

2015

CEO Compensation and Tax Loss Carrybacks

Pei-Yu Sun

Louisiana State University and Agricultural and Mechanical College, peiyu.sun@lsu.edu

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_dissertations



Part of the [Accounting Commons](#)

Recommended Citation

Sun, Pei-Yu, "CEO Compensation and Tax Loss Carrybacks" (2015). *LSU Doctoral Dissertations*. 2729.
https://digitalcommons.lsu.edu/gradschool_dissertations/2729

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.

CEO COMPENSATION AND TAX LOSS CARRYBACKS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Accounting

by

Pei-Yu Sun

B.A., Feng-Chia University, 1995

M.B.A., Western Kentucky University, 2006

May 2016

I dedicate this dissertation to my father, mother, and sister.

ACKNOWLEDGMENTS

I would like to acknowledge my dissertation committee members for their generous support and great guidance. They are Prof. Christine Cheng, Prof. Larry Crumbley (Co-Chair), and Prof. Ken Reichelt (Co-Chair). They have provided a nurturing and supportive environment that is indispensable for the development of the project. I also appreciate all of the help from the faculty and Ph.D. students during my study at the LSU accounting department. They have set good examples of excellence in research and teaching and challenged us to constantly better ourselves.

TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	iii
LIST OF TABLES.....	v
ABSTRACT.....	vi
CHAPTER	
1. INTRODUCTION.....	1
2. NET OPERATING LOSS.....	5
3. BOOK-TAX DIFFERENCES.....	7
4. LITERATURE REVIEW.....	11
5. HYPOTHESIS DEVELOPMENT.....	18
6. RESEARCH DESIGN.....	20
7. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS.....	26
8. EMPIRICAL RESULTS.....	28
9. CONCLUSION.....	39
10. FUTURE RESEARCH.....	41
REFERENCES.....	42
APPENDIX	
A. VARIABLE DEFINITIONS.....	45
B. CALCULATING NET OPERATING LOSS CARRYBACK CAPACITY (NOLC).....	46
VITA.....	47

LIST OF TABLES

1. Descriptive Statistics.....	27
2. Correlation Matrix.....	29
3. Analysis of Cash Compensation Changes and Loss Carrybacks (Full Sample).....	31
4. Analysis of Cash Compensation Changes and Loss Carrybacks (Partitioned Sample)....	33
5. Univariate Statistics.....	37

ABSTRACT

Erickson, Heitzman, and Zhang's (2013) results indicate that firms engage in tax-motivated loss recognition to offset previously recorded income. Since tax and financial income by design is linked (Guenther, Maydew, and Nutter 1997), net operating loss reporting can impose significant costs on CEOs who have to recognize similar losses for financial reporting purposes. As a result, firms must motivate the CEO to accelerate loss recognition if the firm expects to benefit from the cash inflows generated by the tax refund. In the current study, I examine whether CEO cash-based compensation increases to offset the potential negative costs that can arise due to NOL reporting. Counter to ex-ante predictions, the results do not indicate that CEO cash-based compensation increases surrounding NOL reporting. The lack of cash-based compensation increase is consistent with NOL reporting arising from poor financial performance, rather than tax-motivated loss recognition.

CHAPTER 1. INTRODUCTION

Firms have incentives to minimize tax burdens (Hanlon and Heitzman 2011). While extant research has examined a number of different tax planning opportunities firms use to minimize overall tax burdens, tax motivated loss-shifting recently examined by Erickson, Heitzman, and Zhang (2013) represents a unique setting where firm incentives likely conflict with chief executive officer (CEO) incentives. Specifically, since tax and financial accounting income are linked (Guenther, Maydew, and Nutter 1997), net operating loss (NOL) reporting for tax purposes likely results in the recognition of a loss for financial reporting purposes. Thus, while NOLs can result in positive cash inflows for firms, they impose significant risks, such as reduced financial compensation and future employment opportunities, on CEOs. Compensation committees can offset this potentially negative risk by altering the CEO's compensation structure to shield the CEO from negative consequences. In this study, I examine a corollary question that arises from Erickson et al.'s (2013) results: Does earnings-based compensation changes before a firm reports a NOL?

Extent research indicates that CEO compensation contracts encourage corporate tax planning, and that CEOs demand risk premiums through cash compensation. Gaertner (2014) and Newman (1989) set up the expectation that CEO compensation packages motivate CEOs to engage in tax planning activities that benefit the firm. Gaertner (2014) finds that compensating CEOs on after-tax performance leads to greater tax planning effectiveness. Newman's (1989) results show that CEOs at multinational firms and firms with greater capital intensity are compensated on after-tax profits due to these firms having more opportunities available for income tax planning. Furthermore, Newman (1989) shows that firms that encourage tax planning are more likely to use bonus plans to reward CEOs. Both of these studies examine tax planning

in general. Transferring their analysis to the current setting being examined leads to the following ex-ante expectation when CEO and firm incentives are misaligned: CEO cash-based compensation should increase surrounding tax-motivated loss shifting.

Section 172 of the U.S. tax code permits firms that report a net operating loss in the current period to carry that loss back two-years and forward twenty-years. Using a current period NOL to offset prior year's income results in positive cash flow to the firm, as the Internal Revenue Service (IRS) issues a refund of previously paid taxes for any income that is offset by the current period NOL. Understanding Section 172, and the motivation firms may have to use the carryback to generate positive cash flow, Erickson et al. (2013) develop a method to estimate the amount of NOL carryback capacity for firms with projected losses. Erickson et al. (2013) then identify a set of firms that stand to lose some of this carryback capacity if they do not recognize a tax loss in the current year. Firms in this set that recognize losses in the current year are identified by Erickson et al. (2013) as engaging in tax motivated loss-shifting. To answer my research question, I follow Erickson et al.'s (2013) method, and identify a set of firms who engage in tax motivated loss shifting. From 1994 to 2012, there are 15,250 firm-year observations in my study.

Within this set of firms, I examine whether CEO's cash based compensation increases surrounding financially reported losses. Since Guenther, Maydew, and Nutter (1997) indicate that tax and financial reporting are linked, I expect that financially reported losses are also reported for tax purposes. While firms stand to receive positive cash flows from NOL carrybacks, CEO's may suffer negative financial and reputational consequences by reporting losses. Extant research clearly indicates that CEO compensation is positively associated with current period earnings (Lambert and Larcker 1987; Sloan 1993; Gaver and Gaver 1998). Given the increasing

use of stock based compensation, negative financial market impacts associated with reported financial losses will compound negative financial impacts suffered through cash based compensation (Leone et al. 2006). Furthermore, Ghosh and Wang's (2014) results indicate that CEO turnover risk increases with financial loss reporting. These detrimental impacts to the CEO result in a misalignment between the CEO and firm incentives with respect to tax motivated loss shifting. As stated earlier, based on Gaertner (2014) and Newman (1989), I expect that in order for CEOs to engage in tax motivated loss shifting, the firm would seek to shield CEO compensation.

I estimate the statistical association between NOL firms and the percentage change in the cash-based CEO compensation, after controlling for a set of control variables (e.g., advertising, leverage, R&D). The results indicate that tax-motivated loss shifting incentives does not play a statistically significant role in determining changes in CEO cash compensation. I also examine the difference in the percentage change of CEO cash compensation between loss firms with tax-motivated loss shifting incentives and firms with financial difficulty. My results also show no significant differences in the percentage change of CEO cash compensation between these two groups. While my results are inconsistent with my ex-ante predictions, they are consistent with NOL reporting arising from poor financial performance, rather than tax-motivated loss recognition.

My study complements and extends recent literature on tax planning and executive incentive compensation (e.g., Newman 1989; Phillips 2003; Armstrong, Blouin, and Larcker 2012; Rego and Wilson 2012; Gaertner 2014) and tax-motivated loss shifting (e.g., Maydew 1997; Albring, Dhaliwal, Khurana, and Pereira 2011; Erickson et al. 2013). The current study

links both areas to look at whether accelerating loss recognition (which generates a tax refund of prior payments) is associated with compensation shielding.

This paper makes two contributions to the extant literature. First, my paper supplements the results of existing research on executive compensation. It focuses attention on explaining the role of tax-motivated loss shifting based on the incentives in CEO compensation contracts. My results are inconsistent with firms motivating CEOs to report losses, but are consistent with NOL reporting being associated with poor financial performance. Second, prior literature shows that CEO after-tax compensation incentives increase corporate tax avoidance (Newman 1989; Gaerter 2014) when the expected tax savings exceed the incremental cash compensation paid for CEOs. This stream of research investigates the relationship between CEO cash compensation and after-tax earnings performance. My paper has implications for research examining a wide variety of factors that influence firms' tax avoidance, such as executive characteristics, board structure, and tax department orientation (Dyreng et al. 2010; Chen et al. 2010; Robinson et al. 2010). My work extends this stream of research exploring the variation in firms' tax avoidance activities by considering an alternative avenue of tax avoidance - NOL reporting by firms with unrefunded tax incentives.

The remainder of the paper is organized as follows. Chapter 2 discusses net operating loss, and chapter 3 discusses book-tax differences. Chapter 4 reviews the related literature, and specific hypothesis is developed in chapter 5. Chapter 6 presents research design. Chapter 7 discusses the sample selection and presents descriptive statistics. Results from empirical testing of the hypothesis are provided in Chapter 8, and chapter 9 concludes. Chapter 10 discusses future research.

CHAPTER 2. NET OPERATING LOSS

2.1 Section 382

Favorable tax attributes such as net operating losses can be used to claim a refund against future taxable income. Since 1954 Congress has been concerned about the perceived problem of “net-operating-losses-trafficking” when new shareholders of a corporation benefit from loss recognition through acquiring or merging with another corporation. Section 382 seeks to prevent the problem by imposing a limitation on the use of net operating losses. As Abrams, Doernberg, and Leatherman (1998) state,

After a substantial ownership change, the earnings which can be offset by a net operating loss are limited, but the amount of the net operating loss that can be used by the acquiring corporation is not directly limited.... Generally, the loss corporation’s share is limited to earnings generated by the assets contributed by the loss corporation. (pp. 271-2)

The annual limitation for any post-change year is an amount equal to the value of the old loss corporation times the long-term tax-exempt rate.

Section 382 is determined by a change of the ownership. An ownership change occurs when the stock of a loss corporation, which is owned by one or more 5 percent shareholders, increases by more than 50 percentage points as a result of an ownership change or an equity structure shift (Abrams et al. 1998). For the purposes of determining whether an ownership change has occurred for those non-5 percent shareholders, all non-5 percent shareholders are aggregated as a single 5 percent shareholder of such corporation (Abrams et al. 1998).

An “equity structure shift” generally means any tax free reorganization except a divisive D, an F, or a G reorganization. A more than 50 percent equity shift occurs when after the reorganization the percentage of stock held by one or more of the new loss corporation’s 5 percent shareholders is at least 50 percentage points higher than the percentage of the old loss corporation’s stock held by them (Abrams et al. 1998). For example, A Corp., a loss corporation

merges with B Corp., a profit corporation. Neither of the two has at least one 5 percent shareholder. In the merger, the former A Corp. shareholders own 49 percent of the B Corp. stock. The B Corp. shareholders own 51 percent of the new loss corporation, which means that a more than 50 equity shift occurred after the merger (Abrams et al. 1998).

CHAPTER 3. BOOK-TAX DIFFERENCES

U.S. companies are required to compute income separately for financial accounting and tax purposes. The two different rules result in two different income measures and, therefore, cause differences between financial accounting income and taxable income, commonly referred to as book-tax differences (BTDs).

There are three sources of BTDs. First, BTDs can arise due to normal temporary and permanent differences in the treatment of revenue and expenses for book and tax purposes. Examples of temporary and permanent differences are depreciation, allowance for doubtful accounts, stock-based option expenses, investments in tax exempt or tax-favored assets, investments in tax havens with lower foreign tax rates, and participation in tax shelters that give rise to losses for tax purposes but not for book purposes (Chen et al. 2010).

Second, large BTDs can arise from earnings management. Generally Accepted Accounting Principles (GAAP) gives managers greater discretion in their choice of accounting procedures than does the tax system. Thus, large BTDs may be informative about earnings quality. If BTDs are generated through earnings management, the accruals are more likely to reverse in the next period (thus exhibiting low earnings persistence).

Third, the growing divergence between BTDs also can result from tax planning (avoidance) strategies to reduce taxes paid. Such behavior leads to large BTDs but does not necessarily result in accruals that will reverse in the following year.

Since the early 1990s, U.S. corporations have reported increasing differences between the income reported to shareholders and the income reported to tax authorities. Some observers interpret that the growing divergence between book incomes and taxable incomes is attributable to increased earnings management, while others suggest the growing gap indicates an increase in

aggressive tax reporting behavior. Large BTDs have been viewed as a useful signal of earnings quality (Hanlon 2005; Kim et al. 2011).

3.1 Temporary vs. Permanent Book-Tax Differences

Temporary (or timing) differences between book income and taxable income arise when business income or expenses are recognized in one period for taxes, but in a different period for financial accounting (book) purposes. These differences might include revenue recognition, depreciation methods, bad debt expense, or loss contingencies.

Permanent (or scope) differences arise because a particular transaction is recognized under GAAP, but not under the tax code. Examples of permanent differences are municipal bond income, fines, and meals and entertainment. These items affect book income, but never affect taxable income. Permanent differences have an impact on a corporation's effective tax rate and thus on reported net income. Permanent differences are differences that never reverse.

3.2 Book-Tax Differences about Future Earnings

Existing literature indicates that large book-tax differences (BTDs) can provide information about earnings quality (Lev and Nissim 2004; Hanlon 2005; Phillips et al. 2003). Phillips et al. (2003) and Hanlon (2005) examine whether deferred tax expense can inform us about pre-tax earnings management. They consist only of temporary differences because these differences are often hypothesized to provide information about pre-tax earnings quality. On the other hand, Lev and Nissim (2004) focus on total differences between after-tax financial income and taxable income.

Since the tax code allows less discretion in accounting choices than GAAP, large positive BTDs can be informative about earnings management (Phillips et al. 2003; Blaylock et al. 2012). Phillips et al.'s (2003) study supports that deferred tax expense (i.e., temporary book-tax

differences) is informative about pre-tax earnings management to avoid an earnings decline and to avoid a loss. Other research indicates that tax information contained in the financial statements provides information about earnings quality, especially earnings persistence (Lev and Nissim 2004; Hanlon 2005; Blaylock et al. 2012). Hanlon's (2005) study shows that for firm-years with large positive temporary BTDs, pre-tax income is less persistent for future earnings than firm-years with small BTDs. Lev and Nissim (2004) support this view, finding the ratio of tax-to-book income predicts earnings growth for up to five years ahead, but they focus on total differences between after-tax book income and taxable income. Hanlon (2005) also finds that investors reduce their expectations of the persistence of earnings and accruals in the presence of large positive BTDs and are able to efficiently price earnings and accruals for these firms, confirming that investors do care about earnings persistence. She concludes that large positive BTDs are a "red flag", indicating low-quality earnings. Frank et al. (2009), however, report that investors do not fully incorporate the information in discretionary accruals into stock prices; that is, the market overprices financial reporting aggressiveness. Their analysis also reveals that the market overprices tax reporting aggressiveness, but only for firms with the most aggressiveness financial reporting. Under Frank et al.'s (2009) study, investors are unable to efficiently price earnings and accruals for these firms, which is inconsistent with Hanlon's (2005) results.

According to above studies, large BTDs do signal earnings quality issues. Deferred tax expense or the ratio of tax-to-book income may be an appropriate approach to informing earnings persistence (Hanlon and Heitzman 2011). Another view suggests that large BTDs are an indicator of tax avoidance activities because of the different purpose of making the aggressive reporting.

3.3 Book-Tax Conformity

While book-tax differences may seem to over-shadow normal accounting, many transactions are reflected in financial statement income and taxable income with the same accounting methods. This book-tax conformity links financial statement income and taxable income. Guenther, Maydew, and Nutter (1997) examine the extent of book-tax conformity between pre-TRA 86 and post-TRA 86. The Tax Reform Act of 1986 (TRA 86) forced a set of U.S. firms (sales in excess of \$5 million) to use the accrual method of accounting for tax purposes, which increased their book-tax conformity. The results show that companies that used the cash method for tax purposes before 1986 and switched to the accrual method after 1986 showed a reduction in accruals after 1986, suggesting that firms deferred more income for financial statement purposes after the tax law change.

There is an ongoing debate about whether the U.S. should eliminate differences between accounting earnings and taxable income in order to improve earnings quality. Indeed, book-tax conformity is an important issue among tax researchers and policymakers because it involves earnings persistence, earnings quality, and future cash flows concern. Atwood et al.'s (2010) evidence, for example, suggests that increased book-tax conformity may reduce earnings quality because earnings have lower persistence and a lower association with future cash flows when book-tax conformity is higher.

CHAPTER 4. LITERATURE REVIEW

4.1 Tax Incentives in Executive Compensation and Corporate Tax Avoidance

A number of studies in accounting develop and test theories about how certain attributes of taxes and earnings affect their relative use as performance measures on executive compensation contracts. Newman (1989) is the first paper to test firm characteristics, multinational status, and capital intensity, about why some firms use after-tax profits, and other firms use before-tax profits to determine short-term bonuses for CEOs. He finds that CEOs at multinational firms and firms with capital intensity are compensated on after-tax profits due to more opportunities available for income tax planning. As a result, firms are more likely to use after-tax bonus plans to reward CEOs when there is available tax credit to reduce the income tax expense.

Recent academic literature explores the determinants of corporate tax avoidance.¹ A subset of the literature examines how top executive incentives align with the profile of corporate tax avoidance (e.g., Phillips 2003; Desai and Dharmapala 2006; Armstrong et al. 2012; Rego and Wilson 2012). However, the results are mixed. In the first study to test the effect of compensating CEOs to reduce their firms' tax burden, Phillips (2003) provides no evidence that using after-tax earnings performance in CEO bonus plans is associated with reduced effective tax rates (ETRs). The result is supported by Armstrong et al. (2012), who find no evidence that the level of CEO pay is associated with any measure of corporate tax avoidance. Unlike Phillips (2003) and Armstrong et al. (2012), Rego and Wilson (2012) examine CEO equity compensation and find that stock option portfolio convexity can motivate managers to undertake risky tax projects and is positively associated with tax aggressiveness. Rego and Wilson's (2012) finding

¹ See Hanlon and Heitzman 2011 for a review.

is consistent with Dyreng, Hanlon, and Maydew's (2010) suggestion that CEOs influence the level of a firm's tax avoidance activity. Rego and Wilson (2012) use equity compensation (i.e., stock options) as a motivator for tax planning and emphasize a positive association between equity risk incentives and tax risk, which is expected to generate net benefits (i.e., profits; positive net present value) for the firms and shareholders. However, the current study focuses on firms reporting loss to claim a tax refund, which may result in a stock price drop affecting CEO wealth. As a result, CEOs demand a risk premium through cash compensation, instead of equity compensation, to compensate the potential loss. By extending Newman (1989) and re-examining Phillips (2003), Gaertner (2014) finds a negative relation between CEO after-tax compensation incentives and ETRs, and a positive relation between the after-tax incentives and CEO cash compensation. Gaertner's (2014) findings suggest that compensating CEOs on after-tax performance leads to greater tax planning effectiveness, consistent with CEO compensation contracts having a significant impact on corporate tax avoidance, and those CEOs demand a risk premium through cash compensation.

4.2 Corporate Tax Avoidance

Corporate tax avoidance receives considerable attention from tax authorities and researchers. Various studies analyze the link between different issues such as corporate tax avoidance and time period (Dyreng, Hanlon, and Maydew 2008), corporate tax avoidance and the growth of high-powered incentives (Desai and Dharmapala 2006), tax aggressiveness and agency issues (Chen, Chen, Cheng, and Shevlin 2010), corporate tax avoidance on stock price reaction (Kim, Li, and Zhang 2011), and the relationship between book aggressiveness and tax aggressiveness (Frank, Lynch, and Rego 2009; Wilson 2009).

Dyreng et al. (2008) study firms' ability to avoid income taxes over long periods of time, and they find that approximately one-fourth of their sample firms appear to successfully maintain long-run cash effective tax rates below 20 percent over sustained periods of time. Indeed, decreasing taxes payable has become an important aspect of corporate tax planning. Dyreng et al. (2008) also develop a long-run cash ETR measure, which reduces year-to-year volatility in annual effective tax rates. The long-run computation is also used to estimate tax aggressiveness by Frank et al. (2009) and Chen et al. (2010). In addition, the use of cash taxes paid is beneficial because it avoids tax accrual effects present in the current tax expense. Therefore, this study improves upon the measurement of tax avoidance, specifically in the long run.

Another stream of recent tax avoidance research also suggests that large positive book tax differences (hereafter, BTDs) signal both book and tax aggressiveness (Frank et al. 2009; Wilson 2009). Wilson's (2009) study documents that tax sheltering is positively associated with aggressive financial reporting, echoing Frank et al.'s (2009) result that a strong, positive relation between financial and tax reporting aggressiveness exists because nonconformity between GAAP and tax code allows firms to engage in book income upward and taxable income downward in the same reporting period. To examine the relation between financial and tax aggressive reporting behaviors, Frank et al. (2009) develop a measure of tax reporting aggressiveness. They find a positive relation between financial reporting aggressiveness and tax reporting aggressiveness and the market prices earnings and accruals inefficiently for these firms. The results in this study benefit investors concerning the consequences of aggressive corporate reporting and benefit academics investigating aggressive tax and financial reporting behaviors. Moreover, firms may face additional regulatory scrutiny from the IRS and external auditors if

large book-tax differences are created aggressively for both financial and tax reporting purposes (e.g., reporting a tax loss but a financial profit in the same year).

Chen et al. (2010) examine the relationship between tax aggressiveness and the non-tax cost of a potential price discount in family firms and non-family firms. They find that family firms are less tax aggressive than their non-family counterparts. The results interpret that family owners are willing to forgo tax aggressive activities to avoid price discounts that arise from minority shareholders' concern over tax avoidance masking family rent-seeking activities. These results substantiate the concern that family firms have relatively weak corporate governance exposed by Wilson (2009) and Frank et al. (2009).

Chen et al.'s (2010) findings also support Desai and Dharmapala's (2006) results. Desai and Dharmapala's (2006) document that increases in incentive compensation reduce the level of tax sheltering, corresponding with an enhancing relationship between managerial rent diversion and corporate sheltering.² This negative effect is especially driven by firms with relatively weak corporate governance. The finding is consistent with the agency perspective on tax avoidance; that is, tax avoidance activities facilitate managerial opportunistic behavior (Chen et al. 2010; Desai and Dharmapala 2006; Kim et al. 2011). As a result, even though tax sheltering activities may create little or no risk of penalties, it could still be better to leave the opportunities to avoid the non-tax cost, such as a potential price discount (Desai and Dharmapala 2006). This claim might help reconcile the result in Desai and Dharmapala's (2006) study with recent accounting research (Hanlon 2005 and Lev and Nissim 2004) on the effects of BTDs on earnings persistence

² Dynegy engaged in a transaction that provided for \$300 million in operating cash flow on Dynegy's financial statements and a 12% rise in net income from transfer pricing activities (tax benefits) in 2001. However, the large cash inflows were from a loan or a financing cash flow instead of operating cash inflows (Desai and Dharmapala 2006).

and earnings quality (e.g., large BTDs are associated with a reduced degree of earnings persistence and lower future returns).

Kim et al. (2011) explores the association between the extent of a firm's tax avoidance and its future stock price crash risk. Because tax avoidance activities may provide tools and masks for managers to artificially enhance earnings and hide negative operating outcomes for extended periods, those activities facilitate managerial rent extraction (Desai and Dharmapala's 2006) and bad news hoarding activities (Kim et al. 2011). Kim et al.'s (2011) results show that corporate tax avoidance activities increase firm-specific stock price crash risk. They also find that the positive relation between tax avoidance and crash risk is weakened when high institutional ownership serves as strong external monitoring mechanisms.³ Kim et al.'s (2011) findings reinforce the agency perspective of corporate tax avoidance (Desai and Dharmapala, 2006), and they identify the significant costs that tax avoidance can impose on firms and their shareholders, demonstrating the concern of agency issue in Chen et al. (2010).

4.3 Net Operating Loss Carrybacks

Another stream of research that focuses on the short-term tax incentive effect to shift income to accelerate loss recognition has also been seen as an approach of corporate tax avoidance. An early study that was conducted by Maydew (1997) finds that firms with net operating loss (NOL) carrybacks during the year immediately after the Tax Reform Act of 1986 (TRA 86) was enacted, shifted gross margin and SG&A expenses between the fourth quarter of the NOL year and the first quarter of the following year. The gross margin and SG&A expense shifting increases the refund of prior years' taxes. Albring, Dhaliwal, Khurana, and Pereira (2011)

³ Enron entered into a tax transaction called "Project Steele" to manage pre-tax accounting earnings. The transaction created \$133 million to inflate pre-tax accounting earnings to make stock price increases, and helped opportunistic managers extract benefits (e.g., excess executive compensation) from the inflated stock price.

study the effect of the Taxpayer Relief Act of 1997 (hereafter, TRA 1997) on firm behavior. TRA 1997 reduces the NOL carryback period from three to two years. An opportunity cost would be incurred, because if a firm does not report an NOL in 1997, then it forgoes the refund of taxes paid in 1994 and 1995. The study documents that the tax code change created a short-term incentive to trigger income shifting to accelerate loss recognition in the tax year 1997. Using data from 1981 to 2010, Erickson et al. (2013) investigate firms with NOL carryback incentives and examine whether they incur losses to claim back taxes paid in prior periods. They find that the possibility of net loss reporting to claim a cash refund of taxes increases when firms paid taxes in the earliest carryback year, corresponding with a concern of tax-induced financial reporting decisions.

Following my prior discussion, despite reporting a greater loss for financial reporting purposes; managers' compensation contracts motivate actions that maximize identified performance measures. As a result, management incentives drive corporate outcomes. Because managers are risk averse, firms need to provide greater incentives to encourage CEOs to engage in income decreasing earnings management to accelerate loss recognition. CEOs who demand a premium for bearing additional risk may receive greater cash compensation.

4.4 Compensation Contracts and Financial Reporting

A number of papers find that managers and directors face relatively severe penalties for earnings manipulation (Dechow et al. 1996; Farber 2005). However, another stream of recent research has begun to examine the manipulation of earnings numbers in order to influence executive compensation contracts. Results in Matsunaga and Park (2001) and Mergenthaler et al. (2009) suggest that boards might encourage and reward earnings management. Matsunaga and Park (2001) find that CEOs' bonuses are reduced when they miss the quarterly benchmark two,

three, or four times during the year. The finding in Mergenthaler et al. (2009) shows that the CEO bonus results of Matsunaga and Park (2001) also extend to equity-based compensation and forced turnover.

Wallace (1997) compares a sample of firms where incentive compensation is based on residual income-based measures⁴, to firms where incentive compensation is based on traditional accounting earnings, in order to investigate whether management incentives drive corporate performance. The findings show that firms adopting residual income compensation as opposed to control firms engage in more activities associated with the explicit capital charge in residual income-based measures. These findings are consistent with managerial incentives driving corporate performance.

⁴ It is defined as earnings before interest less a capital charge on total capital (debt and equity).

CHAPTER 5. HYPOTHESIS DEVELOPMENT

Managers are risk averse; however, principals are risk neutral (Scott 2009). Performance measures selected for management compensation contracts are those measures that best motivate management to maximize the value of the firm. Any incentive contract has both benefits and costs. A firm can reward a manager to generate NOLs that refund prior year's tax payments. The additional benefits associated with recognizing NOLs are likely to exceed the additional costs associated with greater compensation risk imposed on the manager via income decreasing earnings management. Aggressive tax strategies involve significant uncertainty and can impose costs on both firms and managers. Therefore, managers must be motivated to engage in risky tax activities that are expected to generate net benefits for the firm.

Compensation committees identify performance measures that can be observed and used to design an efficient incentive contract, *ex ante*. The incentive contract will induce managers to take the desired action. Then the committee uses those measures to evaluate manager performance, *ex post*. Because the incentive plan allows for flexibility in compensation to reflect some activity changes over the course of a year, the mix of earnings-based compensation that motivates short-term decision making, and stock-based compensation that motivates long-term decision making, are likely to differ from year to year. In order to align the financial interests of shareholders and management, corporations expect operating income and total direct compensation to trend together. However, in any given year, there might be some variability due to goal changes. The two components of CEO compensation are cash (salary, bonuses, and non-equity incentives) and equity (stock options and restricted stock awards). Cash-based incentives are like annual short-term incentive awards; while equity-based incentives are awarded under a long-term performance component of the compensation plan. Because the value of stock options

and restricted stock depends on a company's share price, this characteristic provides an incentive to increase share price for the long run. If a corporation's compensation committee encourages the CEO to use income-decreasing earnings management in a given year, so as to accelerate loss recognition and claim a refund of the prior years' taxes, the committee will increase the cash-based compensation so as to achieve the short-term goal. Moreover, cash compensation payments lead to an immediate deduction that reduces tax liabilities, while employee stock options (restricted stock units) lead to a corporate deduction only when the options (units) are eventually exercised (vested), which defer the tax deduction. Consequently, increasing cash-based compensation also can help to immediately reduce the corporation's tax rate and tax liability. However, when corporations encounter financial constraints, shortage of money may trigger CEOs, either strategically or legitimately, to engage in tax-motivated loss recognition without incentives encouraged by compensation committees. Finally, if the firm simply has poor financial performance for a given year, there is no ex-ante expectation that the CEO's compensation should be adjusted. Therefore, the CEO's cash-based compensation will not likely change. In my empirical analysis, I will compare loss firms with tax incentive to loss firms with financial constraints. This analysis leads to the following prediction:

H1: CEO compensation of loss firms with tax-motivated income shifting exhibits relatively higher earnings-based compensation than that of loss firms with financial difficulty.

CHAPTER 6. RESEARCH DESIGN

6.1 Net Operating Loss (NOL)

I follow Erickson et al.'s (2013) study by calculating the tax loss carryback capacity, which is an estimate of the unrefunded tax payments in the earliest year of the carryback period that will expire if the firm does not claim a refund in year t . The variable ($NOLC$) for the period is an indicator variable equal to 1 if in year t the firm has unrefunded income tax paid in the earliest carryback year, as defined in Appendix B. I next identify a set of firms that report a loss (negative earnings) in year t , positive earnings the next year ($t+1$), and positive earnings in the two prior years ($t-1$ and $t-2$). The variable (STR) is an indicator variable equal to 1 if in year t the firm has negative earnings, and the firm reports positive earnings in years $t-2$, $t-1$, and $t+1$. This approach identifies a set of firms that claim a refund of taxes paid in a prior year, that has a corresponding amount of potentially refundable taxes, and that reports a profit in the year following the claim.

Companies report a loss due to one of the following two scenarios. In the first scenario, the compensation committee encourages the CEO to claim a tax refund of prior year's taxes, by reporting a loss in year t and carrying it back to years $t-1$ and $t-2$, with no loss to carry forward into the future. Under this scenario, the loss reported in year t is sufficiently less than the positive earnings of years $t-1$ and $t-2$, because the CEO is probably not willing to deeply jeopardize their career. In the second scenario, if the company encounters financial distress and cannot meet its minimum earnings target, the CEO may take a big bath to artificially enhance next year's (and potentially later years) earnings. Under this scenario, the loss reported in year t will substantially be greater than the combined positive earnings in year $t-1$ and $t-2$, and there will be a substantial loss carryforward. I classify these two scenarios as 1) the compensation contract incentive, and 2)

the big bath incentive, respectively. As I will explain, the two scenarios are distinguished by cutoffs based on the median for each scenario of the relative magnitude of the profits in the two carry back years to the current year's loss.

To compute the cut-off, I first separate firms into two groups. First, firms with losses in year t that are less than the sum of the two prior year's profits ($t-2$ and $t-1$). This group identifies firms where the loss is under the prior two years profits (or just slightly over), so that the CEO does not jeopardize their career. Second, firms with losses that are greater than the sum of the two prior year's total profits. This group identifies firms that encountered a financial crisis, cannot meet their minimum earnings target, and the CEO uses big bath earnings management in the current year. I next compute, for each group, the median absolute value of the ratio of the sum of the profits in years $t-2$ and $t-1$ to the loss in year t . The medians of the two groups are 0.73 and 1.41, respectively for 1) the compensation contract incentive group, and 2) the big bath incentive group. For simplicity, I use 0.75 and 1.50 as the respective cutoffs to distinguish the two scenarios.

Erickson et al. (2013) mention firms are motivated to take advantage of tax loss carryback provisions to claim a tax refund by accelerating loss recognition. I next use equation (1) to distinguish firms with compensation contract incentives from firms with big bath incentives, and equation (2) to distinguish firms with big bath incentives from loss firms that exceed the 1.5 cut-off:

$$(Earnings_{t-2} + Earnings_{t-1}) * 0.75 \geq - Earnings_t \quad (1)$$

$$(Earnings_{t-2} + Earnings_{t-1}) * 1.50 \geq - Earnings_t \\ > (Earnings_{t-2} + Earnings_{t-1}) * 0.75 \quad (2)$$

Tax loss carryback laws create opportunities for firms to shift income to their advantage by creating a loss to carryback to prior years and to claim a refund of prior year's taxes paid. Based on the classification of the two scenarios, the compensation contract incentive and the big bath incentive, *TAX INCENTIVE* is a dummy variable that indicates that a firm has a compensation contract incentive (equation 1), has the capacity for tax loss carrybacks (*NOLC* = 1), and reports negative earnings in year *t* (*STR* = 1). *BIG BATH* is a dummy variable that indicates a firm has a big bath incentive (equation 2), has the capacity for tax loss carrybacks (*NOLC* = 1), and reports negative earnings in year *t* (*STR* = 1). *PROFIT* is a dummy variable indicating a firm that has the capacity for tax loss carrybacks (*NOLC* = 1) but reports positive earnings in year *t*, and thus reports profits for the three years (*t-2*, *t-1*, and *t*).

6.2 Earning-Based Compensation

The current study examines the extent to which the change in earnings-based (hereafter, cash-based) compensation precedes NOL reporting for the tax-motivated loss shifting purpose. I use the percentage change in cash-based compensation of CEO pay to identify NOL reporting primarily due to the compensation contract incentive (*TAX INCENTIVE*=1) or due to the big bath incentive (*BIG BATH*=1).

I use four different methods to calculate CEO cash-based compensation changes. Variable names from Execucomp are shown in bold and in parentheses. The first three methods calculate the difference in the percentage of cash-based compensation between year *t* and *t-1*.

For firm *i* in year *t* and the CEO, I calculate cash-based compensation change, as follows:

$$CASH_CHANGE_{i,t} = \frac{Salary_{i,t} + Bonus_{i,t}}{Salary_{i,t-1} + Bonus_{i,t-1}} - 1 \quad (3)$$

$$CASH_CHANGE_INC_{i,t} = \frac{Salary_{i,t} + Bonus_{i,t} + NonEq_Incent_{i,t}}{Salary_{i,t-1} + Bonus_{i,t-1} + NonEq_Incent_{i,t-1}} - 1 \quad (4)$$

The first method, *CASH_CHANGE*, uses the *Salary* (**SALARY**) and *Bonus* (**BONUS**) to calculate the percentage difference in the cash-based compensation between years *t* and *t-1*. The second method, *CASH_CHANGE_INC*, follows Gaertner (2014), by including all cash-based compensation: *Salary*, *Bonus* and *NonEq_Incent* (**NONEQ_INCENT**) – non-equity incentives, in order to calculate the percentage difference in the cash-based compensation between years *t* and *t-1*.

The third method, *CASHCHANGE_SBORINC*, which follows Seidman and Stomberg (2012), is similar to *CASH_CHANGE*. However, *NonEq_Incent* is used if *Bonus* is missing.

The fourth method, *CASH_WEIGHT*, is calculated as the percentage difference between total compensation derived from salary and bonus in years *t* and *t-1*, weighted for stock options and restricted stock units. For firm *i* in year *t* and the CEO, I calculate *CASH_WEIGHT*, as follows:

$$CASH_WEIGHT_{i,t} = \frac{Salary_{i,t} + Bonus_{i,t}}{Salary_{i,t} + Bonus_{i,t} + Options_{i,t} + RSU_{i,t}} - \frac{Salary_{i,t-1} + Bonus_{i,t-1}}{Salary_{i,t-1} + Bonus_{i,t-1} + Options_{i,t-1} + RSU_{i,t-1}} \quad (5)$$

Options is the fair value of stock options granted (**OPTION_AWARDS_FV**). *RSU* (**STOCK_AWARDS_FV**) is defined as the fair value of restricted stock units granted to executive during the year.

To test the change in the earning-based CEO compensation when firms report NOLs with tax-motivated loss-shifting incentives, I estimate equation (6):

$$\begin{aligned}
 C_CHANGE_{i,t} = & \beta_0 + \beta_1 TAX\ INCENTIVE_{i,t} + \beta_2 BIG\ BATH_{i,t-1} \\
 & + \beta_3 PROFIT_{i,t} + \beta_4 Control\ Variables_{i,t} \\
 & + Year\ Fixed\ Effects + e_{i,t}
 \end{aligned} \tag{6}$$

where *C_CHANGE* is one of four dependent variables: *CASH_CHANGE*, *CASH_CHANGE_INC*, *CASH_CHANGE_SBORINC*, or *CASH_WEIGHT*. Each dependent variable is estimated in separate OLS regressions. My main interests are *TAX INCENTIVE* and *BIG BATH*, the difference between *TAX INCENTIVE* and *BIG BATH*, and the difference between *TAX INCENTIVE* and *PROFIT*. In hypothesis 1, I predict that NOL reporting should lead to a relatively higher CEO cash-based compensation of loss firms with tax incentives (i.e., *TAX INCENTIVE*) than that of loss firms with financial difficulty (i.e., *BIG BATH*). As such, β_1 should be positive and greater than β_2 . I have no prediction for the sign of β_2 . The coefficient on *TAX INCENTIVE* in this model is interpreted as the percentage change of CEO cash-based compensation that increases with NOL carryback incentives due to compensation contracts.

Therefore, the main test variable (*TAX INCENTIVE*) for the period is a dummy variable that indicates a firm with tax incentives has refunded income tax paid in the earliest carryback year (*t-2*) and reports a loss (negative earnings) in the current year.

6.3 Control Variables

I control for several variables which have been used in the literature and represents a vector of time-varying, firm-level controls, including research and development (*R&D*), leverage

(*LEVERAGE*), intangible assets (*INTANGIBLE*), an indicator for whether the firm has foreign operations (*FOREIGN_OPE*), CEO tenure (*TENURE*), and advertising expense (*ADVERTISING*). Variable definitions are in Appendix A.

The variable *SIZE* controls for possible economies of scale related to tax planning as well as for variation in the political costs of tax planning (Gupta and Newberry 1997). Research and development (*R&D*) is included because additional research and development tax credits reduce the effective tax rate of the firm (Berger 1993). Leverage (*LEVERAGE*) controls for differences in tax planning opportunities related to capital structure decisions (Gupta and Newberry 1997). The ratio of intangible assets to total assets (*INTANGIBLE*) controls for possible income shifting from high- to low-tax jurisdictions (Desai and Hines 2002). Foreign operations, an indicator for whether the firm has foreign operations (*FOREIGN_OPE*), controls for additional tax credits from tax planning opportunities (Dyreng et al. 2010). CEO tenure (*TENURE*) controls for CEO entrenchment which may lead to higher cash compensation. Advertising expenses (*ADVERTISING*) control for financial constraints, which increase the need for a tax refund from prior years.

CHAPTER 7. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

7.1 Data

I begin with a sample of firm-years from 1994-2012 in the intersection of Compustat, ExecuComp, and CRSP databases that are incorporated in the U.S., are industries other than financial services and utilities, and have nonmissing asset data. I use 1994 as a starting point because the accounting for income taxes has changed significantly since 1993 with the implementation of SFAS No. 109. To be included in the final sample, the observations do not include missing variables used in the regression and missing SIC. My final sample consists of 15,250 firm-years.

7.2 Descriptive Statistics

Table 1 displays descriptive statistics for the full sample (15,250 firm-years). Variable definitions are in Appendix A. Average CEO cash compensation (*CASH_COMP*) is \$1.672 million. Table 1 shows that roughly 2.9 percent of firms with refundable tax payments (*TAX_INCENTIVE*+ *BIG BATH*) have an incentive to report negative earnings, which is close to that in Erickson et al. (2013). 75.4 percent of firms, on average, report a profit three years in a row (*PROFIT*). The mean *CASHCHANGE*, excluding non-equity incentive, is 26.3 percent. The mean for *ADVERTISING* is 1.1 percent, which is consistent with Dyreng et al. (2010). The averages of *FOREIGN_OPE* and *LEVERAGE* are 57.2 percent and 17.1 percent, respectively; while the standard deviations of *FOREIGN_OPE* and *LEVERAGE* are 49.5 percent and 15.5 percent, respectively; which are close to those in Dyreng et al. (2010). Mean intangible assets represent 15.7 percent of total assets; while average CEO tenure is 8.59 years. The averages of *BOOK_TO_MARKET* and *SIZE ADJUSTED RETURN* are 60.4 percent and 4.9 percent, respectively. Overall, I conclude my variables are consistent with prior studies.

Table 1
Descriptive Statistics

Panel A: Univariate Statistics

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
CASHCHANGE	15,250	0.263	2.951	-0.041	0.054	0.230
CASHCHANGE_INC	15,250	0.325	3.002	-0.077	0.084	0.314
CASHCHANGE_SBORINC	15,250	0.322	2.993	-0.079	0.082	0.312
CASH_WEIGHT	15,250	0.029	1.896	-0.144	-0.009	0.093
CASH_COMP (\$MM)	15,250	1.672	2.101	0.683	1.139	2.000
TAX INCENTIVE	15,250	0.024	0.152	0.000	0.000	0.000
BIG BATH	15,250	0.005	0.072	0.000	0.000	0.000
PROFIT	15,250	0.754	0.431	1.000	1.000	1.000
TENURE	15,250	8.592	7.735	3.132	6.170	11.449
R&D	15,250	0.034	0.064	0.000	0.001	0.036
LEVERAGE	15,250	0.171	0.155	0.020	0.154	0.268
INTANGIBLE	15,250	0.157	0.173	0.007	0.095	0.252
FOREIGN_OPE	15,250	0.572	0.495	0.000	1.000	1.000
SIZE	15,250	7.336	1.532	6.217	7.173	8.311
ADVERTISING	15,250	0.011	0.026	0.000	0.000	0.009
BOOK_TO_MARKET	15,250	0.604	0.256	0.414	0.591	0.774
SIZE ADJUSTED RETURN	15,250	0.049	0.523	-0.208	-0.007	0.216

Table 1 presents descriptive statistics for the sample. All variables presented are defined in Appendix A.

CHAPTER 8. EMPIRICAL RESULTS

8.1 Correlation Matrix

Table 2 presents the Spearman correlation matrix of the dependent and independent variables used in this study. The correlations between the *TAX INCENTIVE* variable and the dependent variables (*CASHCHANGE*, *CASHCHANGE_INC*, and *CASHCHANGE_SBORINC*) are all negative and significant at conventional levels. The *BIG BATH* variable also is negatively correlated with *CASHCHANGE*, *CASHCHANGE_INC*, and *CASHCHANGE_SBORINC*, but the correlation is weaker than those with *TAX INCENTIVE*. *PROFIT* firms are positively correlated with *CASHCHANGE*, *CASHCHANGE_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT*. I do not find a significant correlation between *PROFIT* firms and the dependent variables. While these correlations are not in the predicted direction, multivariate analysis seems necessary to test my hypothesis.

8.2 Multivariate Analysis

Table 3 presents results from estimating equation (6) by each of the four dependent variables (*CASHCHANGE*, *CASHCHANGE_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT*). To support my hypothesis, I expect that the coefficient on *TAX INCENTIVE* is positive and greater than the coefficient on *BIG BATH*. However, the evidence shows that CEO cash-based compensation does not increase with NOL carryback incentives.

Examining the regression results when *CASHCHANGE* is the dependent variable, the coefficient on *TAX INCENTIVE* is 0.301 ($p=0.38$), indicating that the percentage change of cash-based compensation increases by 30.1 percent in years when a loss firm has a tax-based incentive to accelerate losses. However, the coefficient on *TAX_INCENTIVE* is not statistically significant.

Table 2
Correlation Matrix

Panel A: Variable CASHCHANGE to CASH_COMP

	<u>CASHCHANGE</u>	<u>CASHCHANGE</u> <u>_INC</u>	<u>CASHCHANGE</u> <u>_SBORINC</u>	<u>CASH_WEIGHT</u>	<u>TAX INCENTIVE</u>	<u>BIG BATH</u>	<u>PROFIT</u>	<u>CASH_COMP</u>
CASHCHANGE	1							
CASHCHANGE_INC	0.770	1						
CASHCHANGE_SBORINC	0.753	0.951	1					
CASH_WEIGHT	0.296	0.395	0.420	1				
TAX INCENTIVE	-0.050	-0.064	-0.061	-0.015	1			
BIG BATH	-0.023	-0.036	-0.031	-0.002	-0.011	1		
PROFIT	0.007	0.009	0.006	0.002	-0.273	-0.127	1	
CASH_COMP	0.141	0.258	0.245	0.110	-0.055	-0.030	0.069	1
TENURE	-0.133	-0.133	-0.134	-0.030	0.002	0.001	0.029	-0.036
R&D	0.003	0.004	0.003	-0.005	0.030	-0.002	-0.056	-0.033
LEVERAGE	0.002	0.000	0.003	-0.001	0.024	0.017	-0.078	0.189
INTANGIBLE	-0.047	-0.011	-0.011	0.009	0.007	0.020	0.045	0.241
FOREIGN_OPE	-0.010	0.005	0.005	0.006	0.022	0.010	-0.024	0.226
SIZE	-0.014	0.020	0.016	0.008	-0.005	-0.010	0.022	0.691
ADVERTISING	-0.048	-0.024	-0.022	-0.002	-0.011	-0.008	0.044	0.118
BOOK_TO_MARKET	-0.070	-0.097	-0.089	-0.004	0.070	0.065	-0.175	-0.035
SIZE ADJUSTED RETURN	0.202	0.258	0.252	0.083	-0.012	-0.042	0.043	0.139

Table 2 presents Spearman correlation coefficients. All variables presented are defined in Appendix A. Coefficient values in bold are statistically significant at the 0.05 level.

(Table 2 continued)

Panel B: Variable TENURE to SIZE ADJUSTED RETURN

	<u>TENURE</u>	<u>R&D</u>	<u>LEVERAGE</u>	<u>INTANGIBLE</u>	<u>FOREIGN_OPE</u>	<u>ASSETS</u>	<u>ADVERTISING</u>	<u>BOOK_TO _MARKET</u>	<u>SIZE ADJUSTED RETURN</u>
TENURE	1								
R&D	-0.023	1							
LEVERAGE	-0.069	-0.243	1						
INTANGIBLE	-0.061	0.077	0.202	1					
FOREIGN_OPE	-0.054	0.375	-0.016	0.183	1				
SIZE	-0.120	-0.037	0.355	0.205	0.263	1			
ADVERTISING	-0.012	-0.045	-0.062	0.046	-0.019	0.056	1		
BOOK_TO_MARKET	-0.028	-0.275	0.364	0.068	-0.045	0.100	-0.116	1	
SIZE ADJUSTED RETURN	0.009	0.020	-0.057	-0.001	0.022	0.012	0.009	-0.248	1

Table 2 presents Spearman correlation coefficients. All variables presented are defined in Appendix A. Coefficient values in bold are statistically significant at the 0.05 level.

The difference in the percentage change of cash-based compensation between loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and loss firms with financial difficulty (*BIG BATH*) is 0.702 ($p=0.57$). But the difference is still not statistically significant. The result is also not significant when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are chosen as the dependent variable. As a result, hypothesis 1 is not supported by any of the dependable variables.

Table 3
Analysis of Cash Compensation Changes and Loss Carrybacks (Full Sample)
(n = 15,250)

Variable ^{a,b}	CASHCHANGE Coefficient	CASHCHANGE_ INC Coefficient	CASHCHANGE_ SBORINC Coefficient	CASH_ WEIGHT Coefficient
Intercept	0.098	0.101	0.114	-0.178 *
TAX INCENTIVE (β_1)	0.301	0.222	0.220	0.436
BIG BATH (β_2)	1.003	0.928	0.943	-0.050
PROFIT (β_3)	-0.095 *	-0.122 **	-0.124 **	0.001
R&D	0.393	0.252	0.239	0.377
LEVERAGE	-0.211	-0.218	-0.211	-0.088
INTANGIBLE	-0.144	-0.182	-0.174	-0.101
FOREIGN_OPE	-0.014	-0.017	-0.016	-0.001
TENURE	-0.014 ***	-0.016 ***	-0.015 ***	-0.003 ***
ADVERTISING	0.034	0.387	0.393	0.520
SIZE	0.032 *	0.040 **	0.038 **	0.013
BOOK_TO_MARKET	0.022	-0.029	-0.020	0.113 *
SIZE ADJUSTED RETURN	0.176 ***	0.217 ***	0.214 ***	0.076 **
Year Effect	Yes	Yes	Yes	Yes
R-squared	0.008	0.007	0.007	0.004
Diff. between β_1 and β_2	No	No	No	No
Diff. between β_1 and β_3	No	No	No	No

*, **, *** indicate statistical significance at 10 percent, 5 percent, and 1 percent, respectively.

^a All variables are defined in Appendix A.

The dependent variables are stated in the column heading.

^b All p-values are based on two-tailed tests and are calculated based on standard errors that are clustered by firm and year (Peterson 2009; Gow et al. 2010).

An F-test is performed for differences between β_1 and β_2 and between β_1 and β_3 .

Further analysis shows that the difference between loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and profit firms with loss carryback capacity (*PROFIT*) is 0.396 ($p=0.24$). I interpret the result that the change in cash compensation increases by 43 percent more for loss firms with tax-motivated loss shifting than for profit firms with only carryback capacity but no incentive to carry back losses. However, the difference is not statistically significant. The result also is not statistically significant when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are chosen as the dependent variable.

Overall, the results in Table 3 do not provide support for the prediction that firms with tax motivated loss shifting incentives increase cash compensation to CEOs for bearing additional risk, compared to firms without tax motivated loss shifting. Instead, the results show that accelerating loss recognition, when the firm expects to benefit from the cash inflows generated by the tax refund, does not increase cash-based CEO compensation. Therefore, NOL reporting seems more likely due to financial difficulty that the firm is encountering.

Table 4 also presents results from estimating equation (6) by each of the four dependent variables (*CASHCHANGE*, *CASHCHANGE_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT*); but, I partition the sample into three time periods: 1994 – 2001; 2002 – 2005; and 2006 – 2013. The first sample period ends in 2001 in order to exclude the effects of The Sarbanes Oxley Act of 2002 (SOX). SOX was passed in 2002 in reaction to high profile corporate and accounting scandals, including Enron, Worldcom, and Arthur Andersen. The passage of SOX in 2002 has affected companies' corporate governance, internal control, boardroom diversity, corporate culture, tax shelters, and so on. Therefore, separating pre -and post - years of the passage of SOX provides evidence for the effect of the change in corporate

Table 4
Analysis of Cash Compensation Changes and Loss Carrybacks (Partitioned Sample)

Variable ^{a,b}	CASHCHANGE Coefficient	CASHCHANGE_ INC Coefficient	CASHCHANGE_ SBORINC Coefficient	CASH_ WEIGHT Coefficient
Year: 1994 - 2001 (n = 6,706)				
TAX INCENTIVE (β_1)	0.732	0.732	0.732	0.866
BIG BATH (β_2)	-0.183	-0.183	-0.183	-0.039
PROFIT (β_3)	-0.056	-0.056	-0.056	0.014
Control Variables	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes
R-squared	0.008	0.008	0.008	0.008
Diff. between β_1 and β_2	No	No	No	No
Diff. between β_1 and β_3	No	No	No	No
Year: 2002 - 2005 (n = 3,335)				
TAX INCENTIVE (β_1)	1.775	1.775	1.775	1.714
BIG BATH (β_2)	-0.084	-0.084	-0.084	-0.173
PROFIT (β_3)	-0.083	-0.083	-0.083	-0.018
Control Variables	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes
R-squared	0.011	0.011	0.011	0.012
Diff. between β_1 and β_2	No	No	No	No
Diff. between β_1 and β_3	No	No	No	No
Year: 2006 - 2013 (n = 5,209)				
TAX INCENTIVE (β_1)	-0.242 ***	-0.467 ***	-0.473 ***	-0.116 ***
BIG BATH (β_2)	2.717	2.520	2.557	-0.038
PROFIT (β_3)	-0.128 *	-0.200 **	-0.205 ***	-0.002
Control Variables	Yes	Yes	Yes	Yes
Year Effect	Yes	Yes	Yes	Yes
R-squared	0.019	0.017	0.017	0.008
Diff. between β_1 and β_2	No	No	No	No
Diff. between β_1 and β_3	Yes ***	Yes ***	Yes ***	Yes ***

*, **, *** indicate statistical significance at 10 percent, 5 percent, and 1 percent, respectively.

^a All variables are defined in Appendix A.

The dependent variables are stated in the column heading.

^b All p-values are based on two-tailed tests and are calculated based on standard errors that are clustered by firm and year (Peterson 2009; Gow et al. 2010).

An F-test is performed for differences between β_1 and β_2 and between β_1 and β_3 .

governance on the change of a company's tax policy and CEO compensation. Thus, the second sample period is from 2002 to 2005 before the next major economic event in 2006.

The third sample starts in 2006 when the U.S. housing market collapsed and ends in 2013 shortly after the global recession ended. The housing market collapse in 2006 was followed in 2007 with the subprime mortgage market beginning to display an increasing rate of mortgage defaults. The financial crisis played a significant role in the failure of businesses, decline in consumer wealth, and the downturn in economic activity, which led to the 2008–2012 global recession. Because the crisis had an extensive effect on the U.S. and global economy, companies faced a range of risks that needed to be managed, including operational, strategic, and market risks. A company's corporate governance procedures and policies, reporting strategies, and tax strategies were likely influenced by the profound financial crisis. Moreover, the change of rules regarding disclosure of executive compensation such as executive and director compensation, related person transactions, director independence and other corporate governance matters, and security ownership of officers and directors in 2006 may also affect corporate reporting behaviors (U.S. Securities and Exchange Commission, 2006).

Table 4 presents results from estimating equation (6) for the three time periods and for each of the four dependent variables (*CASHCHANGE*, *CASHCHANGE_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT*). Examining the regression results for 1994–2001 when *CASHCHANGE* is the dependent variable, the coefficient on *TAX_INCENTIVE* is 0.732 ($p=0.24$), indicating that the percentage change of cash-based compensation increases by 73.2 percent in years when a loss firm has a tax-based incentive to accelerate losses. However, the coefficient on *TAX_INCENTIVE* is not statistically significant. The difference in the percentage of cash-based compensation between loss firms with tax-motivated loss shifting

incentive (*TAX_INCENTIVE*) and loss firms with financial difficulty (*BIG BATH*) is 0.915 (p=0.14); however the difference is not statistically significant. The results are also not significant when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are the dependent variable; thus hypothesis 1 is not supported for the period 1994 to 2001.

As well, the difference between loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and profit firms with loss carryback capacity (*PROFIT*) is 0.788 (p=0.20). I interpret the result that the change in cash compensation increases by 78.8 percent more for loss firms with tax-motivated loss shifting than for profit firms with only carryback capacity but no incentive to carry back losses. Again the difference is still not statistically significant. The result also is not statistically significant when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are the dependent variable.

The results from 2002–2005 also provide no support. However, the period of 2006–2013 shows some differences when compared to those of the other two periods. When *CASHCHANGE* is the dependent variable, the coefficient on *TAX_INCENTIVE* is -0.242 (p=0.01), and is statistically significant, indicating that the percentage change of cash-based compensation decreases by 24.2 percent in years when a loss firm has a tax-based incentive to accelerate losses. This is again consistent with the NOL reporting being due to financial difficulty, rather than tax motivations. The *TAX_INCENTIVE* coefficient is also significant when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are the dependent variable. The difference in the percentage of cash-based compensation between loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and loss firms with financial difficulty (*BIG BATH*) is 2.959 (p=0.32); however, the difference is not statistically significant; thus, hypothesis 1 is not supported.

Interestingly, the difference in the percentage of cash-based compensation between loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and profit firms with loss carryback capacity (*PROFIT*) is 0.114 ($p=0.00$). I interpret the result that the change in cash-based compensation decreases by 11.4 percent more for loss firms with tax-motivated loss shifting incentives than for profit firms also with loss carryback capacity; the difference between the two coefficients is statistically significant. The results also hold when *CASH_COMP_INC*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* are the dependent variable.

Overall, the results in Table 4 do not provide support for the prediction that firms with tax motivated loss shifting incentives increase cash compensation to CEOs for bearing additional risk. Instead, the results show that accelerating loss recognition when the firm expects to benefit from the cash inflows generated by the tax refund does not change cash-based CEO compensation, or when it does change, decreases cash-based CEO compensation. Therefore, NOL reporting is likely motivated by financial difficulty that the firm is encountering, rather than by CEO compensation incentives.

8.3 Univariate Analysis

Panel A of Table 5 compares the mean values of the dependent variables and control variables, for loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and loss firms with financial difficulty (*BIG BATH*). These univariate results show that loss firms with financial difficulty (*BIG BATH*) pay more cash-based compensation than those with tax-motivated loss shifting incentive (*TAX_INCENTIVE*). *BIG BATH* firms have a higher mean value of *CASHCHANGE*, *CASHCHANGE_INC*, *CASHCHANGE_SBORINC* than *TAX_INCENTIVE* firms. Thus, loss firms with financial difficulty have a higher percentage change in cash-based compensation than those with tax-motivated loss shifting incentive.

Table 5
Univariate Statistics

Panel A

Variable	Mean for TAX INCENTIVE (β_1) (N = 362)	Mean for BIG BATH (β_2) (N = 80)	t-test for Differences in Means	
CASHCHANGE	0.6245	1.3303	-0.7058	***
CASHCHANGE_INC	0.6153	1.2711	-0.6558	***
CASHCHANGE_SBORINC	0.6142	1.2988	-0.6846	***
CASH_WEIGHT	0.4852	-0.0414	0.5266	***
R&D	0.0640	0.0653	-0.0013	
LEVERAGE	0.1962	0.2054	-0.0092	
INTANGIBLE	0.1598	0.1929	-0.0331	
FOREIGN_OPE	0.6409	0.6375	0.0034	
TENURE	8.6131	8.1359	0.4772	*
ADVERTISING	0.0070	0.0077	-0.0007	***
SIZE	7.2532	7.1361	0.1171	
BOOK_TO_MARKET	0.7190	0.8482	-0.1292	
SIZE ADJUSTED RETURN	0.0200	-0.1619	0.1819	***

Table 5 presents descriptive statistics by TAX INCENTIVE and BIG BATH subsamples. All variables presented are defined in Appendix A.

*, **, *** indicate two-tailed significance at 10 percent, 5 percent, and 1 percent, respectively.

Panel B

Variable	Mean for TAX INCENTIVE (β_1) (N = 362)	Mean for PROFIT (β_3) (N = 11,495)	t-test for Differences in Means	
CASHCHANGE	0.6245	0.2217	0.4028	***
CASHCHANGE_INC	0.6153	0.2834	0.3319	***
CASHCHANGE_SBORINC	0.6142	0.2792	0.3350	***
CASH_WEIGHT	0.4852	-0.0028	0.4880	***
R&D	0.0640	0.0302	0.0338	***
LEVERAGE	0.1962	0.1640	0.0322	***
INTANGIBLE	0.1598	0.1613	-0.0015	
FOREIGN_OPE	0.6409	0.5648	0.0761	***
TENURE	8.6131	8.7395	-0.1264	*
ADVERTISING	0.0070	0.0117	-0.0047	***
SIZE	7.2532	7.3610	-0.1078	*
BOOK_TO_MARKET	0.7190	0.5770	0.1420	**
SIZE ADJUSTED RETURN	0.0200	0.0548	-0.0348	***

Table 5 presents descriptive statistics by TAX INCENTIVE and PROFIT subsamples. All variables

*, **, *** indicate two-tailed significance at 10 percent, 5 percent, and 1 percent, respectively.

However, *BIG BATH* firms also present a negative mean value of *CASH_WEIGHT*. This shows that the weight in cash-based compensation to total compensation decreases in the loss year. Moreover, *TAX_INCENTIVE* firms have higher CEO tenure and stock return and lower advertising.

Panel B of Table 5 compares the mean values of the same variables for loss firms with tax-motivated loss shifting incentive (*TAX_INCENTIVE*) and profit firms with loss carryback capacity (*PROFIT*). Because unrefundable tax payments create short-term incentives to accelerate loss recognition, firms may engage in income-decreasing earnings management in order to generate losses for loss carryback purposes (Albring, Dhaliwal, Khurana, and Pereira 2011). Therefore, firms with loss carryback capacity that do not manage earnings down are more likely to report profits (i.e., *PROFIT* firms). Panel B shows that *TAX_INCENTIVE* firms have a higher mean value of *CASHCHANGE*, *CASHCHANGE_INCENT*, *CASHCHANGE_SBORINC*, and *CASH_WEIGHT* than *PROFIT* firms. Thus, firms with loss-shifting incentives have a higher percentage change in cash-based compensation than profit firms with loss-carryback capacity, suggesting that income-decreasing earnings management was likely used by *TAX_INCENTIVE* firms, and that *TAX_INCENTIVE* firms pay more cash-based compensation than *PROFIT* firms. As well, note that *TAX_INCENTIVE* firms also have higher R&D, higher leverage, higher foreign operations, higher book-to-market ratio, lower CEO tenure, lower advertising, lower firm size, and lower stock return than profit firms with capacity, consistent with Panel A results.

CHAPTER 9. CONCLUSION

In the current study I investigate whether CEO compensation plans affect tax-motivated loss shifting. Specifically, I study whether there is an increase in the percentage of cash-based (i.e., earnings-based) CEO compensation before firms report a net operating loss (NOL) consistent with tax motivated loss-shifting. I measure tax-motivated loss-shifting by identifying firms that have loss carryback capacity and report a small loss in the current year. I identify two scenarios where the CEO will incur a sufficiently large loss (based on relative size) to carry back to the two prior years and claim a tax refund of prior year's taxes. At the same time, the CEO reports a profit in the year following the current year ($t+1$) so as to not jeopardize their compensation contract and job security. The results do not show that CEO cash-based compensation changes are higher for firms with tax motivated loss-shifting. The evidence suggests that there is no increase in earnings-based compensation that plays a role of accelerating loss recognition to obtain a tax refund that is beneficial to the firm's operating cash flow and which is encouraged by the compensation committee.

The evidence is relevant in understanding the growing importance of executive compensation. Section 162(m) of the Internal Revenue Code prohibits public corporations from deducting more than \$1 million per year in compensation paid to each of certain executives. However, the Section 162(m) limit on deductible compensation does not apply to qualified performance-based compensation, which means that the compensation is based on performance goals, and most of the time the performance goal is linked to the financial statement income performance. Therefore, the setup works against the CEO's incentives to report a loss. Since actual tax return data are confidential, I do not know whether loss firms, with tax-loss carryback incentives, deduct taxes for cash compensation beyond the \$1 million. However, prior research

does find that NOL firms display higher (lower) levels of income-decreasing (-increasing) earnings management (Albring et al. 2011). Their results imply that loss firms with tax-loss carryback incentives may engage in income-decreasing earning management in order to generate enough losses to carryback. The losses may be enough to cover non-deductable taxes beyond the \$1 million.

CHAPTER 10. FUTURE RESEARCH

While the results show no relation between CEO cash-based compensation changes and tax loss carryback incentives, they should be interpreted with care. The period 2006 – 2012 shows a negative association between the percentage change of cash-based compensation and small loss reporting. The results in my research imply that reporting a tax loss may decrease firm value which is contrary to Erickson et al.'s (2013) argument that carrying back tax losses is a tax motivated strategy to utilize refundable tax capacity. However, if the corporate reporting decision can increase firm value, we will not see a decrease in CEO cash-based compensation. Future research may focus on the reason behind NOL reporting to understand the relationship between corporate governance and tax reporting strategies.

BIBLIOGRAPHY

- Abrams, H., R. Doernberg, and D. Leatherman. 1998. Federal Corporate Taxation. 4th Edition. Foundation Press.
- Albring, S., D. Dhaliwal, I. Khurana, and R. Pereira. 2011. Short-term incentive effects of a reduction in the NOL carryback period. *Journal of the American Taxation Association* 33 (2): 67-88.
- Armstrong, C., J. Blouin, and D. Larcker. 2012. The incentives for tax planning. *Journal of Accounting and Economics* 53: 391-411.
- Atwood, T., M. Drake, and L. Myers. 2010. Book-tax conformity, earnings persistence and the association between earnings and cash flows. *Journal of Accounting and Economics* 50, 111–125.
- Berger, P. 1993. Explicit and implicit tax effects of the R&D tax credit. *Journal of Accounting Research* 31(Autumn): 131-171.
- Blaylock, B., T. Shevlin, and R. Wilson. 2012. Tax Avoidance, Large Positive Temporary Book-Tax Differences, and Earnings Persistence. *The Accounting Review* 87: 91-120.
- 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, 41–61.
- Dechow, P., R. Sloan, and A. Sweeney. 1996. Causes and consequences of earnings manipulation. *Contemporary Accounting Research* 13, 1–36.
- Desai, M., and D. Dharmapala. 2006. Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics* 79, 145–179.
- Desai, M., and J. Hines, Jr. 2002. Expectations and expatriations: Tracing the causes and consequences of corporate inversions. *National Tax Journal* 55 (3): 409-441.
- Dyreng, S., M. Hanlon, and E. Maydew. 2008. Long-run corporate tax avoidance. *The Accounting Review* 83, 61–82.
- Dyreng, S., M. Hanlon, and E. Maydew. 2010. The effects of managers on corporate tax avoidance. *The Accounting Review* 85 (4): 1163-1189.
- Erickson, M., S. Heitzman, and X. Zhang. 2013. Tax-motivated loss shifting. *The Accounting Review* 88, 1657–1682.
- Farber, D. 2005. Restoring trust after fraud: does corporate governance matter? *The Accounting Review* 80, 539–561.

- Frank, M., L. Lynch, and S. Rego. 2009. Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review* 84, 467–496.
- Gaertner, F. B. “CEO After-Tax Compensation Incentives and Corporate Tax Avoidance.” Forthcoming, 2014.
- Gaver, J., and K. Gaver. 1998. The relation between nonrecurring accounting transactions and CEO cash compensation. *The Accounting Review* 73, 235–253.
- Ghosh, A. and J. Wang. 2014. Accounting losses, CEO turnover, and turnover risk premium. Working paper. The City University of New York.
- Guenther, D., E. Maydew, and S. Nutter. 1997. Financial reporting tax costs, and book-tax conformity. *Journal of Accounting and Economics* 23: 225-248.
- Gupta, S. and K. Newberry. 1997. Determinants of the variability in corporate effective tax rates: evidence from longitudinal study. *Journal of Accounting and Public Policy*: 1-34.
- Hanlon, M., 2005. The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences. *The Accounting Review* 80, 137–166.
- Hanlon, M. and S. Heitzman. 2011. A review of tax research. *Journal of Accounting and Economics* 50: 127-178.
- Kim, J., Y. Li, and L. Zhang. 2011. Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics* 100, 639-662.
- Lambert, R. and D. Larcker. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25: 85-125.
- Leone, A., J. Wu, and J. Zimmerman. 2006. Asymmetric sensitivity of CEO cash compensation to stock returns. *Journal of Accounting and Economics* 42: 167–192.
- Lev, B., and D. Nissim. 2004. Taxable income, future earnings, and equity values. *The Accounting Review* 79, 1039–1074.
- Matsunaga, S.R., and C.W. Park. 2001. The effect of missing a quarterly earnings benchmark on the CEO’s annual bonus. *The Accounting Review* 76, 313–332.
- Maydew, E. 1997. Tax-induced earnings management by firms with net operating losses. *Journal of Accounting Research* 35, 83–96.
- Mergenthaler, R., S. Rajgopal, and S. Srinivasan. 2009. CEO and CFO career penalties to missing quarterly analysts forecasts. Working Paper.

- Newman, H. 1989. Selection of short-term accounting-based bonus plans. *The Accounting Review* 64: 758-772.
- Phillips, J. 2003. Corporate tax-planning effectiveness: The role of compensation-based incentives. *The Accounting Review* 78 (3): 847-874.
- Phillips, J., M Pincus, and S Rego. 2003. Earnings management: new evidence based on deferred tax expense. *The Accounting Review* 78, 491–521.
- Rego, S. 2003. Tax avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research* 20: 805-833.
- Rego, S., and R. Wilson. 2012. Equity risk incentives and corporate tax aggressiveness. *Journal of Accounting Research* 50 (3): 775-810.
- Robinson, J., S. Sikes, and C. Weaver. 2010. Determinants and ETR consequences of evaluating corporate tax departments as profit or cost centers. *The Accounting Review* 85 (3) 1035-1064.
- Scott, W. 2009. *Financial Accounting Theory*. 5th Edition. Toronto, ON. Pearson Prentice Hall, Inc.
- Seidman, J. and B. Stomberg. 2012. Equity compensation and tax avoidance: incentive effect or tax benefits? Working paper.
- Sloan, R. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16: 56-100.
- U.S. Securities and Exchange Commission. (2006, November). *Current accounting and disclosure issues in the division of corporation finance*. Retrieved from <http://www.sec.gov/divisions/corpfin/cfacctdisclosureissues.pdf>.
- Wallace, J. 1997. Adopting residual income-based compensation plans: Do you get what you pay for? *Journal of Accounting and Economics* 24: 275-300.
- Wilson, R., 2009. An examination of corporate tax shelter participants. *The Accounting Review* 84, 969–999.

APPENDIX A VARIABLE DEFINITIONS

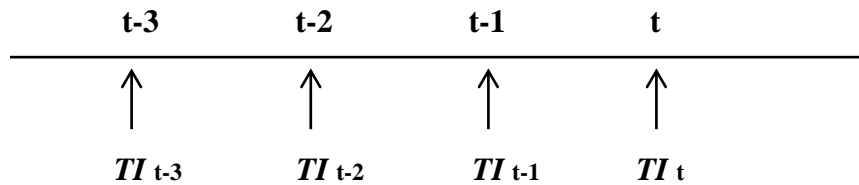
Variable	Definition
Dependent variable:	
<i>CASHCHANGE</i>	Percentage change in CEO cash compensation, excluding non-equity incentive, measured as $((SALARY_t + BONUS_t) / (SALARY_{t-1} + BONUS_{t-1})) - 1$.
<i>CASHCHANGE_INC</i>	Percentage change in CEO cash compensation, including non-equity incentive, measured as $((SALARY_t + BONUS_t + NONEQ_INCENT_t) / (SALARY_{t-1} + BONUS_{t-1} + NONEQ_INCENT_{t-1})) - 1$.
<i>CASHCHANGE_SBORINC</i>	Percentage change in CEO cash compensation. If <i>BONUS</i> missing, then use (<i>NONEQ_INCENT</i>).
<i>CASH_WEIGHT</i>	Weight change in CEO cash compensation, measured as $((SALARY_t + BONUS_t) / (SALARY_t + BONUS_t + STOCK_AWARDS_t + OPTION_AWARDS_t)) - ((SALARY_{t-1} + BONUS_{t-1}) / (SALARY_{t-1} + BONUS_{t-1} + STOCK_AWARDS_{t-1} + OPTION_AWARDS_{t-1}))$.
Variable(s) of interest:	
<i>NOLC</i>	1 if a firm has an estimate of potentially unrefunded tax payments on income in the earliest carryback year, and 0 otherwise.
<i>STR</i>	1 if in year t the firm has negative earnings, and in years t-1, t-2, and t+1 the firm reports positive earnings, and 0 otherwise.
<i>TAX INCENTIVE</i>	1 if <i>STR</i> equal 1, and loss in current year is less than or equal to 75% of prior two years, and <i>NOLC</i> equal to 1.
<i>BIG BATH</i>	1 if <i>STR</i> equal 1, and loss in current year is greater than 75% but less than or equal to 150% of prior two years, and <i>NOLC</i> equal to 1
<i>PROFIT</i>	1 if <i>NOLC</i> equal 1. Firms report profit in the current three years. The current three years is the current year and the two prior years (t-2, t-1, and t).
Other variables:	
<i>CASH_COMP</i>	Natural logarithm of CEO cash compensation, excluding non-equity incentive, measured as $(SALARY + BONUS)$.
<i>CASH_COMP_INC</i>	Natural logarithm of CEO cash compensation, including non-equity incentive (e.g., performance pay), measured as $(SALARY + BONUS + NONEQ_INCENT)$.
<i>R&D</i>	Research and development expense, measured as (<i>XRD</i>) divided by net sales (<i>SALE</i>); when missing, reset to 0.
<i>LEVERAGE</i>	The leverage ratio, measured as (<i>DLTT</i>) divided by total assets (<i>AT</i>).
<i>INTANGIBLE</i>	The ratio of intangible assets (<i>INTAN</i>) to total assets (<i>AT</i>).
<i>FOREIGN_OPE</i>	1 if a firm has a non-missing, non-zero value for pre-tax income from foreign operations (<i>PIFO</i>), and 0 otherwise.
<i>TENURE</i>	CEO tenure in years.
<i>SIZE</i>	Natural logarithm of total assets (<i>AT</i>).
<i>ADVERTISING</i>	Advertising expense, measured as (<i>XAD</i>) divided by net sales (<i>SALE</i>); when missing, reset to 0;
<i>BOOK_TO_MARKET</i>	Firms growth, measured as total assets (<i>AT</i>) / (<i>LT</i> + (<i>PRCC_F</i> * <i>CSHO</i>)).
<i>SIZE ADJUSTED RETURN</i>	Size-adjusted return calculated as the buy and hold return of the security less the buy and hold return of a size matched portfolio. Return accumulation begins in the fourth month of the second year after the fiscal year end of t.

Compustat definitions are italicized and in parentheses.

APPENDIX B
CALCULATING NET OPERATING LOSS CARRYBACK CAPACITY (NOLC)

I follow Erickson et al. (2013) to estimate net operating loss carry back capacity (*NOLC*), which is the firm’s opportunity (i.e., capacity) to carry back operating losses. Tax loss carryback capacity is an estimate of the unrefunded tax payments in the earliest carryback year that will expire if the firm does not claim a refund in year t .

Firms can carry back net operating losses (NOLs) up to two years and carry forward NOLs up to 20 years:



In order to ensure that the firm can carry back losses incurred in year t against income in the earliest carryback year ($t-2$), I define taxable income (*TI*) as current tax expense divided by the top statutory tax rate, which is 35%. The following is a function to calculate the potential value of *NOLC*:

$$NOLC = \text{MAX} \{0, TI_{t-2} + \text{MIN} [0, TI_{t-1} + \text{MAX} (0, TI_{t-3})]\}.$$

Through the above function, I estimate the maximum amount of loss in year t that can be carried back to obtain a refund of $t-2$ taxes.

VITA

Pei-Yu Sun was born in Taipei, Taiwan. She grew up in Kaohsiung, Taiwan. She graduated from Feng-Chia University with her bachelor's degree in Accounting in 1995. After graduation she worked for 6 years in public accounting, and then made the decision to study abroad and graduated from Western Kentucky University with her master's degree in M.B.A. in 2006. After graduation she made the decision to pursue her doctorate of Accounting at Louisiana State University. Her research interests are tax avoidance, accounting for income taxes, financial reporting, corporate governance, executive compensation, and auditing. Her teaching interests include individual income tax, managerial / cost accounting, auditing, and financial accounting.