



Do corporate governance characteristics influence tax management?

Kristina Minnick^{a,*}, Tracy Noga^{b,1}

^a Bentley College, Department of Finance, Waltham, MA, 02452, United States

^b Bentley College, Department of Accounting, Waltham, MA, 02452, United States

ARTICLE INFO

Article history:

Received 15 February 2010

Received in revised form 24 August 2010

Accepted 25 August 2010

Available online 19 September 2010

JEL classification:

G31

G34

Keywords:

Corporate governance

Tax management

ABSTRACT

This paper investigates how corporate governance plays a role in long-run tax management and contributes to the existing literature in several ways. First, we add insight into the horizon problems related to executive and director compensation and show that incentive compensation provides long-term incentives to improve performance by establishing a link between higher pay-performance sensitivity and lower taxes. Second, this is one of the first papers, to our knowledge, to empirically examine the role of governance in corporate tax management from a long-term perspective in order to better understand the lasting effects of governance. We find that incentive compensation drives managers to make investments into longer-horizon pay outs such as tax management. Furthermore, we find that this investment into tax management benefits shareholders; better tax management is positively related to higher returns to shareholders. We also address the endogeneity issues of corporate governance and performance measures. Finally, our paper is unique in examining which type of tax management strategy (domestic or foreign) different firms focus on. Our results shed light into how governance can improve firm performance and increase shareholder value in the long run.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

This study examines how corporate governance influences tax management and thus bottom-line performance in the long run. The fundamental question in finance-based corporate governance research is whether performance is driven by governance mechanisms. The majority of governance studies examine either single events (e.g., takeovers and CEO turnover) or bottom-line performance measures (e.g., stock market returns, Tobin's Q, and return on assets). What remains unanswered in the literature is by what specific means governance improves performance, and what is the long-run relationship between better governance and performance. In this paper, we seek to provide insight into whether better governance improves shareholder wealth and net profits in the long-run. Our analysis demonstrates that pay-performance-sensitivity creates longer term incentives for managers and directors, which in turn, motivates investment decisions with longer term pay-outs that result in higher shareholder value and profits. We then identify systematic differences in corporations' tax management strategies, as well as explore governance's role in a company's choice of a tax strategy.

Examining the link between governance and tax planning (versus other aspects of a company's operating decisions) is interesting for two reasons. First, tax planning can be complex and opaque and can possibly allow for managerial opportunism. Understanding the role that governance plays in tax management thus becomes more important. Second, tax planning involves significant uncertainty, and it may not immediately benefit a company's performance; rather, it serves as a long-term investment. By understanding how governance is related to tax management, we garner a better understanding of how governance works in

* Corresponding author. Tel.: +1 781 891 2941.

E-mail addresses: kminnick@bentley.edu (K. Minnick), tnoga@bentley.edu (T. Noga).

¹ Tel.: +1 781 891 2432.

the long term as well as the short term. Particularly, we gain insight into horizon problems related to executive and director compensation (e.g., whether incentive compensation provides long-term incentives to improve performance). Since decision makers have many choices in how to expend firm resources, it is important to know if firms that choose tax management are systematically different than firms that choose not to invest in tax management.

Directors and CEOs play an integral role in choosing a tax management strategy; they are responsible for resource allocation, performance and increasing shareholder wealth. Directors have a finite number of choices in terms of how to allocate resources and improve performance. A board that is interested in top-line performance improvement primarily focuses on sales growth through advertising or physical (capital) expansion, and will divert resources to these goals. Alternatively, they can also choose to focus on bottom-line performance. Effective tax management is a significant driver of bottom-line performance; when the board invests resources into value-maximizing activities such as tax planning, the result is lower taxes and improved bottom-line performance.

Many US companies are not dissuaded by costs of tax management and are quite adept at tax avoidance. Companies such as General Electric and Marriott Corporation are known for their consistently low effective tax rate (ETR). For example, Marriott reported an ETR of 6.8% in 2002 (Byrnes and Lavelle, 2003). If their taxes were calculated at the federal statutory rate of 35%, their tax liability on their financial statements would be \$164.9 million rather than the \$32 million reported. The cash taxes they paid in 2002 were \$107 million, less than 23% of their pre-tax book income of \$471 million. Marriott's 2003 ETR was 8.81% and its 2004 ETR was 15.29% versus the federal rate of 35%. Although this is just one example of an ultra-low ETR, it raises the question of how companies accomplish this tax management. Various strategies of tax management may prove easier and/or cheaper to follow, although they may not be so effective in tax reduction. For instance, companies may choose to focus on either lowering their foreign taxes or lowering their domestic taxes. Because of complexities associated with foreign tax management, there may be additional costs and resources required to follow this strategy, versus focusing on domestic taxes. Companies with different governance structures may be more likely to pursue different types of tax management.

Using a list of the 2005 S&P 500 companies, we collect data from 1996 to 2005 and examine how governance mechanisms, including compensation, affect the various components of taxes. First, we test whether incentive compensation and governance is related to long-run tax management. We then focus on different types of tax management strategies, such as foreign tax management and domestic tax management, and examine whether different companies with governance structures choose different strategies. We limit our study to four areas of governance: board composition, executive compensation, board compensation, and entrenchment. We focus on both the GAAP ETR and cash income taxes paid during the year. We do not study the marginal tax rate since we are concerned with the overall tax burden of the firm relative to its pre-tax income rather than the taxes paid on any incremental income. Furthermore, given the sample of firms, most companies would have the same marginal tax rate, making the sample homogeneous. Following Dyreng et al. (2008) we calculate the long-run ability to avoid taxes by focusing on five-year averages rather than one-year amounts, which could be impacted by isolated events. Then we examine the various components that make up the difference between the statutory tax rate and the GAAP ETR, such as the state, foreign, and other components of the rate reconciliation. By examining the specific components of tax management, we can better understand the relationship between governance and the specific areas in which companies are likely to manage their tax rate in the long run.

Our study shows that governance plays an important role in long-term tax management. The most important driver of tax management is the pay-performance-sensitivity (PPS) for both directors and CEOs. These results are strong and robust to various areas of tax planning. We find that high PPS leads to lower taxes, including both GAAP effective tax rates and cash taxes paid. A one-unit increase in CEO PPS results in a 0.541% decrease in industry-adjusted GAAP ETR and a 0.571% decrease in industry-adjusted cash ETR. Likewise, high PPS results in lower foreign and domestic taxes. A one-unit increase in CEO PPS results in a 0.166% decrease in industry-adjusted foreign taxes and a 0.477% decrease in industry-adjusted domestic taxes, a significant savings. The results show that regardless of the strategy (foreign or domestic), higher PPS results in better tax management. We find other corporate governance measures to be not as influential in tax management as incentive compensation. These results are consistent with Wintoki et al. (2010), who find little relation between corporate governance and performance measures after controlling for endogeneity. We do find that companies with different governance structures focus on different areas of tax management. Companies with a higher percentage of independent directors tend to focus on foreign tax management. Companies with larger boards that are less entrenched tend to focus on domestic taxes.

Our paper contributes to the existing literature in several ways. First, by establishing a link between pay structure and lower taxes, we shed light into how governance is related to performance. Second, this is one of the first papers, to our knowledge, to empirically examine the role of governance in corporate tax management from a long-term perspective. By examining long-run tax management, we can better understand the lasting effects of governance. Additionally, our paper is unique in examining the decomposition of the ETR into its various components. This allows us to identify exactly how directors and executives are managing their taxes. Finally, a major concern in corporate governance research is the endogeneity between performance and governance measures. We carefully control for the endogenous relationships between governance, firm characteristics and firm performance as suggested by Wintoki et al. (2010). Endogeneity is a serious concern when carrying out any empirical estimation in corporate governance; indeed it is likely that governance and its determinants will be jointly determined (Hermalin and Weisbach, 1998). To alleviate biases that may arise in this context, we estimate a partial adjustment model using a dynamic panel estimator that controls for simultaneity, dynamic endogeneity and unobserved heterogeneity that arises from the relationship between governance and tax management.

2. Literature review and hypotheses development

Although there is little intersection between tax management studies and corporate governance, the results in the extant literature provide a natural theoretical link between the areas. Reviewing the studies in each area of literature provides the appropriate foundation to our empirical study of the interaction of governance and tax management.

2.1. Tax management

A few papers have proposed that tax planning is a value-enhancing activity and find that shareholders hold that belief (Graham and Tucker, 2006). Additionally, Desai and Dharmapala (2006) find that tax avoidance is valued by shareholders. Firms are willing to engage in tax planning if it is deemed to be a value-enhancing activity. Although managing taxes can improve the bottom line of a firm, it is important to recognize there are costs associated with choosing to invest resources in tax planning. Capital that is used for tax management could have been allocated toward income-generating investments. Scholes et al. (2009) point out that in addition to opportunity costs, there are other costs of using resources for tax management, including transaction costs, implicit taxes and uncertainty. However, firms will only engage in tax planning if a net benefit exists, in other words, if the tax savings from planning outweigh the associated costs of executing the planning. Although firms can choose many areas in which to improve their performance, it is interesting to know which firms chose this area of performance as a focus due to its complexity and the long-term management commitment.

There is a plethora of research on causality of effective tax rates (Shackelford and Shevlin, 2001). Dyreng et al. (2008) examine long-run corporate tax avoidance and profile firms that have successfully managed their taxes. They find that one-fourth of their sample firms are able to manage their long-run tax rate at less than 20%, as opposed to the sample mean of 30%. Zimmerman (1983), for instance, examines firm size (as a proxy for a firm's political cost) and the association with ETR, and reports that firm size is positively associated with a firm's ETR. This is consistent with anecdotal evidence concerning larger firms investing in tax planning generating negative media attention. Therefore, larger firms have more to lose; thus, managing taxes raises the risk of political cost (Hanlon and Slemrod, 2010).

The political cost hypothesis argues that firms may be reluctant to manage their taxes if they will be seen as unpatriotic or as "bad" corporate citizens. There are instances where political costs have forced firms to alter choices, including not minimizing taxes to the extent they would like. For example, due to domestic political pressures, Stanley Works chose not to move their headquarters off shore, which would have resulted in a substantial tax savings (The Wall Street Journal, 2002). However, every firm needs to manage and plan their taxes to a certain extent. Although some firms may choose to not be overly aggressive, they are not going to altogether ignore the long-run benefits of consistent tax management. These firms will allocate a certain amount of resources toward tax management. However, the tax management strategy that the company chooses is likely to be dependent on the governance and compensation structure in place.

Different tax management strategies require different resources. For example, foreign tax management requires unique knowledge and resources as compared to domestic tax management. Although we are not aware of any empirical evidence, it is reasonable to assume that foreign tax planning is more costly than domestic tax planning due to the complexity and abundance of foreign tax regimes, as well as the difficulties in obtaining expertise. Additionally, most directors and CEOs have experience with domestic taxes, even if it may be related to a different industry. Companies that focus more on foreign tax management may have more resources available to offset the potential costs. For instance, Mills et al. (1998) find that larger firms engage in more foreign tax planning. However, that study does not investigate which firms, in terms of governance profiles, are willing to make this investment.

Several recent papers look at the relationship between compensation at several management positions in the firm and various measures of tax management including aggressiveness and non-compliance. Phillips (2003) uses survey data to look at the relationship between the compensation of managers and CEOs and tax planning. He finds that compensation tied to after-tax measures is related to ETR decreases for managers but not CEOs. Erickson et al. (2006) see a positive association between equity-based incentives and non-compliance. Rego and Wilson (2009) look at CEO and CFO compensation and tax reporting aggressiveness and tie that relationship to future firm performance. They find a positive relationship between compensation and aggressive tax reporting. Further, they find no evidence that this aggressiveness leads to deteriorating future firm performance or is a result of weak governance. Desai and Dharmapala (2006) find that increased incentives lead to less tax avoidance and the authors propose that the quality of governance may play a role in this relationship. These papers do not focus on the long-run relationship between taxes and compensation nor do they look at the board of director level of compensation as this study does. Since compensation, particularly incentive compensation, is intended to give executives and directors a long-term focus, examining the link between long-run tax management and pay-performance sensitivity allows us to examine the effectiveness of incentive compensation.

Tax issues have made their way into the board room, shifting the role of the director who focuses on taxes (i.e., the tax director) from tax specialist to business manager. Tax directors monitor the legislative and regulatory changes occurring around the world to manage their potential impact on their organizations. Armstrong et al. (2009) look at tax directors and find that compensation incentives have a strong negative relationship with the financial ETR. They suggest that their results indicate that tax directors are given incentives to provide a favorable impact to the financial statements. Friese et al. (2006) find that tax law can influence corporate governance by offering privileges or imposing penalties. Additionally, corporate governance structures impact how a company manages taxes (e.g., tax systems can influence corporate governance in terms of paying dividends and reorganizations).

Tedds (2006) does not specifically address governance but looks at tax evasion and finds that the legal organization of a business affects tax compliance. Arlen and Weiss (1995) find that taxes lead to income retention, which increases agency issues, while Roe (1994) claims that taxes lead to worse monitoring, by discouraging ownership structures that would minimize agency issues. Morck (2003), in contrast, suggests a possible benefit of the double taxation of dividends in reducing the use of pyramidal ownership structures.

The literature suggests that there is a relationship between governance and taxes. However, the results are somewhat inconsistent and dependent upon which management position is being studied. To our knowledge, no one has examined how specific governance or compensation mechanisms are related to long-run tax management.

2.2. Corporate governance

To mitigate agency issues between managers and shareholders, the academic literature offers multiple governance solutions. Bhagat and Bolton (2008) take an intricate look at governance and performance using composite measures of governance as well as individual measures. They find a relationship between better governance and better current and future performance. Interestingly, they find one or two individual measures of governance (e.g., board independence or ownership) are a good proxy for overall good governance, making composite measures not incrementally useful. Yet, they still see a strong link between governance and performance. What has yet to be answered is what specific piece(s) of performance is driving the results.

We examine four facets of corporate governance: board composition, entrenchment, board compensation and executive compensation. Board composition includes the size of the board as well as the number of independent directors on the board. Managerial entrenchment focuses on the duality of the CEO/Chair and takeover provisions that make it difficult for an executive to be dismissed. We use the incentive compensation component of director compensation and executive compensation to primarily focus on long-term compensation's sensitivity to performance.

2.2.1. Board composition

The board of directors serves as an internal monitoring mechanism to protect the interests of shareholders. Johnson et al. (1996) cite three functions of the board of directors: the control, service and resource dependence roles. From an agency theory perspective, boards represent the primary internal mechanism for controlling managers' opportunistic behavior, which helps to align shareholders' and managers' interests (Jensen, 1993). It is well documented that the size and composition of the board influence the effectiveness of monitoring. However, there are conflicting views as to how board composition affects monitoring and, as a result, performance. Earlier governance papers show that board composition (the size of the board and percentage of insiders on the board) is related to the degree of agency problems (Byrd and Hickman, 1992; Core et al., 1999; Hermalin and Weisbach, 1991; Yermack, 1996). This literature finds that larger boards with more inside directors tend to have more agency problems. Conversely, firms with small boards and a higher percentage of outsiders will be more concerned about shareholder welfare and firm performance. Smaller boards (Yermack, 1996; Jensen, 1993) with more outside directors (Weisbach, 1988) tend to have higher stock returns. As a result, the accepted relationship was that smaller, more independent boards would result in improved performance and greater shareholder wealth.

Recent literature shows the relationship between board composition and performance may be tenuous. Bhagat and Black (1999) find that small boards and more independent directors are not necessarily related to strong firm performance. They find there is not a single optimal structure; rather, that structure depends on the industry. Coles et al. (2008) find that boards vary with characteristics of the company. They find that complex companies have large boards with more outsiders; complex companies' values increase with board size, while the values of simpler companies decrease with board size. Relating the literature to the research question at hand, it is possible that independent directors can provide useful knowledge from their own industry and experience, which can help tax management. These independent directors may be willing to divert resources to tax management as a way to ensure good performance. Likewise, small boards may be more nimble when making decisions, such as the decision to divert resources to tax management.

2.2.2. Entrenchment

We focus on two areas of managerial entrenchment: duality in the CEO/Chair position and managerial entrenchment. Duality, having the CEO also serve as chairman of the board, has a slightly negative effect on performance (Klein, 2002; Deli and Gillan, 2000), possibly because this leads to CEOs becoming self-serving. A number of recent papers confirm the governance role of entrenchment and the market for corporate control (Gompers et al., 2003; Bebchuk et al., 2009; Bebchuk and Cohen, 2005). They show that firms with relatively more anti-takeover provisions (ATPs) or weaker shareholder rights have lower values. To explore the channel through which ATPs destroy value, Masulis et al. (2007) find that acquirers with more ATPs also have lower merger announcement returns. The existence of the takeover provisions can serve as a good indication of the intensity of managerial entrenchment. Cremers and Nair (2005) show that staggered boards are the most important of the anti-takeover provisions; therefore we focus on staggered boards in our multivariate analysis. Chen and Zhao (2008) show that managers in companies with staggered boards are lazier, as shown by a lack of motivation to manage earnings. Therefore, firms with managerial entrenchment, or staggered boards, will likely have lower values and returns, a component of which will be less tax management and higher tax expense.

2.2.3. Director compensation

Yermack (2004) suggests that directors have two incentives to protect shareholders: their reputation and their compensation. Directors with good reputations may be rewarded with other opportunities, such as consulting opportunities, job positions, or board seats in other companies. Yermack shows that as the value of a company rises, outside board members experience higher compensation and an increase in future outside board seats (presumably due to improved reputation). In contrast, when value decreases, board members are more likely to lose their seats on the board. Yermack's results indicate that it is in the directors' best interests to work to increase the value of the company. One possible method of increasing a firm's value is through the effective management of the company's tax expense.

In addition to reputational capital, directors are provided monetary incentives, including stock and option grants. Ryan and Wiggins (2004) find that boards with more independent directors award themselves larger stock and option grants that are more closely tied to stock price performance. Similar to the executives, the higher sensitivity to performance, resulting from stock and option grants, creates an incentive for directors to improve performance over the long term. Since directors are responsible for asset allocation, they are in a position to provide more resources toward tax management, which can be a driver of good long-term performance.

Linn and Park (2005) find that director compensation is aligned with investment opportunities. They argue that companies whose costs of monitoring are high find it necessary to attract suitable directors with higher levels of compensation; additionally, these companies mitigate agency costs with equity compensation. Viewing tax management as an investment choice, directors in firms who manage taxes more actively than others should earn more. Therefore, compensation will increase as the complexity of the company's tax environment increases.

2.2.4. Executive compensation

There is an extensive literature that links compensation to company performance (Jensen and Murphy, 1990). Compensation packages that include stocks and options can be used to solve the moral hazard problem of managers such as shirking and perquisite consumption (Morgan and Poulsen, 2001) as well as risk alignment (Ertugrul and Hegde, 2008). Stock and option grants link managers' personal wealth with shareholders' value, and therefore should align shareholders' and managers' incentives. However, there is an emerging literature that suggests a dark side to incentive compensation. Instead of trying to strike a balance between providing incentives and sharing risks, unchecked CEOs in poorly governed firms might instead try to maximize their personal benefits (Bertrand and Mullainathan, 2001; Garvey and Milbourn, 2006). There is some evidence that CEOs in weakly governed firms are much more likely to maximize their short-term wealth (Yermack, 1997; Bebchuk et al., 2006). Since tax management has a long horizon, we can add insight into this debate by determining whether incentive compensation affects tax management over the long run, especially since minimizing taxes should be an important goal of maximizing compensation.

2.3. Hypotheses

Our first hypothesis (H1) deals with executive and director compensation. The tax literature has found a relationship between compensation and tax management in the short run (Armstrong et al., 2009; Rego and Wilson, 2009). The governance literature has long agreed that compensation packages influence company performance (Jensen and Murphy, 1990). The basic purpose of incentive compensation is to tie shareholder incentives to managerial incentives. The use of options and stock-based compensation should promote a long-term horizon, versus short-run incentives created by cash compensation. Since effective tax management is a long-term goal, we expect that companies with higher incentive compensation will invest more resources in tax management, resulting in lower effective and cash tax rates over the long run. H1, stated in alternative form, is

H1. Increased pay-performance sensitivity for both the CEO and directors will result in lower taxes.

Our second hypothesis (H2) studies external governance mechanisms. There is ample evidence that certain corporate governance characteristics improve overall performance (Bhagat and Bolton, 2008). Various governance factors (size of the board, number of independent members, entrenchment and duality of the CEO) have been found to affect performance, presumably through resource allocation. Several studies have found tax management to be influenced by corporate governance (Desai and Dharmapala, 2006; Erickson et al., 2006). Smaller boards may find it easier to convince management to allocate assets towards tax management. Independent boards are in a better position to divert resources to tax management, especially since their independence offers them a broader view of the company and its overall performance rather than focusing on traditional top-line sources of industry oriented performance growth. When management is entrenched, there is less threat of removal. Entrenched managers are likely to be less motivated to pursue performance growth. H2, stated in alternative form, is

H2. Increased quality of external governance mechanisms will result in lower taxes.

Our paper expands the tax and governance literature in four ways. First, rather than focusing on just one aspect of tax management, such as the use of shelters, we examine overall tax management. Thus we can better understand the interaction of governance and compensation on incentives to manage taxes. Second, we focus on long-term tax management versus short-term measures. Tax planning involves significant uncertainty and may not immediately benefit the bottom line. By using long-term versus short-term management, we can avoid other tax management papers' horizon problems. Third, most existing studies only focus on governance measures in isolation. Since various governance mechanisms can serve as substitutes, analysis based on

individual measures can lead to spurious results. For example, if weak internal governance (CEO or director compensation) can be supplemented by strong external monitoring (board composition or the market for corporate control), then it is hard to draw any conclusion on the effect of governance by only considering internal or external mechanisms. Therefore, by incorporating different governance mechanisms, rather than an overall measure, we contribute to the literature by providing a better evaluation of the marginal effect of different governance mechanisms. Fourth, corporate finance research is plagued by the endogenous relation between the governance mechanisms that oversee the operations of a firm and the firm's overall performance. We use a dynamic panel GMM estimator to deal with this endogeneity, which controls for unobserved heterogeneity and simultaneity. Finally, the results from the tax and governance studies have been mixed; our paper provides insight into this area of study.

3. Empirical method

3.1. Data

We construct our sample starting with all of the companies on the S&P 500 in 2005 and collect data for them from 1996 to 2005. Companies in our final sample meet the following criteria:

- The company has data from Compustat for at least five years over our 1996–2005 time frame.
- The company has compensation data from Execucomp or from Proxy Statements.
- The company has board compensation data from IRRC or from Proxy Statements.
- The company has a tax rate reconciliation in the footnotes of its 10-K statement.

From the original 500 companies we started with, we are left with 456 companies that meet the above criteria. For our analysis we focus on the five-year moving average. We can have a maximum of six observations per firm: 1996–2000 average, 1997–2001 average, 1998–2002 average, 1999–2003 average, 2000–2004 average, and 2001–2005 average; out of these 456 companies, 27 only appear in our sample once, 28 appear twice, 25 appear three times, 15 appear four times, 45 appear five times, and 316 appear six times. This results in 2,339 firm year observations from 1996 to 2005.² We focus our sample on S&P 500 companies because larger companies manage their taxes more effectively (Dyreng et al., 2008; Johnston, 2003). Using a cross section of firms of all different sizes would introduce numerous confounding effects into the analysis.

3.1.1. Tax data

Tax management is defined as the ability to pay a low amount of taxes over a long period of time. We are interested in a company's ability to manage its tax rate globally, not just domestically. Aggressive tax management is not necessarily connected to unethical or illegal behavior. Tax codes have many provisions that allow firms to legally reduce their taxes. However, without access to private company data, researchers have no way of determining which methods governors are using to lower a firm's taxes.

As Dyreng et al. (2008) point out, traditional ETRs have many limitations; primarily, annual ETRs are not very good predictors of long-run effective tax rates and, thus, are not accurate proxies for long-run tax avoidance. Neither are marginal tax rates appropriate as they do not represent the total tax burden of the company. In this paper, we are concerned with the interaction of tax management and incentive compensation, which tends to have a long-run horizon; therefore, it is important that we focus on long-run tax management.

Following Dyreng et al. (2008), we first calculate the annual GAAP ETR, which firms are required to disclose in their financial statements. The GAAP tax rate is defined as the ratio of total tax expense to pre-tax income for a given firm $xtit$ in year t :

$$GAAPETR_{i,t} = TaxExpense_{i,t} / PretaxIncome_{i,t} \quad (1)$$

where tax expense and pre-tax income are from Compustat. There are issues with using the GAAP ETR as a measure of tax avoidance. It is based on annual data; there can be significant year-to-year variation in annual effective tax rates and undefined effective tax rates due to negative denominators. This can result in misleading indicators of a firm's tax avoidance. A one-year measure is not an appropriate measure of tax avoidance since the taxes paid will include isolated payments to (and refunds from) the IRS and other tax authorities upon settling of tax disputes that arose years ago (Dyreng et al., 2008). However, in the long run, the income related to taxes will be included, which suggests that to understand tax avoidance, it is important to focus on a longer horizon. To control for these issues, as in Dyreng et al., we look at the long-run GAAP ETR over a five-year period. We measure long-term GAAP ETR as the sum of all taxes paid over the five years adjusted by the sum of pre-tax income for each year over the same five-year period.

Under SFAS Number 109, Accounting for Income Taxes, tax expense is composed of the sum of current tax expense and deferred tax expense. Deferred taxes represent taxes that will be paid or refunded in the future as a result of timing book-tax differences. These timing differences are an effective and popular tax planning tool to reduce current taxes and maximize the time value of money. However, from a financial statement perspective, this can be offset by the inclusion of the deferred tax component.

² Due to the system GMM approach we use in our multivariate estimate, our sample size is reduced to 1472 observations because of our two-year lags.

GAAPETR includes both current and deferred taxes and will not reflect short-term tax avoidance, a valuable performance and cash management tool. To allay the issues with GAAP ETR, Dyreng et al. (2008) measure effective taxes using cash taxes paid. For example, cash ETR takes into account the tax benefits of employee stock options, whereas GAAP ETR does not. Moreover, unlike GAAP ETR, cash ETR is not affected by changes in estimates such as the valuation allowance and tax cushions. Following Dyreng et al. (2008) we measure cash taxes as follows:

$$\text{CashETR}_{i,t} = \text{CashTaxesPaid}_{i,t} / (\text{PretaxIncome}_{i,t} - \text{SpecialItems}_{i,t}) \quad (2)$$

where the data is from Compustat. All variables used in the analysis are defined in Table 1. We measure long-term cash ETR as the sum of cash taxes paid over the five-year period, and divide that by the sum of its total pre-tax income (excluding the effects of special items) over the same five-year period.

One contribution of our paper is our deconstructed effective tax rate variables. We hand collect the components of the GAAP effective tax rate from 10-K statements to understand how companies manage their tax rates. We used the rate reconciliations in the tax footnote data to determine the individual components of GAAP ETR. The rate reconciliation begins with the applicable US statutory tax rate (presumably 35% for all S&P 500 companies) and ends with the GAAP ETR (as calculated in Eq. (1)). The reconciliation categorizes the differences between the two rates into a few broad categories: state tax, foreign tax, changes in valuation allowance and other. Presumably, state taxes will always increase the ETR while the other categories could go either way. Many companies do have a negative foreign tax rate adjustment since almost all countries have lower corporate tax rates than the US; however, some companies manage this advantage better than others. The valuation allowance is used to reduce the value assigned to deferred tax benefits the company may not be able to realize in the future (for instance, net operating loss carry-forwards). If the firm reduces these benefits on their financial statements, it will increase the ETR. Companies can reduce their cash ETR by reducing the valuation allowance in future years because benefits are likely to be realized. The other category includes all permanent book-tax differences (not related to foreign, state and valuation allowance) such as disallowed deductions or differences in the treatment of stock options. To illustrate a rate reconciliation from our sample, in 2005 Abbott Labs started with the statutory tax rate of 35%. They paid 1.2% additionally for state taxes, saved 6.4% on foreign taxes and saved 2.8% in other taxes for an effective tax rate of 27%. We then classify the effective tax rate into domestic taxes and foreign taxes. Foreign taxes are the

Table 1
Variable definitions.

Tax variables	Variable definition	Variable dataset
GAAP ETR	Income tax expense/pre-tax income	Compustat
Cash ETR	Income tax paid/(pre-tax income - special items)	Compustat
<i>Decomposed tax variables</i>		
State ETR	The effective tax rate for state taxes	10-K
Foreign ETR	The effective tax rate for foreign taxes	10-K
Domestic ETR	GAAP ETR-foreign ETR	Computed
Value ETR	The change in valuation allowance tax rate	10-K
Other ETR	Other ETR	10-K
<i>Firm characteristics</i>		
Assets	Total assets	Compustat
BM	Book value of common equity/market value of common equity	Compustat
Debt_Equity	Long-term debt/book value of common equity	Compustat
Ad Ex	Advertising expenses/total assets	Compustat
Cap Ex	Capital expenditures/total assets	Compustat
Earnings	Pretax income - special items	Compustat
D_Earn	Equal to one if earnings ≥ 0 , zero otherwise	Computed
ROA	Earnings/total assets	Compustat
<i>Governance characteristics</i>		
Board	The number of board members	IRRC
Indep	The percentage of directors who are independent	IRRC
DCEO	Equal to one if the CEO is not chair, zero otherwise	IRRC
GIndex	Uses 24 distinct corporate governance provisions	IRRC
EIndex	Uses 6 distinct corporate governance provisions	IRRC
CBoard	Equal to 1 for staggered boards, zero otherwise	IRRC
Age	Age of the CEO	Execucomp
<i>Compensation characteristics</i>		
Option PPS	Option PPS for Directors or CEOs	Execucomp
Stock PPS	Stock PPS for Directors or CEOs	Execucomp
Total PPS	Total PPS for Directors or CEOs	Execucomp
D_PPS	Predicted value of total PPS for directors	Execucomp
C_PPS	Predicted value of total PPS for CEO	Execucomp

decomposed foreign tax category. Domestic taxes are calculated as the difference between the GAAP and foreign rates. Similarly to GAAP and cash ETRs, we calculate the five-year average for each of the deconstructed tax rate categories.

Table 2 shows Annual GAAP and cash ETR by year for the S&P 500 companies in our sample. We also show the break out by one-digit SIC codes. The table shows how the annual numbers can easily be skewed by isolated and unusual circumstances as evidenced by the variability year to year. The industry most represented in our sample is electrical and industrial manufacturing with 659 firm years. The smallest representation is the public administration industry with 13 firm years.

Panel A of Table 3 examines the differences between the one-year and five-year tax rates. We find that the average values of cash and GAAP ETR are lower for the one-year rates than for the five-year averages. This suggests that tax rates are increasing over time. Additionally, since the one-year numbers have shocks, using a longer horizon better captures a firm's ability to manage its tax rate despite isolated events. Taxes can differ dramatically by industry. It is important to carefully control for the industry effect when examining tax rates since tax legislation is often industry dependent. We adjust the taxes using the median value of the industry-specific tax rate (using the Fama French 12 industry classifications). These adjusted values show that, on average, the companies pay 0.05% less than the industry median in cash taxes over five years, and 0.12% less than the median in GAAP taxes over five years.

Panel B of Table 3 shows the mean and median values for these components. We only include those entries where the firm actually used the component. If the value was zero, we do not include it in the averages. It is interesting to note that domestic and state rates are higher in the five-year averages, but the foreign rate and valuation allowance are lower, highlighting how these have changed over time or are perhaps indicative of a shift in tax management opportunities and strategies.

3.1.2. Company-specific data

In our analysis we control for firm-specific characteristics, including size, book-to-market ratio, debt-equity ratio, advertising expenses, capital expenditures, return on assets and earnings. Dyreng et al. (2008) suggest that firm size and growth may play a role in tax management, and they find that smaller, higher-growth firms have higher tax rates. We define assets as total assets, and in the multivariate analysis, we use the log of total assets (Size) as a proxy for firm size. We use book-to-market (BM) as a proxy for growth, and define it as the book value of equity divided by the market value of equity. Jensen (1986) shows that higher levels of debt combat agency problems. DeAngelo and Masulis (1980) argue that companies substitute between debt and non-debt tax shields. The debt ratio (Debt) is the ratio of total debt divided by book value of equity. As Hanlon et al. (2010) show, tax management can be influenced by political costs. We also use advertising expense (Ad Ex) as a proxy for political costs. As an alternative to tax management, companies can improve performance by diverting resources to top-line growth activities. We use the capital expenditure ratio (Cap Ex) to proxy for this occurring. Although some ETR studies include a measure of intangibles, we found it to be insignificant in all of our analysis. Further, it tends to be inversely correlated with the amount of tangible assets creating issues of multicollinearity. A main reason why companies engage in tax management is to improve performance. In order to control for overall performance and tease out the specific effects of tax management, we include ROA (Dyreng et al., 2008). Companies with negative earnings can easily skew the results, so we also include an indicator variable that is equal to one if earnings are positive, and zero otherwise. The SOX variable is

Table 2

Annual GAAP ETR and Cash ETR by Industry and Year. This table shows the sample of the S&P 500 companies for which we have data by year. We show the breakout by one-digit SIC code where 1 is mining and construction, 2 is consumer manufacturing, 3 is electrical and industrial manufacturing, 4 is transportation and utilities, 5 is trade, 6 is financial, 7 is commercial services, 8 is private services and 9 is public administration. We show the average GAAP and cash effective tax rates.

Year	ETR	One-digit SIC codes									N
		1	2	3	4	5	6	7	8	9	
1997	GAAP					39.75	24.12	30.88	41.57	21.725	8
	Cash					34.17	24.2	25.47	0.96	16.27	
1998	GAAP	26.82	35.46	33.19	30.85	39.42	30.98	36.48	41.57	30.96	69
	Cash	25.08	12.33	20.85	18.28	33.1	28.15	12.51	41.16	13.48	
1999	GAAP	34.15	33.53	33.05	34.4	39.44	27.09	32.62	39.39	34.02	91
	Cash	19.33	25.73	19.21	20.95	33.83	24.28	16.02	26.63	8.44	
2000	GAAP	36.61	33.22	29.91	33.1	37.8	25.59	34.01	37.16	30.03	327
	Cash	20.79	22.31	18.35	20.09	28.62	18.23	19.85	21.1	11.67	
2001	GAAP	27.66	29.93	27.11	31.39	36.94	28.7	32.13	36.92	25.83	352
	Cash	14.7	22.76	16.79	14.44	28.25	15.17	15.85	21.75	9.44	
2002	GAAP	31.25	30.3	26.08	32.26	37.49	27.99	30.26	38.5	15.39	369
	Cash	18.08	21.07	16.91	10.08	25.87	22.21	18.66	20.93	12.49	
2003	GAAP	31.77	29.36	25.36	29.12	35.7	29.9	29.68	35.37	31.47	379
	Cash	17.23	21.29	15.06	10.82	26.59	19.23	16.54	22.21	12.09	
2004	GAAP	30.65	31.07	27.67	29.36	36.54	29.83	29.61	37	22.26	379
	Cash	19.74	25.89	17.55	16.92	26.17	19.28	18.17	28.58	8.72	
2005	GAAP	31.21	31.19	28.22	31.41	34.2	30.56	30.73	37.71	20.07	365
	Cash	19.08	22.85	17.42	15.74	30.13	22.23	20.28	23.5	15.02	
Averages	GAAP	30.50	31.40	29.37	31.57	36.79	28.79	31.18	38.35	23.5	31.45
	Cash	19.87	21.53	18.61	17.01	28.24	20.42	18.15	22.98	11.64	25.4
N		126	453	659	272	280	280	203	53	13	2339

Table 3

Summary statistics. This table shows the summary of our variables. See Table 1 for variable definitions. We calculate the industry-adjusted tax rates by taking the median of the industry tax rate (using the Fama French 12 Industry Classifications) and subtracting this industry value from the company-specific tax rate each year. * denotes significance at 10%, ** at 5% and *** at 1%.

	One-year			Five-year			Significance	
	Mean	Median	N	Mean	Median	N	Mean	Median
<i>Panel A: tax variables</i>								
Cash ETR	20.18	20.52	2339	22.27	22.4	2339	***	***
GAAP ETR	30.90	33.12	2339	31.91	33.89	2339	***	***
Industry-adjusted								
Cash ETR	0.07	0	2339	−0.05	0	2339	***	***
GAAP ETR	−0.11	0	2339	−0.12	0	2339	*	*
<i>Panel B: effective tax rate deconstructed</i>								
Domestic ETR	32.80	34.99	1084	33.55	34.90	555	***	***
State ETR	1.69	1.60	2339	1.76	1.80	2289	**	**
Foreign ETR	−1.79	−0.90	1084	−2.24	−1.18	555	**	**
Value ETR	−1.78	0.00	628	−2.66	−0.52	228	***	***
Other ETR	−2.68	−0.80	1850	−1.42	−0.77	1500	***	***
Industry-adjusted								
Domestic ETR	−0.11	0	1084	−0.36	0	555	***	***
State ETR	0.014	0	2339	0.01	0	2289	**	**
Foreign ETR	0.08	0	1084	−0.02	0	555	**	**
Value ETR	−0.03	0	628	−1.39	0	228	***	***
Other ETR	−0.124	0	1850	−0.14	0	1500		
<i>Panel C: firm-specific variables</i>								
Assets	24,657	6751	2339	19,857	5622	2339		
BM	0.35	0.32	2339	0.33	0.29	2339		
Debt_Equity	0.61	0.43	2339	0.69	0.45	2339		
Ad Ex	0.01	0	2339	0.01	0	2339		
Cap Ex	0.05	0.04	2339	0.06	0.05	2339		
D_Earn	0.95	1	2339	0.95	1	2339		
Earnings	1279	541	2339	1076	445	2339		
ROA	0.15	0.146	2339	0.10	0.09	2339		
<i>Panel D: governance variables</i>								
Board composition and entrenchment								
Board	10.47	10	2339	10.56	10.60	2339		
Indep	66.59	71.40	2339	62.05	66.91	2339		
DCEO	0.23	0	2339	0.20	0	2339		
CBoard	0.56	1	2339	0.57	1	2339		
GIndex	9.37	9.38	2339	8.91	8.96	2339		
EIndex	2.17	2.12	2339	2.1	2	2339		
Age	55.67	56	2339	55.86	56.11	2339		
CEO pay-performance sensitivity								
Stock PPS	6704.21	0	2339	5994.80	0	2339	*	
Option PPS	470.84	135.65	2339	446.81	128.54	2339		
Total PPS	7186.03	355.5	2,339	6450.92	294.19	2339	*	*
Director pay-performance sensitivity								
Stock PPS	215.61	0	2339	218.27	0	2339		
Option PPS	85.03	27.89	2339	85.09	28.08	2339		
Total PPS	284.72	58.2	2339	289.16	58.61	2339		

an indicator variable equal to one if the firm year is a post-Sarbanes–Oxley firm year and zero otherwise. This provides an exogenous shock and is particularly relevant since the legislation changed corporate governance for most firms. Panel C of Table 3 shows the one-year and five-year averages of our firm control variables. There are no significant differences between the one- and five-year controls.

3.1.3. Compensation and board data

We examine board characteristics, since it has been shown that certain board structures reduce agency problems, which can improve performance (Bhagat and Bolton, 2008; Hermalin and Weisbach, 1998; Yermack, 1996). Specifically, we examine board size (Board) and the percentage of independent directors on the board (Indep). Independent directors include any non-employee board members as well as any members who are not considered gray (consultants, lawyers, accountants, etc.). We include an indicator variable that is equal to one if the chair of the board is an outsider, and zero otherwise (DCEO). Managerial entrenchment is shown to also affect performance; thus, we use three different measures of managerial entrenchment. The Gompers et al. (2003) index uses 24 distinct corporate-governance provisions derived from charter amendments to classify shareholder protection (GIndex). According to this classification, firms with a GIndex value below six are categorized as having

strong shareholder power, and firms with a GIndex value above 13 are categorized as having strong managerial power. The second classification is the Entrenchment Index (EIndex) of six governance provisions constructed by [Bebchuk et al. \(2009\)](#), who argue that their refined index is a better measure of managerial entrenchment than the aggregate GIndex. The third measure of managerial power is the staggered board indicator (CBoard). [Bebchuk and Cohen \(2005\)](#) and [Faleye \(2007\)](#) argue that staggered boards protect management from removal. [Bebchuk et al. \(2009\)](#) show that the staggered boards indicator drives the negative relation between the deployment of governance provisions and firm value. Similarly, [Cremers and Nair \(2005\)](#) show that staggered boards are the most important driver of the GIndex. Following existing research, we focus on staggered boards in the rest of the analysis. CBOARD is measured using an indicator variable that is equal to one if the company has a staggered board. This entrenchment occurs when board seats are staggered, making it more difficult to replace management. Staggered boards can reduce managers' and directors' incentives to actively monitor the firm and monitor the firm's performance.

Both director and executive compensation can create incentives to improve performance. We examine how those arrangements may lead to more active tax rate management. To measure the incentive effects of equity-based compensation, we calculate the equity incentives or pay-performance sensitivity as defined in [Core and Guay \(1999\)](#) for both directors and executives. PPS measures the change of an executive's wealth (in thousand dollars) from his/her stock and option holdings given a 1% change in stock price. We calculate the pay-performance sensitivity based on stock holdings (Director Stock PPS and CEO Stock PPS) and option holdings (Director Option PPS and CEO Option PPS). Options grants are measured as the total option holdings including both the existing options and the newly awarded options in the given year. Options are valued using the Black–Scholes model, assuming a 10-year maturity, while stock return volatility is estimated from monthly stock return in the year of the grant. We then sum the option and stock PPSs to calculate total PPS for CEOs and for directors (CEO PPS and Director PPS). Recent research has shown that the age of the CEO is a governance variable that affects how a firm is managed ([Dechow and Sloan, 1991](#)). CEO compensation is also dependent upon the age of the CEO. For these reasons we also control for age (Age) of the CEO.

Panel D of [Table 3](#) examines the governance characteristics for our sample. We show both the one-year values and the averaged five-year values. Governance does not show much variation over time. Looking at the five-year average, we find that the median board size is 11 members, where 67% are independent for the sample; 20% of our sample have an outsider acting as chair of the board; and 57% have staggered boards. For the average firm, a 1% increase in stock price increases the CEOs compensation by \$294,190 and directors experience an almost \$60,000 increase in their wealth.

Panel A of [Table 4](#) shows the correlation of the dependent variables used in the various regressions. As expected, Cash and GAAP ETR are significantly correlated to each other although the correlation is low (coefficient of 0.53). Also, domestic taxes are significantly correlated with both GAAP and Cash ETR. It is interesting to note that foreign and domestic taxes show a significant negative correlation. This suggests that companies focus on managing either their foreign taxes or their domestic taxes. Panel B shows the correlation with the independent variables. The firm-specific variables have the expected signs for correlations. However, few correlation coefficients exceed 0.5 and variance inflation factor (VIF) statistics show that multicollinearity is not a factor in the regression analysis.

3.2. Methodology

Corporate governance research is often complicated by endogeneity concerns. It is very difficult to determine exogenous factors to control for the relationships being studied. Following [Wintoki et al. \(2010\)](#), we control for the endogeneity of the panel using a GMM estimator. They argue that governance studies often do not control for the dynamic endogeneity of the data which is not strictly exogenous and changes over time due to shocks to the firm at various points in time. Since a firm's historical performance can proxy for important governance attributes such as managerial ability, it is important to control for past performance, which is a major determinant of future performance and future governance structures. [Wintoki et al. \(2010\)](#) suggest that the most appropriate method to control for this endogeneity is a system GMM estimator controlling for historical factors in the form of lags of the main variable of interest. Their results suggest that fixed effects models are biased because the models ignore past performance and past governance choices.

We test our hypotheses using a system GMM estimator controlling for year and industry with an industry-adjusted ETR calculated by year. The basic model we use for our analysis is:

$$ETR = \beta_1 + \beta_2 ETR_{t-1} + \beta_3 ETR_{t-2} + \beta_{4-7} BoardCharacteristics + \beta_8 Entrenchment + \beta_{9-10} Compensation + \beta_{11-14} ControlVariables + \epsilon \quad (3)$$

We hand collected tax footnote data in order to get a more complete and accurate ETR sample, where we calculate GAAP and cash ETR and use a long-run average of five years to remove any isolated jumps in any specific year ([Dyregang et al., 2008](#)). As discussed above, our board characteristics include the following: board size (Board), board independence (Indep) and independent CEO/Chair (DCEO) as well as staggered boards (CBoard) and the age of the CEO (Age). Our compensation data includes the pay-performance sensitivity of CEOs and outside directors' wealth (PPS and Director PPS, respectively).³ We control for

³ We use $\ln(PPS + 1)$ to eliminate the extreme outliers.

Table 4

Correlation statistics. This table shows the correlation matrix for both the dependent variables used in the multivariate analyses (State, Foreign, Value, Other, GAAP, Cash ETR, and Domestic) and the independent variables (ROA, Size, BM, Debt_Equity, Ad Ex, Cap Ex, D_Earn, Board, Indep, Age, DCEO, CBoard, C_PPS, and D_PPS). * denotes significance at 10%, ** at 5%, and *** at 1%.

Panel A: tax variables														
	State	Foreign	Value	Other	GAAP	Cash	Domestic							
State	1.00													
Foreign	−0.05	1.00												
Value	−0.04	−0.16	1.00											
Other	−0.07	−0.13	0.26	1.00										
GAAP	−0.20	0.04	−0.01	0.04	1.00									
Cash ETR	−0.05	−0.01	−0.17	−0.24	0.53	1.00								
Domestic	−0.03	−0.35	−0.11	−0.18	0.48	0.94	1.00							
Panel B: governance and control variables														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
<i>Firm characteristics</i>														
(1)ROA	1													
(2)Size	−0.49	1												
(3)BM	−0.63	0.32	1											
(4)Debt_Equity	−0.34	0.13	0.22	1										
(5)Ad Ex	0.30	−0.16	−0.21	−0.09	1									
(6)Cap Ex	0.18	−0.2	−0.16	0.06	0.08	1								
(7)D_Earn	0.20	0.05	−0.05	0	0.04	−0.05	1							
<i>Board compensation and entrenchment</i>														
(8)Board	−0.28	0.54	0.14	0.11	0.01	−0.09	−0.09	1						
(9)Indep	−0.06	0.16	0.11	−0.01	−0.06	0.02	0.02	0.08	1					
(10)Age	−0.04	0.15	0.11	0.09	−0.03	0.02	0.02	0.15	0.09	1				
(11)DCEO	0.07	−0.07	−0.12	−0.04	−0.05	−0.01	−0.01	0.04	−0.04	−0.15	1			
(12)CBoard	−0.03	−0.01	0.1	0.05	−0.08	0.03	0.03	0.09	0.11	−0.02	−0.02	1		
<i>Pay-performance sensitivity</i>														
(13)C_PPS	−0.02	0.24	−0.01	−0.08	−0.04	−0.09	−0.09	0.09	0.2	−0.05	0.02	0	1	
(14)D_PPS	0.07	0.1	−0.21	−0.17	0.05	−0.05	−0.05	−0.03	0.1	−0.14	0.01	−0.03	0.25	1

All of the coefficients are significant at 10% or less.

robustness by using the [Windmeijer \(2005\)](#) correction. Since our regressor is predetermined, but may not be strictly exogenous, we use lags of one and two years, which invokes instruments from $t-3$ and $t-4$ respectively ([Roodman, 2006](#)).

We estimate Eq. (3) to investigate the effect of corporate governance on GAAP and cash ETR. We then examine the five-year gap between these tax rates. Finally we examine the various components of the deconstructed tax rates, including the domestic portion of the GAAP tax rate, the state portion net of federal benefit, the foreign portion, the change in valuation and the other category. We use the difference between the deconstructed ETR from the 10-Ks and the foreign component to calculate the domestic ETR.

4. Results

4.1. Multivariate analysis

To test what effect governance has on tax management, we examine tax rates in a multivariate analysis using the average of the tax rates over five years using a system GMM estimator with lags to control for endogeneity as in [Wintoki et al. \(2010\)](#).

[Table 5](#) shows the regression results for the five-year average tax rates for both GAAP and cash ETR. We use a Hausman test to see if there are any significant differences between GAAP and cash taxes. Results show that as company size increases, tax rates do as well, consistent with other research ([Zimmerman, 1983](#); [Rego, 2003](#)). Growth potential, measured as BM, is positively related, as expected, to tax rates and is consistent with [Dyreg et al. \(2008\)](#). These companies are focusing on top-line growth and tax rates are increasing as they grow. Advertising expenses are also positively related to tax rates and are consistent with the political cost hypothesis, which argues that firms that are at greater risk from public backlash (those with higher advertising expenditures) are less likely to aggressively manage their taxes. These results are also consistent with those from [Hanlon et al. \(2010\)](#) and [Hanlon and Slemrod \(2010\)](#). ROA is positively associated with tax rates, which is consistent with expectations since tax rates are progressive according to income. We find no significance on the SOX variable, suggesting that the SOX legislation had no effect on tax levels.

Columns 1 and 2 (GAAP ETR and cash ETR, respectively) focus on [H1](#) and examine the effect of CEO and director compensation on ETR. Results strongly support [H1](#) and show that PPS significantly reduces both book and cash taxes although we see that CEO

Table 5

System GMM approach for five-year GAAP and cash tax measures. This table shows the Arellano and Bover (1995) system GMM estimation approach to control for endogeneity for GAAP and cash taxes. For each of the tax variables we use the difference between the firm's actual value and the median industry value, using the Fama French 12 Industry Classifications each year. Columns 1 and 3 show GAAP ETR, and Columns 2 and 4 show cash ETR. We control for year effects. Windmeijer (2005) corrected robust standard errors are shown in parentheses. Since our regressor is predetermined, but may not be strictly exogenous, we use lags of 1 and 2 years, which invoke instruments from $t-3$ to $t-4$ respectively (Roodman, 2006). We report the p-values for four additional tests. AR(1) and AR(2) are tests for first order and second order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test of over-identification has a null hypothesis of the instruments as a group is exogenous. The difference in Hansen test of exogeneity has a null hypothesis that the levels of instruments in the GMM and the IV (Year indicators) are exogenous. * denotes significance at 10%, ** at 5% and *** at 1%. We use a Hausman test to test for significant differences between the GAAP and cash rates. An ^a denotes significance at 10%, ^b at 5%, and ^c at 1% for the Hausman test.

	GAAP (1)	Cash (2)	GAAP (3)	Cash (4)
<i>Firm characteristics</i>				
ETR _{t-1}	0.670*** (0.23)	0.463*** (0.17)	0.737*** (0.20)	0.569*** (0.17)
ETR _{t-2}	-0.120 (0.19)	0.347* (0.19)	-0.052 (0.19)	0.233 (0.18)
Size	1.526*** (0.57)	0.599 ^d (0.77)	1.328* (0.76)	0.882 (1.33)
BM	6.661** (3.71)	11.663 ^{bd} (6.09)	11.263* (5.79)	14.288 ^{***d} (6.49)
Debt_Equity	-0.077 (0.10)	-0.091* ^c (0.05)	-0.049 (0.09)	-0.086 ^c (0.07)
Ad Ex	0.187* (0.10)	0.103 (0.17)	0.254** (0.13)	-0.088 (0.19)
Cap Ex	0.274** (0.13)	-0.103 (0.28)	0.472** (0.23)	0.070 (0.27)
ROA	0.206** (0.10)	0.257** (0.12)	0.196** (0.10)	0.370** (0.18)
SOX	-0.259 (0.35)	0.159 (0.45)	-0.042 (0.37)	0.246 (0.44)
D_Earn	-3.271*** (1.44)	-0.110 (5.37)	-1.471 (2.61)	0.676 (4.98)
<i>Compensation characteristics</i>				
C_PPS	-0.266* (0.13)	-0.377*** (0.15)	-0.541*** (0.20)	-0.571** (0.25)
D_PPS	-0.462* (0.25)	-0.225 (0.44)	-0.337* (0.16)	-0.214 (0.41)
<i>Governance characteristics</i>				
Board			-0.114 (0.28)	0.031 ^a (0.40)
Indep			-0.008 (0.02)	-0.026 (0.03)
DCEO			-0.025 (1.41)	-1.068 (1.47)
Age			-0.005 (0.10)	-0.145*** ^c (0.07)
Cboard			2.870** (1.31)	2.620** (1.30)
Constant	-18.450** (7.86)	-9.890 (6.63)	-16.640** (7.69)	-7.038 (7.44)
Observations	1472	1472	1472	1472
AR(1) test	0.013	0.092	0.010	0.077
AR(2) test	0.297	0.429	0.426	0.212
Hansen test	0.867	0.874	0.538	0.460
<i>Difference in Hansen</i>				
GMM instruments for levels	0.936	0.314	0.309	0.112
IV	0.667	0.159	0.411	0.394

PPS has a larger influence on reducing tax rates than director PPS does.⁴ Looking at columns 3 and 4, a one-unit increase in CEO PPS results in a 0.54% reduction in GAAP taxes and a 0.57% reduction in cash taxes. To demonstrate the actual economic impact, we will use an example: in 1999, ADC Telecommunications has a PPS of \$144,366 for the CEO. Therefore, according to Column 3 in Table 5, the CEO's PPS will decrease the industry-adjusted GAAP ETR by 2.7% and will decrease cash ETR by 2.84%. Considering,

⁴ We run a Wald test to examine whether there is a significant difference between the coefficients on CEO PPS and director PPS and find that they are significantly different at 1%.

from Table 3, the adjusted ETRs are only 0.12% and 0.05% on average, this is a substantial decrease in taxes paid. ADC Telecommunications had a pre-tax net income in 1999 of \$160 million. This translates into taxes saved of \$4.9 million for book purposes and cash savings of \$4.5 million.

Director PPS only affects GAAP ETR, resulting in a 0.34% decrease in GAAP taxes. These results suggest that although in general PPS leads to overall effective tax management, directors focus on managing the financial statement aspect of taxes by maximizing net income for book purposes. As Yermack (2004) finds, directors are compensated two ways—through actual cash compensation and through reputational capital; directors' reputational capital can increase when the earnings increase. Managing GAAP taxes is one way to improve earnings. In contrast, although CEOs care about earnings, they also care about cash flow and manage the cash taxes paid as well as GAAP taxes. Overall, the association between PPS and ETR shows that tying compensation to performance creates incentives to actively manage the company's taxable income.

H2 tests the influence of corporate governance, specifically board size, independence, entrenchment and duality of the CEO, on ETRs. Columns 3 and 4 of Table 5 show little support for H2. Only CBOARD is significant; staggered boards, a sign of managerial entrenchment, result in higher GAAP and cash taxes. The results on staggered boards are consistent with Chen and Zhao (2008), suggesting that managers in companies with staggered boards do not spend as many resources managing taxes. The lack of significance on the other governance variables is consistent with Wintoki et al. (2010). They find that after controlling for endogeneity, governance variables have no predictable relationship with performance measures. Overall, our results, which control for endogeneity, suggest that governance does not appear to be significantly associated with book or cash taxes.

In Table 5, we also report the results from tests of the exogeneity of our model. Our exogeneity assumption is that a firm's historical tax management and characteristics are exogenous to changes in their current tax management. We use several tests of exogeneity suggested by Arellano and Bond (1991) and Roodman (2006) to see if our assumption of the exogeneity of tax management is valid. The first test looks at serial correlation. There is no evidence of autocorrelation (AR) in any of the models. Next, we test for autocorrelation as the validity of the instrumental matrix in the Arellano Bond (AB) estimator depends on no autocorrelation. The initial step in the AB takes the first differences between $ETR_t - ETR_{t-1}$. AR(1) and AR(2) are tests for first-order and second-order serial correlation in the first-differenced residuals, under the null of no serial correlation. Due to first-differencing in the AB estimator, there can be mechanical first-order autocorrelation in the errors (thus, it is not unusual if the AR(1) test has low p -values). The relevant test involves checking for second-order autocorrelation in AR(2), where higher p -values are desired, as this shows no serial correlation (Wintoki et al., 2010). The x_{itp} -values reported in Table 5 for the AR tests suggest the underlying conditional errors are not autocorrelated (the AR1 test yields p -values between 0.01 and 0.092, and the AR2 test yields p -values between 0.212 and 0.294).

The second step is to further check the exogeneity of the instruments by performing a Hansen test of over-identifying restrictions. Since the dynamic panel GMM estimator uses multiple lags as instruments, it is possible that our system is over-identified. The Hansen test has a null hypothesis that the instruments as a group are exogenous. The high p -values for the Hansen test indicate that the null hypothesis cannot be rejected. We also report the results from a test of the exogeneity of a subset of our instruments. By using a system GMM approach, we are able to include the level equations in our GMM estimates and use lagged differences as instruments for these levels. We test this assumption by using a difference in Hansen test of endogeneity. The high p -values found for the difference in Hansen test for the levels of instruments in the GMM suggests we cannot reject the null hypothesis that these instruments are exogenous. We also run a difference in Hansen test for the year IVs, and find similar p -values. The lack of serial correlation suggests that endogeneity is not a significant concern in our approach.

4.2. Additional analysis

After controlling for endogeneity, PPS affects both GAAP and cash ETRs while other governance variables do not play as strong a role in tax management as originally anticipated. However, if companies are working to reduce taxes, there are various aspects of tax management they may focus on. Companies can focus on foreign or domestic strategies to manage their taxes. The choice of a tax management strategy may be affected by both the strategy's costs and the company's governance structure. Directors and executives may opt for a more costly strategy, such as foreign tax management, if the potential payoff is greater, especially if they have high incentive compensation. We would expect to see companies that have high PPS invest more resources in foreign tax management, which (although more costly) may lead to more effective tax management.

By using the decomposed tax variables (domestic, foreign, state, etc.) within the structure of our multivariate analysis, we can better understand how governance interacts with specific areas of tax management. Table 6 shows the multivariate regressions for each piece of the decomposed tax rate. The significant firm control variables show the same signs as in Table 5. The compensation variables for CEO are uniformly significant and negative as they are in Table 5. The coefficients range from -0.003 to -0.688 . The results suggest that an increase in PPS will lead to significant tax savings, across all types of taxes. It is interesting to note that although higher PPS reduces both foreign and domestic taxes, it appears to lead CEOs to focus on domestic tax management. A one-unit increase in PPS, a \$172,000 increase in wealth, will result in foreign tax savings of 0.166% versus a domestic tax savings of 0.477%. Likewise, the directors also seem to focus on domestic tax management versus foreign tax management (a one-unit increase in director PPS will decrease domestic taxes by 1.269%).

This focus on domestic tax management is primarily driven by reducing the valuation allowance and the other component. Both CEOs and directors focus on reducing this component. A one-unit increase in CEO PPS (Director PPS) leads to a valuation allowance savings of 0.688% (0.800%) and other tax savings of 0.199% (0.021%). Regardless of the strategy, CEOs and directors with high PPS are committed to lowering taxes in all areas.

Table 6

Multivariate five-year decomposed tax measures. This table shows the *Arellano and Bover (1995)* system GMM estimation approach to control for endogeneity for our deconstructed tax variables. For each of the tax variables we use the difference between the firm's actual value and the median industry value, using the Fama French 12 factors. Column 1 is the foreign ETR, column 2 is the cash ETR less foreign ETR (domestic ETR), column 3 is state ETR, column 4 is the effect of the valuation allowance on ETR and column 5 is the other components of ETR. *Windmeijer (2005)* corrected robust standard errors are shown in parentheses. Since our regressor is pre-determined, but may not be strictly exogenous, we use lags of 1 and 2 years, which invokes instruments from $t-3$ to $t-4$ respectively (*Roodman, 2006*). We report the p-values for four additional tests. AR(1) and AR(2) are tests for first order and second order serial correlation in the first-differenced residuals, under the null of no serial correlation. The Hansen test of over-identification has a null hypothesis that the instruments as a group are exogenous. The difference in Hansen test of exogeneity has a null hypothesis that the levels of instruments in the GMM and the IV (year indicators) are exogenous. * denotes significance at 10%, ** at 5% and *** at 1%. We use a Hausman test to test for significant differences between the GAAP and cash rates. An ^a denotes significance at 10%, ^b at 5% and ^c at 1% for the Hausman test.

	Foreign (1)	Domestic (2)	State (3)	Value (4)	Other (5)
<i>Firm characteristics</i>					
ETR _{t-1}	0.700*** (0.23)	0.838*** (0.19)	0.710*** (0.22)	0.202 (0.33)	0.114 (0.17)
ETR _{t-2}	0.025 (0.19)	0.155 (0.17)	0.041 (0.17)	0.308 (0.26)	1.951 (0.18)
Size	0.481* (0.25)	2.410*** ^c (1.07)	0.134 (0.21)	2.606** (1.30)	0.273*** (0.12)
BM	2.693 (1.99)	3.252 (7.53)	0.648 (1.02)	6.330** (1.25)	0.080 (0.13)
Debt_Equity	-0.172* (0.10)	-0.077 (0.22)	-0.011 (0.02)	-3.956* (2.06)	-0.243*** (0.10)
Ad Ex	0.084 (0.14)	0.279* ^c (0.16)	0.033 (0.04)	0.785 (0.65)	0.002 (0.16)
Cap Ex	0.252* (0.13)	0.313** (0.15)	0.002 (0.04)	0.674** (0.33)	0.185 (0.19)
ROA	0.094* (0.05)	0.084 (0.21)	0.028 (0.03)	0.944*** (0.40)	0.837 (0.82)
SOX	0.774 (1.15)	0.857 (2.90)	0.002 (0.08)	0.990 (0.88)	0.125 (0.37)
D_Earn	3.948*** (1.54)	5.578 ^d (7.13)	0.226 (0.33)	4.260** (2.89)	0.041 (0.53)
<i>Compensation characteristics</i>					
C_PPS	-0.166*** (0.07)	-0.477*** (0.23)	-0.003 (0.04)	-0.688*** (0.29)	-0.199** (0.10)
D_PPS	-0.055 (0.32)	-1.269*** ^c (0.60)	-0.082*** (0.48)	-0.800 (1.25)	-0.021* (0.01)
<i>Governance characteristics</i>					
Board	0.150 (0.27)	-0.806*** ^c (0.39)	-0.072 (0.07)	-0.548 (0.52)	-0.866*** (0.28)
Indep	-0.054** (0.02)	0.137*** ^c (0.06)	0.006** (0.00)	0.079* (0.04)	0.742*** (0.32)
DCEO	-0.013 (0.37)	1.808 ^c (2.71)	-0.077 (0.28)	-3.982 (3.05)	0.044 (0.10)
Age	-1.884*** (0.66)	0.152 ^c (0.11)	0.033 (0.02)	4.548 (2.95)	-4.956 (3.08)
Cboard	-0.031 (0.03)	0.206*** ^c (0.09)	0.001 (0.01)	0.021*** (0.01)	0.042** (0.02)
Constant	-10.392* (5.87)	-4.414 ^b (14.52)	0.303 (1.25)	1.834** (0.94)	-3.251 (3.55)
Observations	548	548	1472	207	1088
AR(1) test	0.055	0.029	0.021	0.026	0.099
AR(2) test	0.969	0.679	0.817	0.788	0.930
Hansen test	0.740	0.413	0.404	1.000	0.870
<i>Difference in Hansen</i>					
Instruments for levels	0.903	0.380	0.538	0.903	0.510
IV	1.000	0.933	0.527	0.764	0.663

We find that several board characteristics affect foreign tax management differently than domestic tax management. Independent boards focus more on foreign tax management. A one percent increase in board independence reduces foreign taxes by 0.054%. However, a one percent increase in board independence increases domestic taxes by 0.137%. It is possible that independent directors, unless properly motivated by higher PPS, are concerned about the political costs associated with managing taxes domestically, and therefore focus more on reducing taxes internationally. By having an international focus, they may be able to preserve their reputational capital. This result underlines the importance of correctly compensating directors to ensure they are not managing their self-interests and instead are managing shareholder interests. Interestingly, larger boards focus on reducing

Table 7

Multivariate five-year decomposed tax measures. This table shows the correlation between the five-year industry adjusted GAAP and cash ETRs and the five-year return on equity and five year long-term buy-and-hold returns. ROE is calculated as the EBITDA divided by shareholders' equity averaged over five years. To calculate the long-run returns, we use an approach similar to Barber and Lyon (1997). First, we calculate monthly buy-and-hold returns (BHR) by compounding monthly returns using the monthly returns from CRSP over a (0, 60) month horizon. We then calculate BHRs of the CRSP Value matched portfolios over the same time horizon. Finally, BHARs are calculated by subtracting the corresponding average BHRs of benchmark index from the relevant average BHRs of our sample companies. *, **, and *** denote significance at 10%, 5% and 1% respectively.

Effects on shareholders	GAAP ETR		Cash ETR	
	Pearson correlation	Significance	Pearson correlation	Significance
5-year average return on equity	−0.0257	**	−0.0576	***
Long-term returns	−0.063	**	−0.11	**

domestic taxes. One possible explanation is that, with a larger board, consensus is much more difficult. Therefore, making decisions regarding foreign operations is likely to be more difficult than to plan domestically, which is something everyone should be more familiar with. We find that more entrenched boards pay more in domestic taxes. These results suggest that entrenched boards are less motivated to exert effort toward long-term tax management. Since there is high government oversight for domestic tax management, finding new ways to reduce taxes may require a level of motivation and effort that entrenched boards are not willing to extend. Again, these results highlight the importance of PPS, which can correctly motivate management to actually exert the necessary effort to effectively manage taxes.

4.3. Shareholder wealth and ETRs

In our multivariate analysis, we show that companies with higher PPS are better at managing their taxes. As a robustness check, we analyze returns to shareholders to examine whether the investment in tax management can be justified by an increase in shareholders wealth. Table 7 shows the Pearson correlation coefficients between the industry adjusted GAAP and cash ETRs and two measures of long-term shareholder wealth: the five-year average of return on equity, and the five-year buy-and-hold abnormal returns. We calculate return on equity (ROE) as the EBITDA divided by shareholders' equity averaged over five years. To calculate the holding period returns (BHAR), we use an approach similar to Barber and Lyon (1997). First, we calculate monthly buy-and-hold returns (BHR) by compounding monthly returns using the monthly returns from CRSP over a (0, 60) month horizon. We then calculate BHRs of the CRSP Value matched portfolios over the same time horizon. Finally, BHARs are calculated by subtracting the corresponding average BHRs of benchmark index from the relevant average BHRs of our sample companies. The BHARs for the sample companies are negatively and significantly correlated with both measures of long-term shareholder wealth. We conclude that companies with higher PPS invest more resources into effective tax management, which reduces the amount of taxes the companies pay over the long run, resulting in real improvements in shareholder wealth.

5. Conclusion

This paper examines the role of corporate governance and compensation in corporate tax management, giving additional insight into how governance affects performance. We find that pay-performance sensitivity provides longer incentive horizons for directors and executives by creating compensation contracts that motivate executives and directors to reduce long-run taxes. Companies with high PPS are more likely to focus on managing both their GAAP and cash ETR, although high PPS companies place a greater emphasis on reducing cash taxes. A one-unit increase in CEO reduces GAAP ETR by 0.541% and cash ETR 0.571%. Likewise, a one-unit increase in director PPS reduces GAAP ETR by 0.337%. High PPS also results in lower foreign and domestic taxes. A one-unit increase in CEO PPS results in a 0.166% decrease in foreign taxes and a 0.477% decrease in domestic taxes. This translates into significant savings for companies with substantial pre-tax income.

We also find that governance plays an important role in tax management; companies with different governance structures choose different tax management strategies. Higher PPS provides incentives for directors and CEOs to focus on better tax management; however, it is the governance of the company that directs which tax management strategy the company pursues. Independent boards focus more on foreign tax management, while larger boards focus more on managing domestic taxes.

Our paper makes several unique contributions to the literature. By focusing on total long-run tax management, we contribute to the study of the interaction of corporate governance and taxes. We also increase our understanding of the long-term effects of incentive compensation and certain governance factors by looking at long-term tax management while controlling for endogeneity. By deconstructing the various components of the overall effective tax rate, we provide useful insight into the actual tax management strategies that companies use. This allows us to better understand how governance affects the different tax management strategies that a company may pursue. These results contribute to the literature by providing insight into one way companies can improve performance.

Acknowledgements

The authors would like to thank participants at the Bentley University Research Forum, anonymous reviewers, Ryan Wilson, Karen Simonyan, Len Rosenthal, Roy A. Wiggins, Atul Gupta, and participants at the Financial Management Association Annual Meeting, the American Accounting Association Annual Meeting and the American Accounting Association Northeast Regional Meeting. The authors would also like to recognize funding from the Bentley University.

References

- Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Rev. Econ. Studies* 58, 277–297.
- Arellano, M., Bover, O., 1995. Another look at the instrumental variable estimation of error-components models. *J. Econometr.* 68, 29–51.
- Arlen, J., Weiss, D., 1995. A political theory of corporate taxation. *Yale Law J.* 105, 325–390.
- Armstrong, C., Jagolinzer, A., Larcker, D., 2009. Chief executive officer equity incentives and accounting irregularities. Working paper, Stanford University.
- Barber, B., Lyon, J., 1997. Detecting long-run abnormal stock returns: the empirical power and specification of test statistics. *J. Fin. Econ.* 43, 341–372.
- Bebchuk, L., Cohen, A., 2005. The costs of entrenched boards. *J. Fin. Econ.* 78, 409–433.
- Bebchuk, L., Grinstein, Y., Peyer, U., 2006. Lucky CEOs, National Bureau of Economic Research, Inc. NBER working papers: 12771.
- Bebchuk, L., Cohen, A., Ferrell, A., 2009. What matters in corporate governance? *Rev. Fin. Studies* 22, 783–827.
- Bertrand, M., Mullainathan, S., 2001. Are CEOs rewarded for luck? The ones without principles are. *Q. J. Econ.* 116, 901–932.
- Bhagat, S., Black, B., 1999. The uncertain relationship between board composition and firm performance. *Bus. Lawyer* 55, 921–963.
- Bhagat, S., Bolton, B., 2008. Corporate governance and firm performance. *J. Corp. Finance* 14, 257–273.
- Byrd, J., Hickman, K., 1992. Do outside directors monitor managers? Evidence from tender offer bids. *J. Fin. Econ.* 32, 95–221.
- Byrnes, N., Lavelle, L., 2003. The corporate tax game. *Business Week Online* March 31.
- Chen, K., Zhao, Y., 2008. Staggered boards and earnings management. *Acct. Rev.* 83, 1347–1381.
- Coles, J., Daniel, N., Naveen, L., 2008. Boards: does one size fit all? *J. Fin. Econ.* 87, 329–356.
- Core, J., Guay, W., 1999. The use of equity grants to manage optimal equity incentive levels. *J. Acctng. Econ.* 28, 151–184.
- Core, J., Holthausen, R., Larcker, D., 1999. Corporate governance, Chief Executive Officer compensation, and firm performance. *J. Fin. Econ.* 51, 371–406.
- Creemers, K., Nair, V., 2005. Governance mechanisms and equity prices. *J. Fin.* 60, 2859–2894.
- DeAngelo, H., Masulis, R., 1980. Optimal capital structure under corporate and personal taxation. *J. Fin. Econ.* 8, 3–29.
- Dechow, P., Sloan, R., 1991. Executive incentives and the horizon problem. *J. Acctng. Econ.* 14, 51–89.
- Deli, D., Gillan, S., 2000. On the demand for independent and active audit committees. *J. Corp. Fin.* 6, 427–445.
- Desai, M., Dharmapala, D., 2006. Corporate tax avoidance and high-powered incentives. *J. Fin. Econ.* 79, 145–179.
- Dyregang, S., Hanlon, M., Maydew, E., 2008. Long-run corporate tax avoidance. *Acctng. Rev.* 83, 61–82.
- Erickson, M., Hanlon, M., Maydew, E., 2006. Is there a link between executive equity holdings and accounting fraud? *J. Acc. Res.* 44, 113–143.
- Ertugrul, M., Hegde, S., 2008. Board compensation practices and agency costs of debt. *J. Corp. Fin.* 2008 (14), 512–531.
- Faleye, O., 2007. Classified boards, firm value, and managerial entrenchment. *J. Fin. Econ.* 83, 501–529.
- Friese, A., Link, S., Mayer, S., 2006. *Taxation and Corporate Governance*. Springer Berlin Heidelberg, Berlin, Germany.
- Garvey, G., Milbourn, T., 2006. Asymmetric benchmarking in compensation: executives are rewarded for good luck but not penalized for bad. *J. Fin. Econ.* 82, 197–225.
- Gompers, P., Ishii, J., Metrick, A., 2003. Corporate governance and equity prices. *Q. J. Econ.* 118, 107–155.
- Graham, J., Tucker, A., 2006. Tax shelters and corporate debt policy. *J. Fin. Econ.* 81, 563–594.
- Hanlon, M., Slemrod, J., 2010. What does tax aggressiveness signal? Evidence from stock price reactions to news about tax aggressiveness. *J. Public Econ.* forthcoming.
- Hanlon, M., Maydew, E., Shevlin, T., 2010. An unintended consequence of book-tax conformity: a loss of earnings informativeness. *J. Acc. Econ.* forthcoming, 2010.
- Hermalin, B., Weisbach, M., 1991. The effects of board composition and direct incentives on firm performance. *Fin. Manage.* 20, 101–112.
- Hermalin, B., Weisbach, M., 1998. Endogenously chosen boards of directors and their monitoring of the CEO. *Am. Econ. Rev.* 88, 96–118.
- Jensen, M., 1986. Agency cost of free cash flow, corporate finance, and takeovers. *Am. Econ. Rev.* 76, 323–329.
- Jensen, M., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *J. Fin.* 48, 831–880.
- Jensen, M., Murphy, K., 1990. Performance pay and top management incentives. *J. Pol. Econ.* 98, 225–264.
- Johnson, J., Daily, C., Ellstrand, A., 1996. Boards of directors: a review and research agenda. *J. Manage.* 22, 409–438.
- Johnston, D., 2003. Tax moves by Enron said to mystify the I.R.S. *New York Times*, February 13 C1.
- Klein, A., 2002. Audit committee, board of director characteristics, and earnings management. *J. Acctng. Econ.* 33, 375–400.
- Linn, S., Park, D., 2005. Outside director compensation policy and investment opportunity set. *J. Corp. Fin.* 11, 680–715.
- Masulis, R., Wang, C., Xie, F., 2007. Corporate governance and acquirer returns. *J. Fin.* 62, 1851–1889.
- Mills, L., Erickson, M., Maydew, E., 1998. Investments in tax planning. *J. Am. Tax. Assoc.* 20, 1–20.
- Morck, R., 2003. Why some double taxation might make sense: the special case of intercorporate dividends. NBER Working Paper 9651.
- Morgan, A., Poulsen, A., 2001. Linking pay to performance—compensation proposals in the S&P 500. *J. Fin. Econ.* 62, 489–523.
- Phillips, J., 2003. Corporate tax planning effectiveness: the role of compensation-based incentives. *Acc. Rev.* 78, 847–874.
- Rego, S., 2003. Tax avoidance activities of U.S. multinational corporations. *Contemp. Acc. Res.* 20, 805–833.
- Rego, S., Wilson, R., 2009. Executive compensation, tax reporting aggressiveness, and future firm performance. Working Paper, University of Iowa.
- Roe, M., 1994. *Strong managers, weak owners: the political roots of American governance*. Princeton University Press, Princeton, NJ.
- Roodman, D., 2006. How to Do xtabond2: An Introduction to “Difference” and “System” GMM in Stata. Center for Global Development, Washington.
- Ryan, H., Wiggins III, R., 2004. Who is in whose pocket? Director compensation, board independence, and barriers to effective monitoring. *J. Fin. Econ.* 73, 497–524.
- Scholes, M., Wolfson, M., Erickson, M., Maydew, E., Shevlin, T., 2009. *Taxes and Business Strategy: A Planning Approach*. Pearson, Upper Saddle River, NJ.
- Shackelford, D., Shevlin, T., 2001. Empirical tax research accounting. *J. Acctng. Econ.* 34, 321–387.
- Tedds, L., 2006. Tax non-compliance and corporate governance: a comparative study. Working Paper, University of Manitoba 2006.
- Wall Street Journal. Stanley worked over. August 5 2002, A10.
- Weisbach, M., 1988. Outside directors and CEO turnover. *J. Fin. Econ.* 20, 431–460.
- Windmeijer, F., 2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. *J. Econometr.* 126, 25–51.
- Wintoki, M., Linck, J., Netter, J., 2010. Endogeneity and the Dynamics of Internal Corporate Governance. Working Paper, University of Kansas.
- Yermack, D., 1996. Higher market valuation of companies with a small board of directors. *J. Fin. Econ.* 40, 185–202.
- Yermack, D., 1997. Good timing: CEO stock option grants and company news announcements. *J. Fin.* 52, 449–476.
- Yermack, D., 2004. Remuneration, retention, and reputation incentives for outside directors. *J. Fin.* 59, 2281–2308.
- Zimmerman, J., 1983. Taxes and firm size. *J. Acctng. Econ.* 1983 (5), 119–149.