4072***
	(7.57)	(5.76)	(4.47)	(7.58)	(6.97)	(5.10)
EQUIC	-22.9493***	-18.7146***	-34.5303***	-19.7598***	-20.6686***	-37.4931***
	(-5.28)	(-4.94)	(-4.51)	(-4.71)	(-7.14)	(-3.07)
MVE $_{t-1}$	-0.0099	-0.0529***	-0.0172	-0.0933***	-0.0302	0.0069
	(-0.28)	(-2.85)	(-0.58)	(-4.02)	(-1.44)	(0.12)
NOL	0.0873***	0.1324***	0.1099***	0.1042***	0.1088***	0.0079
	(3.47)	(3.38)	(2.67)	(2.69)	(6.25)	(0.09)
ChgNOL	0.3486***	0.2811**	0.1481	0.4166***	0.3255***	0.4335*
	(5.31)	(2.53)	(1.18)	(2.91)	(4.93)	(1.81)
LEV	-0.0234	0.2472***	-0.1153	0.1354	0.0756	0.4785**
	(-0.21)	(2.58)	(-0.73)	(0.98)	(1.09)	(2.50)
PPE	0.4135***	0.4194***	0.5425***	0.3331***	0.4186***	0.2841*
	(4.85)	(6.87)	(6.48)	(3.98)	(7.44)	(1.93)

Table 9 – continued

INTANG	0.1576**	0.3169***	0.3059**	0.2190	0.2161***	0.0478
	(2.23)	(3.51)	(2.32)	(1.61)	(3.60)	(0.21)
MB $_{t-1}$	-0.0018	-0.0097	-0.0155	0.0011	-0.0053	0.0041
	(-0.18)	(-0.91)	(-1.39)	(0.12)	(-0.65)	(0.25)
FI	-3.4547***	-4.2444***	-3.4909***	-4.5757***	-3.7369***	-2.4547
	(-5.29)	(-8.66)	(-5.79)	(-6.56)	(-10.19)	(-1.40)
ANALYST	0.0489	0.0560**	0.0565	0.0702**	0.0592*	-0.0790
	(0.98)	(2.50)	(1.34)	(1.99)	(1.82)	(-0.94)
INSTOWN	-0.1051	0.0989	-0.0863	0.0658	-0.0100	-0.0314
	(-1.47)	(1.64)	(-1.17)	(0.74)	(-0.20)	(-0.18)
NegSENTIMENT_PR $_{t-1}$	-0.5053	-0.5332	-2.0331**	-1.5029*		
	(-0.82)	(-1.15)	(-2.35)	(-1.88)		
INTERCEPT	-0.6620***	-0.5956***	-0.2919	0.1995	-0.8986***	-0.4483
	(-3.75)	(-3.28)	(-0.95)	(0.60)	(-10.65)	(-1.30)
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
N	7468	6422	3299	2409	13141	749
adj. R-sq	0.1177	0.2015	0.1343	0.2208	0.1443	0.3022
Wald Tests for Coefficient Differences between Samples:						
NegSENTIMENT $_{t-1}$	$\chi^2 = 5.37$**		$\chi^2 = 2.71$*		$\chi^2 = 3.72$*	
NegSENTIMENT $_{t-1}$ **AGGRESSIVE* $_{t-1}$	$\chi^2 = 5.79$**		$\chi^2 = 4.60$**		$\chi^2 = 6.50$**	

This table reports the result of cross-sectional analyses. The sample period for columns (1), (2), (5), and (6) is from 2000 through 2016. The sample period for columns (3) and (4) is from 2000 through 2015 due to the data availability of the type of institutional investors. All variables are defined in Appendix A. The t-statistics reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.

Table 10 The Effect of Tax Avoidance News

Panel A: The Determinants of Media Coverage of Tax Avoidance

	Probit (*L3TAXNEWS* =1)
L3MVE	0.4442***
	(5.11)
L3ROA	-2.9623***
	(-3.48)
L3FI	2.8816*
	(1.79)
L3ANALYST	-0.5714***
	(-3.49)
L3INSTOWN	-0.6799*
	(-1.85)
L3NEWSCNT	0.4500***
	(5.36)
L3NegSENTIMENT	0.9217
	(0.58)
INTERCEPT	-6.1541***
	(-14.75)
Year FE	Y
Industry FE	Y
N	10082
pseudo R-sq	0.3888

Panel B1: Statistics for Treatment and Control Samples (For Propensity Score Matching)

	L3TAXNEWS =1			*L3TAXNEWS* =0			Wilcoxon Test
	Mean	Median	S.D.	Mean	Median	S.D.	(p-value)
TAXFACTOR	-0.0445	-0.0476	0.72	-0.0670	-0.0959	0.63	(0.2979)
NegSENTIMENT $_{t-1}$	-0.0097	-0.0101	0.03	-0.0077	-0.0102	0.03	(0.9930)
NegSENTIMENT_PR$_{t-1}$	-0.0333	-0.0304	0.02	-0.0311	-0.0295	0.02	(0.5120)
ROA	0.0809	0.0739	0.05	0.0865	0.0875	0.05	(0.2887)
EQUIC	0.0051	0.0009	0.01	0.0051	0.0007	0.01	(0.9606)
MVE $_{t-1}$	9.9730	10.3964	1.38	9.5429	9.9404	1.52	(0.0177)**
NOL	0.4299	0.0000	0.50	0.4673	0.0000	0.50	(0.5834)
ChgNOL	0.0253	0.0000	0.05	0.0206	0.0000	0.05	(0.8769)
LEV	0.2340	0.2051	0.14	0.1667	0.1570	0.10	(0.0007)***
PPE	0.5563	0.3659	0.38	0.5259	0.4495	0.35	(0.7330)
INTANG	0.2088	0.1481	0.18	0.2024	0.1756	0.15	(0.8754)
MB $_{t-1}$	4.1429	2.9489	3.43	3.8702	2.9872	2.95	(0.5622)
FI	0.0539	0.0464	0.05	0.0456	0.0326	0.05	(0.0973)*
ANALYST	3.1123	3.1781	0.57	3.0425	3.1781	0.60	(0.5931)
INSTOWN	0.7157	0.7149	0.13	0.7223	0.7273	0.14	(0.5489)
N	107			107			

Panel B2: Statistics for Treatment and Control Samples (For Simple Matching)

	L3TAXNEWS =1			*L3TAXNEWS* =0			Wilcoxon Test
	Mean	Median	S.D.	Mean	Median	S.D.	(p-value)
TAXFACTOR	-0.0285	-0.0004	0.68	-0.0118	-0.1113	0.93	(0.4537)
NegSENTIMENT$_{t-1}$	-0.0099	-0.0114	0.03	-0.0059	-0.0100	0.03	(0.5550)
NegSENTIMENT_PR$_{t-1}$	-0.0337	-0.0304	0.02	-0.0341	-0.0330	0.02	(0.4255)
ROA	0.0842	0.0779	0.05	0.0770	0.0798	0.06	(0.5550)
EQUIC	0.0045	0.0009	0.01	0.0017	0.0000	0.00	(0.0002)***
MVE $_{t-1}$	10.1310	10.5513	1.30	8.5514	8.3891	1.26	(0.0000)***
NOL	0.4016	0.0000	0.49	0.4400	0.0000	0.50	(0.5375)
ChgNOL	0.0223	0.0000	0.05	0.0584	0.0000	0.18	(0.4474)
LEV	0.2400	0.2159	0.14	0.1937	0.1913	0.14	(0.0150)**
PPE	0.5472	0.3487	0.38	0.5230	0.4090	0.36	(0.8777)
INTANG	0.2017	0.1333	0.17	0.2419	0.1679	0.21	(0.2259)
MB $_{t-1}$	4.1415	3.2946	3.18	3.8962	3.1026	2.74	(0.4931)
FI	0.0540	0.0462	0.05	0.0317	0.0148	0.04	(0.0000)***
ANALYST	3.1323	3.1781	0.53	2.8711	2.9444	0.56	(0.0000)***
INSTOWN	0.7110	0.7065	0.11	0.7353	0.7942	0.24	(0.0000)***
N	126			126			

Panel C: The Effect of Tax Avoidance News on Firms' Tax Avoidance Decision

	Propensity Score Matching		Simple Matching	
	(1)	(2)	(3)	(4)
	TAXFACTOR	*TAXFACTOR*	*TAXFACTOR*	*TAXFACTOR*
L3TAXNEWS	0.0909	0.0453	0.1080	0.0332
	(0.65)	(0.33)	(0.58)	(0.19)
NegSENTIMENT $_{t-1}$		1.3540		3.1361
		(0.57)		(1.19)
L3TAXNEWS				
**** NegSENTIMENT*** $_{t-1}$		-7.1275***		-11.1152***
		(-3.62)		(-2.76)
ROA	6.8662***	6.7796***	1.2884	1.5114
	(5.52)	(6.06)	(0.36)	(0.42)
EQUIC	-15.4071***	-14.0254***	-25.9594***	-22.7762***
	(-3.50)	(-3.97)	(-8.97)	(-5.30)
MVE $_{t-1}$	-0.1119*	-0.1010	-0.0291	-0.0538
	(-1.78)	(-1.38)	(-0.41)	(-0.88)
NOL	-0.1513	-0.1332	-0.0738	-0.1026
	(-1.23)	(-1.19)	(-0.34)	(-0.62)
ChgNOL	2.0937**	1.6151*	0.8923**	0.7871**
	(2.09)	(1.77)	(2.25)	(2.31)
LEV	-0.0404	-0.2639	-0.4777	-0.5821
	(-0.09)	(-0.53)	(-0.48)	(-0.56)
PPE	0.4731*	0.3972	0.3140	0.1704
	(1.84)	(1.54)	(0.70)	(0.41)
INTANG	-0.2221	-0.1820	0.1391	0.0212
	(-0.54)	(-0.41)	(0.30)	(0.04)
MB $_{t-1}$	0.0283	0.0320*	0.0316	0.0256
	(1.40)	(1.90)	(1.34)	(1.23)
FI	-5.0171***	-5.0002***	-2.3459	-2.5990*
	(-4.46)	(-4.20)	(-1.51)	(-1.76)
ANALYST	0.2704*	0.2334*	0.2641**	0.3125***
	(1.94)	(1.73)	(2.37)	(3.62)
INSTOWN	0.3530	0.4833	-0.1387	-0.0578
	(0.94)	(1.42)	(-0.20)	(-0.09)
NegSENTIMENT_PR $_{t-1}$	-3.6330**	-2.0666	-1.6401	0.7226
	(-2.19)	(-1.04)	(-0.64)	(0.32)
INTERCEPT	-0.0722	0.2113	0.8562	1.0899
	(-0.19)	(0.36)	(1.09)	(1.47)
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
N	214	214	252	252
adj. R-sq	0.4682	0.4917	0.2744	0.3162

This table reports the result of the effect of tax avoidance news and media sentiment on tax avoidance decision. Panel A presents the determinant model for the probability that a given firm's tax avoidance issues are reported by the media. Panel B presents the statistics of variables between the treatment and the control samples. Panel C presents the result of the joint effect of tax avoidance news and media sentiment on tax avoidance level. All variables are defined in Appendix A. The t-statistics (z-statistics) reported in parentheses are based on standard errors clustered by firm and year. *, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels.