Does a Tax Hike Reduce CEO Pay?

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ABSTRACT

Many policymakers believe that, given the right tax incentives, firms will cut CEO pay. A late addition to the Affordable Care Act tests their intuition. Because the ACA tax provision targeted only certain health insurers, many of the firms they benchmark against were unaffected. Comparing how executive compensation evolved at affected firms relative to their unaffected peers in a difference-in-differences design allows one to tease out the impact of raising corporate taxes on executive pay.

The results indicate that prodding from the Tax Code is not as effective as one would think. It did reduce pay for some executives, but perhaps not the ones that Congress sought to target. CEOs and highly paid executives emerged relatively unscathed, while younger, less senior colleagues bore the brunt of the tax.

This paper looks to firms with higher tax sophistication and more MBAs on their board to gauge best practices. These more sophisticated firms are more likely to differentiate between their executives, suggesting differential treatment is a response to the executive's attractiveness on the labor market. Governance seems to play a role as well. CEOs fare best when they also serve as chairman of the board or when directors own less stock.

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1. Introduction

In a little known provision of the Affordable Care Act (ACA) (P.L. 111-148), Congress raised the tax cost of paying certain health insurance executives more than $500,000 in annual compensation. The media largely ignored this late addition, but it proved crucial to securing the final votes needed for the law's passage. Indeed, the ACA squeaked by in the Senate with 60 votes, the bare minimum needed to overcome a filibuster.

This tax provision—codified as Section 162(m)(6) of the Tax Code—helped offset the cost of the ACA and perhaps more importantly garner the support of moderate Democrats who worried about its price tag. All tax revenue raised by the provision was directed to the Medicare Trust Fund.

How firms reacted to this tax change offers insight into the factors they consider when setting executive compensation. Members of the firm's board—those on its compensation committee—are the ones responsible for this process. Compensation committees, often with the help of specialized consultants, engage in benchmarking—that is, assessing the competitiveness of the pay they offer executives relative to what their peers offer. This process requires firms to identify the group of peers they compete with for executive talent.

Disclosure of these peer groups was once voluntary, but since 2006, the SEC has required that firms report them in their proxy statement. The enhanced transparency has allowed researchers to confirm that these peer groups do in fact compete over the same pool of executive talent.

Faulkender and Yang (2010), for example, document "that firms select companies in the same industry, of similar size, and with a history of observed talent flows between them to be members of their compensation peer groups." As Bizjak, Lemmon, and Nguyen (2011) corroborate, peers tend to also have similar geographic diversity,

product diversity, accounting performance, credit ratings, and visibility (as proxied by index membership). They find that when peers are chosen from outside the firm's industry, they tend to be drawn from industries that supply or hire managerial talent and have high stock return correlation with the firm's own industry.

Because the ACA tax provision targeted only certain health insurers, many of the firms they benchmark against were unaffected. Comparing how executive compensation evolved at affected firms relative to their unaffected peers allows one to tease out the impact of raising taxes on executive pay. Indeed, compensation at affected firms moved in parallel with that of their peers prior to the tax change. These peers provide a credible counterfactual, one that can be used to control for concurrent time trends.

The results indicate executive compensation fell more than 20% relative to unaffected peers in response to the tax hike. Salaries appeared largely unchanged, however. The entirety of the reduction came from bonuses, stock options, and other forms of performance pay.

Firms appeared to target certain executives for pay reductions more than others. CEOs, for example, saw no statistically distinguishable impact on their compensation. Younger executives, those with less C-level experience, and those paid less than $2 million prior to the tax change appear to have bore the brunt of the impact.

The impact varied based on firm ownership as well. The more stock the executives held, the less impact they saw on their compensation. The amount of stock held by the management team collectively, as opposed to individually, exhibited a similar relationship.

Board ownership, on the other hand, had the opposite relation. The more stock that directors held, the greater the impact on executive compensation. Board leadership also appears to have played a role. When the CEO served as chairman of the board, executives saw no statistically distinguishable impact on their compensation.

Firms' prior statements regarding their approach to the taxation of executive

compensation are used to gauge their tax sophistication. Compensation fell at firms with higher degrees of tax sophistication as well as at firms with lower degrees of tax sophistication. More sophisticated firms did differ, however, in one significant respect: they differentiated between their executives more. Firms with higher degrees of tax sophistication were more likely to treat their CEOs differently than their less senior executives.

In short, reducing CEO pay appears to be harder than it looks. As Murphy (2013) reminds us, the history of policy intervention in CEO pay is a history in "unintended (and typically unproductive) consequences." These results suggest that the ACA tax provision is no different. What began as an effort to raise tax revenue at the expense of CEOs ultimately fell on younger, less senior executives.

How firms reacted to the tax hike offers a rare window into the factors that compensation committees consider when setting pay. These results offer a first look at the impact of the ACA tax provision and provide a firmer ground for targeted government policy.

Section 2 of this paper identifies three reasons why we would not expect to see any impact from the ACA tax provision given what we know about CEO pay from prior literature. Section 3 lays out the evolving tax provisions that target executive compensation and offers helpful institutional detail. Section 4 describes the data collection process and difference in differences framework used to test the impact of the tax change. Section 5 presents the empirical results. Section 6 concludes.

2. Hypothesis Development

The impact of a tax on CEO pay depends on who determines that pay and their motivations for setting it in the way that they do. Directors on the compensation committee are often faced with competing interests, which makes analyzing and forming

expectations about their behavior more difficult. Scholars have identified a number of stylized facts that aid in our understanding of how they operate. The literature has focused on three frameworks in particular to explain the time-series variation and cross-sectional variation in executive compensation: (1) efficient contracting, (2) managerial power, and (3) lack of sophistication.

Each of these three frameworks predicts that a tax hike would have limited impact on CEO pay. Each, however, comes to that conclusion for different reasons. By exploring the heterogeneity in the sample, this study may be able to offer insight into the factors at play.

As Edmans, Gabaix, and Jenter (2017) remind us, these frameworks are not necessarily mutually exclusive. Compensation committees are tasked with weighing multiple considerations. It could be that no one consideration dominates.

2.1. Efficient Contracting

Some studies suggest that CEO pay reflects the competitive equilibrium of a labor market in which firms compete for scarce managerial talent. Tervio (2008) and Gabaix and Landier (2008), for example, show that competitive assignment models of the labor market can explain the secular rise in CEO pay over the last several decades. As they note, the rise in CEO pay closely tracks the rise in firm size. If one assumes that managerial skills have a multiplicative effect on shareholder value—that is, if small changes in CEO talent have large effects on firm value—then larger firms will be willing to pay more to hire the best managers.

Empirical studies demonstrate that a competitive labor market can explain cross-sectional variation in executive compensation as well. Custódio, Ferreira, and Matos (2013), for example, show that "CEOs are paid a premium when they accumulate general managerial capital (i.e., not specific to any organization and transferable across firms or industries) instead of firm-specific managerial capital (i.e., valuable

only within an organization)." Indeed, they estimate that generalist CEOs are paid 19% more relative to specialist CEOs, a difference that amounts to nearly a million dollars per year.

The competitive labor market framework has important implications for this study. It implies that firms' ability to cut executive pay in response to a tax hike is limited if the tax change did not also affect their peers. These peers are competing for the same scarce executive talent. If affected firms cut executive pay in response, they risk losing their best executives.

The resilience of an executive's compensation in a competitive labor market would be a function of their market power—in other words, their job mobility. Because certain executive skill sets are more desirable in the labor market, executives would not be treated alike. Firms would differentiate. They would be more likely to cut the pay of executives who have less desirable skill sets and hence less job mobility.

For example, younger, less experienced executives are likely to have less labor market power than their older, more senior colleagues. If compensation is determined by a competitive labor market, we would expect younger, less senior executives to be more vulnerable to pay cuts. Fuest, Peichl, and Siegloch (2018) corroborate this intuition with data from Germany. They find that high-skilled employees are less affected by increased corporate tax rates than their less-skilled compatriots.

2.2. Managerial Power

A separate stream of literature raises concerns that CEOs receive more compensation than a competitive labor market would dictate. As Bebchuk and Fried (2003, 2004) contend, directors responsible for negotiating pay on behalf of shareholders lack the incentive to bargain effectively. This results in a systematic market failure, what they refer to as managerial entrenchment, with CEOs, in effect, setting their own pay due to their influence over the board.

Their concerns are supported by empirical studies that document an association between CEO pay and various measures of corporate governance. Core, Holthausen, and Larcker (1999), for example, find that firm ownership and board structure explain much of the cross-sectional variation in CEO pay, suggesting that compensation is largely governance driven. In a similar vein, Hartzell and Starks (2003) demonstrate that higher levels of institutional ownership are associated with lower levels of CEO pay, suggesting that institutional investors serve a monitoring role that mitigates against managerial entrenchment.

The managerial entrenchment notion is not peculiar to executive compensation issues. Economists have long worried that CEOs exhibit too much influence over the corporate boards designed to oversee their behavior. Jensen (1993), for example, expresses concern that CEOs determine the agenda at board meetings and information provided to directors. In fact, CEOs often lead the board as its chairman. This environment, he contends, gives rise to a boardroom culture that discourages directors from expressing independent judgment.

The effects of managerial entrenchment are not necessarily limited to those firms with weak governance. Dicks (2012) shows that poor governance at some firms can induce inefficiently high executive compensation at all firms. Indeed, if some CEOs exhibit undue influence and extract excessive compensation packages, peers may feel compelled to follow suit in order to remain competitive. Bereskin and Cicero (2013) claims this contagion effect occurred in response to a governance shock that affected only those firms incorporated in Delaware.

If CEOs do in fact exhibit influence over the pay process, then their compensation is likely less responsive to changes in the corporate tax environment. CEOs would prefer that the firm take on any additional tax burden, rather than bearing it themselves in the form of lower pay. The incidence of a tax hike, after all, will fall on either the firm, the executive, or a combination of the two.

The impact of the ACA tax provision on CEO pay can therefore provide helpful information about the extent of CEO influence. The managerial entrenchment framework would imply little or no impact on CEOs and a greater impact on less senior executives who have fewer opportunities to interact with the board.

It also implies that the compensation response is a function of board structure and ownership. A CEO that leads the board as its chairman, for example, would likely see less of an impact on his compensation than a CEO who reports to an independent chairman. Similarly, boards with a higher ownership interest in the firm would likely impose larger pay cuts than boards with little ownership interest and therefore little incentive to negotiate. Firms with higher levels of institutional ownership would likely do the same as institutional investors presumably act as a check on CEO influence.

2.3. Lack of Sophistication

Other studies offer evidence suggesting that boards are less sophisticated than economists would expect when it comes to executive compensation. Hall and Murphy (2003), for example, contend that because the Financial Accounting Standards Board (FASB) did not require firms to expense employee stock options prior to 2006, many boards did not comprehend the cost associated with issuing them to executives. As a result, many firms granted executives the same number of stock options each year, resulting in ballooning grant-date values as the stock market climbed.

Shue and Townsend (2017) demonstrate that informational reforms by the FASB and SEC helped boards understand their true economic cost and made them less likely to grant the same number of options each year. Incidentally, they find that directors with a master of business administration (MBA) degree are less susceptible to this type of suboptimal decision-making.

A lack of sophistication could have implications for this study. Boards may not know the tax consequences of their compensation decisions and therefore may not

respond, or at least not quickly, to changes in the tax environment. In addition, if they do respond, they may apply broad pay cuts to all executives rather than thinking through the details of each executive's role and how to keep them best incentivized.

3. Institutional Detail

The ACA provision is not the first time Congress tried to rein in CEO pay using the Tax Code, nor is it the last. It is unusual, however, in a number of respects that allow researchers to better identify the impact of corporate taxes on executive compensation.

For example, the provision (1) does not include an exemption for qualified[1] performance pay, (2) does not grandfather in executives with preexisting employment contracts, (3) does not coincide with any changes to personal or corporate tax rates or the broader corporate tax environment, (4) does not coincide with any changes to executive compensation disclosure requirements, and perhaps most importantly, (5) applies to some, but not all, firms within executive compensation peer groups, thereby providing a counterfactual that can be used to control for concurrent time trends.

This section walks through the history of these tax provisions targeting executive compensation and details how this study fits within the broader tax landscape.

3.1. 1994 Provision

The first attempt to rein in CEO pay using the Tax Code came in 1994. Congress enacted a $1 million limit on the amount that publicly traded companies could deduct for CEO pay and that of other top executives. Corporations could deduct the first $1 million on their tax return but any excess would be subject to their marginal tax rate.

[1]Stock options generally qualify as performance pay as long as the exercise price is at or above the grant-date price. Bonuses and restricted stock also qualify as performance pay if they are conditioned on performance goals that have been approved in advance by shareholders.

Although salary was cabined by this new $1 million limit, the 1994 provision included an exemption that allowed firms to pay executives more than $1 million if the excess was linked to firm performance—for example, in the form of stock options granted at-the-money or out-of-the-money.

As Treasury counsel Catherine Creech explained, Congress never intended for this provision to raise tax revenue. It was intended to serve as a "behavior shaping provision." Congress hoped that it would encourage firms to keep executive compensation below the $1 million mark, unless the firm performed particularly well, in which case the exemption for qualified performance pay would apply.

Notably, the $1 million cutoff was not indexed for inflation. As Rose and Wolfram (2000) document, at the time the provision was enacted, it approximated the median total compensation for CEOs of publicly traded firms. That quickly changed, however.

As Perry and Zenner (2001) observe, total CEO compensation increased dramatically after the provision went into effect in 1994. In the words of Senator Chuck Grassley (R-Iowa), a leading voice in the Senate on tax policy, "Regardless of how you feel about limiting compensation through the tax code, the current law is like a gnat on an elephant in accomplishing its goal. It's easy to swat away, and that's exactly what many companies do."

Perry and Zenner (2001) could not find any evidence that the provision slowed the growth of executive compensation, although they do find some evidence suggesting a slight slowdown in the growth of salaries for those executives near or above the $1 million mark. Taken together, their results and that of Hall and Liebman (2000) imply that the provision may have, at the margin, encouraged firms to substitute stock options and other forms of performance pay for salary.

3.2. 2013 ACA Provision

The original Affordable Care Act bill did not include a tax provision targeting executive compensation. It was added later via an amendment proposed by Senator Blanche Lincoln (D-Arkansas), a key swing vote that the Democrats required to break the Republican filibuster.

In proposing the tax provision, Senator Lincoln sought to assuage her own fears and those of her moderate colleagues regarding the bill's cost. Indeed, a handful had indicated that they needed to see an analysis by the nonpartisan Congressional Budget Office before deciding whether to support the bill. As the leader of the House Republicans, Representative Tom Price (R-Georgia), chided, "Senate Democrats are clearly ignoring the fiscal train wreck that Medicare represents."

Senator Lincoln's amendment directed all tax proceeds to the Medicare Trust Fund. As she explained, "[T]his proposal protects our seniors of today and tomorrow by ensuring that the Medicare Trust Fund remains strong." Unlike the 1994 provision, which sought to tighten the link between CEO pay and firm performance, her proposal was intended to shore up Medicare at CEOs' expense.

The provision lowered the deduction limit to $500,000 and, more importantly, removed the exemption for performance pay. In other words, corporations could not deduct compensation of any form in excess of $500,000. The data collected in this study indicate that almost all affected top five executives earned in excess of $500,000 and the vast majority earned in excess of the prior $1 million limit. Closing the performance pay exemption was therefore the key change.

Senator Lincoln's original proposal tied the deduction limit to the salary of the President of the United States—$400,000 at the time. Congress, however, in an attempt to give executives some breathing room, ultimately agreed to a $500,000 cap. Senator Tom Harkin (D-Iowa) articulated the sentiment: "In defense of their outlandish salaries, . . . CEOs cite the difficulty of their jobs and complexity of their tasks. The

President of the United States probably has the pretty difficult job. He has a few complex tasks to confront. There is no reason . . . CEOs should get a tax break on salaries higher than the President's. That is exactly what the Lincoln amendment does."

As Senator Lincoln explained when introducing the provision, "[T]he amendment I am offering today would set the deduction cap at the same level as the highest paid government official, and that is the President. It is estimated to save approximately $650 million over 10 years, and will place these savings in the Medicare trust fund to further strengthen the solvency of that fund and protect our seniors."

Although a number of lawmakers, in both the House and Senate, voiced support for expanding the provision to cover all firms—a notion that, as described below, ultimately came to fruition in 2018—Senator Lincoln's proposal targeted only certain health insurance companies. Proponents of the provision struggled to offer a principled explanation for why it should not, at a minimum, be expanded to cover health care firms more broadly.

Senator Chuck Grassley (R-Iowa) highlighted this point on the Senate floor: "This amendment picks out one set of executives in the entire health care arena and singles out that one set of executives for limits on compensation. In the entire health care sector of the economy, this amendment suggests that only one group of executives warrants this sort of special treatment, and that happens to be the executives of health insurance companies. . . . Well, a very commonsense question . . . is, why not limit compensation for executives in other areas of health care? What about the executives of hospitals? Shouldn't their excess compensation go to protect Medicare? Why not executives of nursing homes then? Why not executives of medical device manufacturers? Why not limit compensation on the people who run home health agencies? Why not limit compensation for doctors? Why not limit compensation for executives at the drug companies?"

Grassley went on to insinuate that the amendment merely retaliates against certain executives for their failure to support the bill, "[T]his amendment focuses on one specific group of executives who weren't going to be bought off by this bill. So let's just call this amendment out for the brazen political stunt it is. . . . I wish to remind everyone in closing that I asked the sponsor to include drug company executives in her amendment but was turned down."

Apart from Senator Lincoln's amendment, the ACA legislation enacted by Congress did not include any other provisions relating to the deductibility or disclosure of executive compensation, or the corporate tax landscape more broadly. Although Congress passed the ACA in March 2010, a number of states almost immediately filed lawsuits challenging its constitutionality. By January 2011, a federal district court had struck down the entire Act.

This barrage of litigation found its way to the Supreme Court in *National Federation of Independent Business v. Sebelius*, 567 U.S. 519 (2012). Many expected the Supreme Court to affirm the district court's ruling and declare the entire ACA unconstitutional. Indeed, a majority of justices appeared ready to do so in March 2012, when they met in chambers to cast initial votes.

Chief Justice John Roberts, however, changed his mind over the ensuing weeks. On June 28, 2012, in a shock to the legal and business communities, the Supreme Court issued a 5-4 ruling upholding the ACA, with Chief Justice John Roberts casting the tie breaking vote. Affected firms therefore had very little time to react before the tax provision targeting executive compensation went into effect on January 1, 2013.

Firms certainly had no opportunity for last minute gamesmanship. 2012 compensation had already been set by that point—the prior law required firms to determine performance pay within 90 days of the start of the year to qualify for deductibility.

This study is the first to gather executive compensation data on all firms affected by the ACA tax provision and investigate its impact in a comprehensive manner.

The unusual history and nature of the provision makes it particularly well-suited for empirical analysis. Notably, unlike the 1994 provision discussed above and the 2018 provision discussed below, the ACA provision applied equally to all executives starting in 2013 notwithstanding any preexisting employment contracts. These preexisting contracts are unobservable to researchers and have hindered past attempts to identify the impact of changes to the deductibility of executive compensation.

3.3. 2018 Provision

While the ACA removed the performance pay exemption for certain health insurers starting in 2013, the Tax Cuts and Jobs Act (TCJA) (P.L. 115-97) did so for all firms starting in 2018. Firms can now deduct only $1 million in executive pay, regardless of whether or not it is linked to firm performance. The excess over $1 million is subject to the firm's marginal tax rate.

Unlike the 2013 ACA provision, however, the 2018 provision grandfathers in compensation paid pursuant to a written employment agreement in effect when the bill was introduced on November 2, 2017. Firms are not required to disclose which executives had preexisting agreements in place, making it impossible to assess when exactly the tax change takes effect at the executive level.

In addition, unlike the 2013 ACA provision, the 2018 provision coincided with a major reduction in the corporate tax rate—from 35% to 21%. This simultaneous reduction in the tax rate offset the removal of the performance pay exemption, making it difficult to disentangle their effects.

A working paper by De Simone, McClure, and Stomberg (2020) nonetheless leverages variation in firms' fiscal year ends to study the TCJA. They find no immediate, statistically distinguishable impact on executive compensation relative to control firms whose fiscal year ends lag behind by six months. Their identification strategy, however, limits their ability to assess longer response times.

Their results are largely consistent with those here. Firms do not exhibit a knee jerk reaction to the 2013 ACA provision either. They often take a year to adjust to the new tax environment. As Shue and Townsend (2017) document, many firms employ multiyear compensation plans for their executives, which introduces variation into the timing of their response.

4. Empirical Strategy

This study is possible thanks to SEC regulation that requires firms to disclose their executive compensation peer group. These peer groups provide a counterfactual that can be used to control for concurrent time trends.

While some consider the process a black box, affected firms do not set compensation in a vacuum. They compete with peers over a limited set of managers who have the requisite skill set and experience to lead a company of their size and specialty. How compensation evolves relative to these peers speaks to how the tax change has affected the firm's decision-making.

Leveraging firms' admitted peer group prevents any researcher bias from entering into the analysis, and more importantly, accounts for unobservable executive traits that are priced by the labor market but cannot be captured quantitatively. Graham, Li, and Qiu (2012) document that these unobserved differences across executives are in fact an important determinant of their compensation. Albuquerque, Franco, and Verdi (2013) find evidence that these unobservable traits are incorporated into disclosed peer groups, making them more accurate than any counterfactual that could be constructed using observed firm metrics.

Although firms typically target executive compensation at the median of their peer group, Edmans, Gabaix, and Jenter (2017) note that more than 30% choose a higher percentile and almost no firms target compensation below the median of their peers.

This skewed cross-sectional variation in target pay percentile has been a subject of interest. Scholars worry that target pay percentiles above the median reflect undue CEO influence over the board.

The cross-sectional variation in target pay percentile is not important to this study, however. The difference in differences framework used here focuses on changes in pay before and after the tax hike, rather than the starting or ending value.

4.1. Data Collection

Before data can be collected, those firms affected by the ACA tax provision must first be identified. This process is not as straightforward as looking to industry classification codes. The provision applies to the parent company of any subsidiary that generates more than 25% of premiums from qualifying health insurance products. On-site medical clinic coverage as well as other more specialized health insurance products are excluded.

Because the test for whether the provision applies is calculated at the subsidiary level, even highly specialized 4-digit Standard Industrial Classification (SIC) codes leave room for error—they include firms unaffected by the provision and leave out others that are affected. What market participants traditionally classify as a property and casualty insurance company may, for example, have a small subsidiary that generates enough health insurance premiums to subject the parent company's executives to the provision.

State level subsidiary data from the United States Department of Health and Human Services is used to determine which parent companies have subsidiaries that qualify. Annual 10-K reports on file with the SEC are then reviewed to ensure that these firms do not fall under the Treasury Department's de minimis exception (26 C.F.R. § 1.162-31(b)(4)(v)). The qualifying health insurance premiums from any subsidiaries must account for more than 2% of the parent company's gross annual

revenue.

Once all affected firms are identified, their peer groups are then hand collected from proxy statements on file with the SEC. To prevent any opportunity for gamesmanship, these peer groups are pulled from the most recent proxy statement that predates the Supreme Court's surprise 5-4 ruling upholding the ACA.

Firms that received and had not fully repaid capital under the U.S. Treasury's Troubled Asset Relief Program (TARP) are excluded from these peer groups. These firms were subject to a separate tax provision—Section 162(m)(5) of the Tax Code—that imposes similar limits on the deductibility of executive compensation.

Federal securities law requires firms to disclose the amount and type of compensation paid to their CEO, CFO, and three other most highly paid executives. Firms report this information annually in their proxy statements. The SEC requires firms to report non-equity incentive pay in the year the performance criteria was satisfied and to use grant-date fair market values for options and stock awards as FAS 123R provides.

These data are assembled to construct an executive compensation panel for all peer groups in the sample. Observations are at the executive $\times$ year level. The panel begins three years before the 2013 tax change and continues until three years after. Looking out further than three years would result in a reduction in statistical power as multiple affected firms were acquired and dropped out of the sample in the fourth year.

Standard & Poor's ExecuComp database provides this data for firms in the S&P 500, the S&P Midcap 400, and the S&P Smallcap 600. A number of firms in the sample, however, are not included in the ExecuComp database. Compensation information and executive attributes (tenure at firm, gender, age, firm ownership) must therefore be collected by hand from their proxy statements.

These data are then supplemented with firm attributes from Compustat and

the Center for Research in Security Prices (CRSP). Board attributes are provided by BoardEx. Institutional ownership data is provided by Thomson Reuters. Implied volatility data is provided by OptionMetrics. Marginal federal tax rate data is developed by Blouin, Core, and Guay (2010).

The ACA tax provision became effective in tax years beginning on or after January 1, 2013. Because some firms' tax year does not follow the calendar year,[2] care is taken to ensure that the 2013 label reflects when the ACA first took effect. This requires an adjustment from the notation used by Compustat for firms with a June through November year end.

4.2. Difference in Differences Framework

The following baseline specification is used to test the impact of the tax provision on executive compensation outcomes:

$$\begin{aligned} ln(TotalCompensation_{ift}) =& \beta_1 Affected_f + \beta_2(Affected_f \times Post\text{-}Tax_t) \\ &+ \delta_t + \omega_p + \theta_j + \alpha X_{ift} + \epsilon_{ift} \end{aligned} \tag{1}$$

where the $TotalCompensation$ reflects the amount executive i received from firm f in year t.[3] The focus is on coefficient β_2, which measures the percent change in executive compensation at affected firms after the 2013 tax change relative to their unaffected peers. A negative β_2 suggests that the ACA tax provision reduced pay for top five executives, as Congress intended.

$Affected$ is an indicator variable set to 1 if the executive is employed by a firm affected by the 2013 tax change and to 0 if employed by a firm outside its purview. The β_1 coefficient captures initial differences in pay between affected firms and their

[2]Firms' tax year is presumed to match their fiscal year used for financial reporting purposes.

[3]Total Compensation includes all forms of compensation reported in the firm's proxy statement. Grant-date fair market values are used for options and stock awards. Non-equity incentive pay is reported in the year the performance criteria was satisfied.

unaffected peers. It would not be surprising if β_1 were slightly positive as prior literature suggests that a number of firms set target pay above the median of their peers.

The $Post\text{-}Tax$ indicator is absorbed by year fixed effects (δ_t). It is set to 1 if the observation occurred after the tax provision went into effect in 2013 and to 0 if it occurred before.

Peer group fixed effects (ω_p) are included as well, as the focus is on identifying within peer group differences in executive pay. Industry fixed effects (θ_j) are also included in the baseline specification to control for time-invariant industry-specific factors. Industry is defined very narrowly—using four digit SIC classifications.

It is not clear, however, that industry fixed effects are a necessary addition. SIC codes classify industries by products sold. Peer groups, on the other hand, classify industries by executives hired—these firms compete over the same pool of executive talent. There is, no doubt, substantial overlap between product market and labor market classifications, but the focus of this study is on the within labor market variation. Product market classification affects executive compensation only tangentially through firm size and performance, which are controlled for separately. Indeed, the results show that the β_2 coefficient is robust to any digit SIC or NAICS classification and essentially unchanged if industry fixed effects are not included.

These results are conditioned on a rich set of control variables thought to influence executive compensation, denoted by vector X_{ift}. They include executive attributes (gender, age, tenure at the firm, and equity ownership in the firm), firm size (measured by the natural logarithms of sales, assets, and market capitalization), as well as recent firm performance (measured by three year total return to shareholders, including the monthly reinvestment of any dividends). Standard errors are clustered at the firm level and appear in parentheses in the tables.

This specification can be used to test the impact on not only the amount of com-

pensation, but its type as well. Prior literature suggests that firms reacted to the 1994 provision's performance pay exemption by replacing salary, at the margin, with stock options and other forms of performance pay. This study explores whether its removal in the 2013 ACA provision induced the reverse—a shift away from performance pay and back toward salary.

Breaking out salary and performance pay separately allows one to tease out any potential mix shift in the type of pay. For simplicity, performance pay is defined here to include all forms of compensation reported in the firm's proxy statement apart from salary. The results are robust to more nuanced classifications of performance pay as well.

4.3. Comparing Unaffected Peers

Table 1 explores whether affected executives differ from their unaffected peers along any noteworthy dimensions. As one would expect given what we know from the prior literature on executive compensation peer groups, there appears to be substantial overlap in executive, firm, and board attributes. Similar attributes are not necessary for identification, but substantial overlap in the distribution of observable attributes provides some assurance that affected and unaffected firms are in fact comparable.

Firms' previous statements regarding the tax deductibility of executive compensation are also examined. Prior to the 2013 change, both affected firms as well as their unaffected peers were subject to the same 1994 tax provision. It denied deductions for compensation above $1 million unless executives were paid in stock options or other forms of performance pay. The vast majority of firms at least mentioned the 1994 provision in their proxy statement and many provided shareholders some disclosure on how the tax provision factored into their compensation policies.

Firms' statements regarding the 1994 provision generally fell into one of four categories. Many firms explicitly stated that they intend to optimize executive compensa-

tion for tax deductibility. Other firms acknowledged limits on the tax deductibility of executive compensation but stated that those limits are only one factor among many that they consider. Some firms acknowledged limits on the tax deductibility of executive compensation without stating how these limits factor into their decision-making. A few did not acknowledge these deductibility limits at all.

Figure 3 documents that, prior to the 2013 change, affected firms and unaffected peers discussed the 1994 provision in their proxy statements quite similarly. Again, this is not necessary for identification, but it does build confidence that unaffected peers are indeed comparable, particularly when it comes to how they view executive compensation.

The next step is to compare compensation trends prior to the 2013 tax change. It is important to see that, prior to 2013, affected firms were not subject to their own unique compensation trends that differ from those of unaffected peers.

These pre-trends can be examined graphically in Figure 4. To ensure consistency, the data is displayed in the same form used in the baseline specification. It presents log transformed compensation after accounting for peer group fixed effects and the controls used in the baseline analysis—in other words, mean residual values from the following:

$$\ln(TotalCompensation_{ift}) = \omega_p + \alpha X_{ift} + \epsilon_{ift} \tag{2}$$

Figure 4 shows that executives at affected firms as well as their unaffected peers experienced a downward turn in compensation in 2008 followed by a general upward trend until the 2013 tax change. These common trends reinforce the notion that unaffected peers provide a reliable counterfactual. They suggest that compensation at affected firms would have continued on the same upward trend after 2013—as it did for their unaffected peers—if not for the tax change.

A more formal approach to verifying these shared trends is to conduct placebo regressions, which apply the same baseline specification but vary the treatment year.

Given that these placebo tax changes are fictitious, no significant treatment effect should be observed.

Table 2 reports the results of these placebo tests and compares them to the actual tax change in 2013. The year above each column is the year the placebo purportedly went into effect. Each column tests a separate annual panel beginning three years before the placebo and extending until three years after.

As expected, the coefficient on $Affected \times Post\text{-}Tax$ in each of the placebo tests is statistically indistinguishable from zero. In fact, it uniformly is less than the reported standard error. These placebo results suggest that the 2013 shock to compensation at affected firms is not observed by chance.

5. Results

The SEC requires publicly traded firms to report compensation data for their top five executives annually. The interaction term $Affected \times Post\text{-}Tax$ in Table 3 captures the impact of the 2013 tax change on these executives relative to their unaffected peers.

The first panel of Table 3 presents evidence that top five executives shouldered a substantial portion of the increased tax burden. Column 2—the baseline specification—reports a highly significant 20.7% impact on total compensation.

To put that number in perspective, affected firms had a mean federal marginal tax rate of 34.2% at the time. State income taxes are not included in that figure and likely added several percentage points. They cannot be calculated with precision as firms do not disclose their apportionment of income across states. The 2013 tax change therefore added an additional 40% give or take to the cost of paying an executive more than $500,000. A 20.7% impact on total compensation, by comparison, suggests that firms passed a meaningful amount of that additional tax burden onto their executives in the form of lower pay.

Table 3 reports results from a number of alternative specifications as well. In each, the coefficient on $Affected \times Post\text{-}Tax$ is negative and highly significant. Column 3, for example, demonstrates that using within firm variation rather than within peer group variation provides a very similar result. Column 4 demonstrates that lagged controls for firm size and performance do as well.

Some practitioners and policymakers insist that tax costs are too trivial to affect pay practices at publicly traded firms. These results indicate quite the opposite. Firms do appear to take tax considerations into account when setting executive pay. This section conducts a number of additional tests to further investigate what drives these results.

5.1. Impact on Compensation Mix

The 2013 tax change removed the performance pay exemption for affected firms. This exemption allowed firms to deduct any amount of compensation so long as it was paid in a form linked to the firm's performance. Hall and Liebman (2000) suggests that this exemption encouraged firms to substitute stock options and other forms of performance pay for salary, although the effect they observed was "very small."

The removal of the performance pay exemption at affected firms in 2013 would presumably induce the opposite—a mix shift away from performance pay and back toward salary. Panel B of Table 3 tests that hypothesis by examining the impact on compensation mix. The dependent variable is the percent of executives' total compensation that comes from salary. These results document a 4.8% increase in the percent of executives' compensation from salary relative to unaffected firms. Given that the median affected firm paid its executives approximately 20% of their total compensation in the form of salary prior to the tax change, a more than 4% shift is notable, both statistically and economically.

Panel C of Table 3 examines the impact of the provision on salary and performance

pay separately in an attempt to investigate how the exemption's removal affected each. These results indicate a considerable and highly significant reduction in executives' performance pay. The coefficient on $Affected \times Post\text{-}Tax$ points to a 31.3% reduction in the baseline specification even after controlling for time-varying firm size and performance. In other words, the same level of performance brought executives 31.3% less in bonuses and stock options.

There is little evidence that this reduction in performance pay is mitigated by a corresponding increase in salary. Although Panel C reports a positive coefficient on the interaction term in columns (1) through (4), the impact is not statistically distinguishable in any specification tested.

One possible explanation relates to the removal of the performance pay exemption. Affected firms may have been paying their executives more in bonuses and stock options than is optimal because of the associated tax incentive. Another possible explanation relates to the broader labor literature documenting the stickiness of salaries. Firms may have been hesitant to cut executives' salaries but amenable to reducing their performance pay when faced with a tax hike.

In either case, these results suggest that compensation committees are aware of changes to their tax environment and consider them when setting executive pay. They document that firms responded to the 2013 tax change by altering both the amount and type of pay they offered their executives.

5.2. Heterogeneity in Executive Attributes

Although the ACA tax provision applies to any employee paid more than $500,000, the Senate record makes clear that Congress's focus was on CEO pay in particular. Lawmakers expected firms to pass the additional tax burden onto those executives who earn the most.

Table 4 tests the provision's success in that regard. It examines the impact on CEO

Pay Slice, a metric first introduced by Bebchuk, Cremers, and Peyer (2011). CEO Pay Slice is the slice (in %) of compensation paid to the firm's top five executives that goes to the CEO. In other words, the CEO's slice of the overall executive compensation pie. Bebchuk, Cremers, and Peyer (2011) document that higher CEO Pay Slice is associated with weaker governance and poorer performance.

Although not in so many words, Congress intended to reduce CEO Pay Slice. CEOs are presumably the highest paid executive at their firm. They likely earn in excess of $500,000 and, accordingly, incur a higher tax cost under the ACA provision than any other top five executive. If the tax had the effect that Congress intended—that is, if firms cut pay in accordance with each executive's tax cost—the CEO's slice of the overall executive compensation pie should fall.

Column (1) of Table 4, however, reports the opposite result. CEO Pay Slice actually increased 4.0% relative to unaffected peers after the tax hike went into effect. Columns (2) and (3) break out the impact on CEO slice of salary and performance pay separately. They demonstrate that CEOs captured a greater percentage of the firm's bonus and stock option pool after the tax hike. The impact on their slice of the management team's salaries, however, is statistically indistinguishable.

Taken together, these estimates and those of Table 3 suggest that the tax hike had little impact on executive salaries, either in absolute terms or relative to others on the management team. Executives did, however, feel the impact when it came to bonuses and stock options. The evidence on CEO Pay Slice nonetheless suggests firms did not cut these incentives in the manner that Congress expected: CEOs saw less cuts to their bonuses and stock options than other members of the management team.

This special treatment for CEOs is striking—conventional wisdom suggests that those executives with the highest tax cost will bear the greatest burden. It does, however, align with two key themes in the executive compensation literature.

If CEO pay reflects a competitive labor market for executive talent, then we would

expect to see firms differentiate in their response to a tax hike based on each executive's role and experience. Some skill sets, after all, are more marketable than others. Firms would be less likely to cut the pay of those executives who have skill sets sought after by peers.

The unique treatment of CEOs also aligns with a separate stream of literature that raises concerns CEOs exhibit undue influence over the board. If that influence extends to the pay process, then their compensation is likely less vulnerable to cuts than that of their colleagues.

In an effort to shed some light on these cross-sectional patterns in the data, Table 5 extends the baseline specification by adding the $Affected \times Post\text{-}Tax \times CEO$ triple interaction (along with interactions between CEO and both $Affected$ and $Post\text{-}Tax$). CEO is an indicator variable set to 1 if the executive served as CEO in the current year and to 0 if not.

This triple differences framework helps tease out the impact of the tax hike on CEOs relative to other members of the management team. If firms do treat their CEOs more favorably than other executives, then we would expect to see a positive and statistically significant coefficient on the triple interaction term. Column (1) of Table 5 reports just that: CEO pay decreased by 17.1% less than that of their management team colleagues.

The coefficient on the triple interaction term partially offsets the 22.6% pay cut experienced by all members of the management team. The p-value for the partial F-test—reported in the bottom row of Table 5—shows that the sum of the coefficients on $Affected \times Post\text{-}Tax$ and $Affected \times Post\text{-}Tax \times CEO$ is statistically indistinguishable from zero. In other words, the results suggest that although the tax hike had a considerable impact on other members of the management team, it is not clear that it had any impact on CEO pay specifically.

Column (4) repeats this same analysis for compensation mix. The dependent

variable is the percent of executives' total compensation that comes from salary. The coefficient on the triple interaction term is approximately half the standard error, implying that although firms were more reluctant to cut CEO pay than that of their colleagues, CEOs experienced the same shift toward salary after the removal of the performance pay exclusion as the rest of the management team.

Column (2) demonstrates that the severity of pay cuts induced by the tax hike varies with the executive's C-level experience. The *C-Level5+* variable is set to 1 if the executive has served at the C-Level for 5 or more years and to 0 if not. The positive and highly significant coefficient on the triple interaction term documents executives who have served in a C-level capacity for a longer period of time experience less severe pay cuts in response to the tax hike.

Column (3) explores how the impact of the tax hike on compensation varies with the executive's age. The median executive at both affected firms as well as their unaffected peers is 55 years old. An indicator variable is used to split the sample by age along the median. $Age55+$ is set to 1 if the executive is 55 or older and to 0 if not.

The triple interaction term $Affected \times Post\text{-}Tax \times Age55+$ captures the differential impact of the tax hike on compensation for those executives age 55 and older. The interaction term $Affected \times Post\text{-}Tax$, on the other hand, captures the impact of the tax hike on those executives age 54 and younger. The coefficients on these interactions terms offset each other to a large degree. In fact, it is not clear those age 55 and older experienced a pay cut in response to the tax hike. The sum of the two coefficients is statistically indistinguishable from zero. Executives age 54 and younger, on the other hand, saw a 34.5% decrease in their total compensation following the tax hike relative to their unaffected peers. The difference in impact is significant at the 1% level.

Column (6) repeats this analysis using the percent of executives' total compensation that comes from salary as the dependent variable. The coefficient on these interaction terms largely offset each other. It is not clear that those age 55 and older experienced

any shift toward salary after the removal of the performance pay exclusion. The p-value for the partial F-test shows that the sum of the two coefficients is statistically indistinguishable from zero. Executives age 54 and younger, on the other hand, saw a 7.2% increase in the percent of their total compensation that comes from salary. In other words, once incentives for performance pay are removed, boards are less likely to condition compensation for younger executives on hitting specific accounting or stock targets. This finding is consistent with the notion that firms used the removal of tax incentives for performance pay as an opportunity to reevaluate, on an executive-by-executive basis, the optimal balance between salary and bonuses.

Table 6 continues to explore how the impact of the tax hike varied across executives. It uses the executive's compensation prior to the tax change as a differentiator. Two new indicator variables are defined: one denotes the highest paid executives within the firm ($StarExecutive$) and the other denotes the highest paid executives within the peer group ($More\$2$).

$StarExecutive$ is set to 1 if the executive's total compensation prior to the 2013 tax change was in the 60$^{\text{th}}$ percentile or higher relative to other executives listed in the firm's proxy statement and to 0 if not. The large and highly significant triple interaction terms in Columns (1) and (4) show that these star executives were indeed treated differently than their lower paid colleagues. The coefficient on $Affected \times Post\text{-}Tax \times StarExecutive$ suggests 17.4% less of an impact on total compensation and 4.3% less of a shift toward salary in response to the tax change. In fact, the p-value for the partial F-test raises doubt that these executives experienced any change to the amount or type of compensation they received.

$More\$2$, on the other hand, indicates all executives who earned more than $2 million in total annual compensation prior to the 2013 tax change. The coefficient on $Affected \times Post\text{-}Tax \times More\$2$ in Columns (3) and (6) is highly significant and even larger than that of the corresponding $StarExecutive$ triple interaction term. In

other words, executives who earned less than $2 million were far harder hit by the tax change than those who earned more than $2 million—the very opposite of what Congress expected.

Taken together, these results document a striking relation between an executive's prior compensation and the impact of the corporate tax hike: the highest paid executives were among the least affected. Those earning less than $2 million bore the brunt of the impact.

Both the competitive labor market and managerial entrenchment theories of executive compensation discussed in Section 2 offer plausible explanations for the results thus far. Prior compensation could be a reflection of the executive's market power. Firms may be reluctant to pass the additional tax burden onto highly paid executives out of fear of losing them to unaffected peers. Highly paid executives, on the other hand, may be the beneficiary of systematic governance failures that prevent the board from exhibiting independent judgment over the pay process. Their pay may therefore be less susceptible to a tax hike than that of less senior executives who have less influence over the board.

5.3. Heterogeneity in Firm Governance

If governance failures are truly at the heart of these results, then proxies for corporate governance might be associated with the severity of the observed pay cuts. One such proxy that can be used to gauge influence over the board is firm ownership. Higher ownership corresponds to higher voting power. Although board elections are rarely contested, directors ostensibly take into account the interests of those who hold voting power in the firm.

Table 8 explores how firm ownership relates to the impact of the tax hike using the same triple differences framework as above. It extends the baseline specification by adding the $Affected \times Post\text{-}Tax \times \%Ownership$ triple interaction (along with

interactions between $\%Ownership$ and both $Affected$ and $Post\text{-}Tax$).

Columns (1) and (4) focus on the executive's ownership in particular. $\%ExecutiveOwns$ is defined as the percent of the firm's common stock beneficially owned by the executive. Shares not outstanding are nevertheless deemed beneficially owned if the executive has the right to acquire them within 60 days. In other words, their vested employee stock options count toward their ownership percentage.

The triple interaction term helps tease out the impact of the tax hike on executives who own a greater percentage of the firm relative to executives who own less. The large and highly significant triple interaction terms in Columns (1) and (4) document that executives who own more were indeed treated differently than those who own less. The coefficient on $Affected \times Post\text{-}Tax \times \%ExecutiveOwns$ estimates that each additional percent of the firm that the executive owned corresponded to 11.8% less of an impact on their total compensation and 1.4% less of a shift toward salary in response to the tax change.

Some caution is needed in interpreting these results. An executive's ownership in the firm is likely highly correlated with their tenure at the firm and prior compensation. After all, executives who have worked for the firm for a longer period of time have had more opportunity to earn stock options and stock awards. An executive's ownership may also be correlated with his position. Boards often require more senior executives to purchase company stock in an effort to align incentives and demonstrate their commitment to shareholders. It is not clear, therefore, that what we observe with regard to the executive's ownership is new insight as much as it is the same mechanism documented above, albeit through a different lens.

Columns (2) and (5) focus instead on the amount of stock held by the management team collectively, as opposed to individually. In other words, it assesses whether high ownership by some executives has an impact on how the entire management team is

treated with regard to the tax hike. $\%InsidersOwn$ is formally defined as the percent of the firm's common stock beneficially owned by all current executives of the firm.

The coefficient on $Affected \times Post\text{-}Tax \times \%InsidersOwn$ is highly significant, albeit smaller than that of the corresponding $\%ExecutiveOwns$ triple interaction term. This suggests that the management team's collective ownership may act as a proxy for their influence over the board. It is not otherwise clear why one executive's ownership should have any relation to how their colleagues are treated in response to the tax hike.

Columns (3) and (6) leverage data provided by Thomson Reuters to study whether the impact of the tax hike relates to firms' institutional ownership. $\%InstitutionsOwn$ is defined as the percent of the firm's common stock beneficially owned by institutions—that is, mutual funds or institutional investment managers who exercise investment discretion over $100 million or more in assets.

Hartzell and Starks (2003) suggest that "a larger concentration of institutional shareholders might result in greater monitoring and scrutiny of the CEO and the board." If that is the case, then firm's reactions to the tax hike may relate to their institutional ownership.

Column (3) presents some evidence of an association but limited statistical power prevents more conclusive results. The negative coefficient on the triple interaction term is significant at the 10% level. The observed association with the compensation mix response reported in Column (6) is stronger. It appears that firms with higher levels of institutional ownership were more likely to readjust executive compensation packages back toward salary once the tax incentives for performance pay had been removed.

Table 9 explores how the impact of the tax hike relates to board attributes. Unfortunately, affected boards exhibit very little variation in some of the popular governance proxies used in the literature—for example, the number of directors on the board

and the percent of them who are independent. Two noteworthy attributes, however, exhibit enough variation to merit further investigation: (1) whether the CEO serves as the board's chairman and (2) the amount of equity the average director holds in the firm.

Columns (1) and (3) of Table 9 examine the impact of board leadership. $CEOIsChairman$ is set to 1 if the firm's CEO is also chairman of its board and to 0 if not. The coefficient on the triple interaction term $Affected \times Post\text{-}Tax \times CEOIsChairman$ is highly significant and essentially offsets the $Affected \times Post\text{-}Tax$ term. Indeed, the p-value for the partial F-test shows that the sum of the two coefficients is statistically indistinguishable from zero.

In other words, it appears the tax hike had little to no effect on executive compensation if the CEO also serves as chairman of the board, but a considerable impact if the CEO does not. This result corroborates fears that CEO influence over the board may extend to the pay process. It suggests that boards are more reluctant to pass the burden of a tax hike onto executives when CEOs chair them.

Column (2), on the other hand, examines the relation between board ownership and the severity of the observed pay cuts. $AverageBoardOwnership$ is defined as the amount of equity held by the average director on the firm's board (in $10 million). The coefficient on the triple interaction term is negative and highly significant. It suggests that each additional $10 million of director ownership is associated with an additional 2.8% cut to executive pay in response to the tax hike. In other words, when directors own more stock in the firm, they are more likely to pass the burden of the tax hike onto executives.

Taken together, these results lend credence to concerns that poor governance may contribute to high levels of executive compensation. Those boards led by the CEO and those boards that own few shares in the firm are far more likely to pass the burden of a tax increase onto their shareholders, rather than their executives. In other words, it

appears who is on the board and who leads it matter to executives' compensation.

5.4. Heterogeneity in Tax Sophistication

As Figure 3 documents, firms exhibit quite a bit of variation in their announcements regarding the tax consequences of executive compensation. Some firms acknowledge the 1994 tax provision and tell shareholders that they will optimize any compensation packages over $1 million to fit within the performance pay exemption. Other firms acknowledge the 1994 provision but state that it is only one factor among many that they consider. Far fewer acknowledge the provision without providing context as to how it factors into the pay process. Fewer still fail to acknowledge the 1994 tax provision.

Firms' prior statements regarding the 1994 provision can be used as a proxy for their tax sophistication. Firms that acknowledge the provision and explicitly state that they optimize compensation for tax purposes are presumably among those with the highest levels of tax sophistication. An indicator variable, $Optimize$, is created to identify these firms. $Optimize$ is set to 1 if the firm has explicitly stated in its proxy statement its intention to optimize executive compensation for tax deductibility purposes and to 0 if not.

Table 10 examines whether firms with higher degrees of tax sophistication differ in their response to the 2013 tax change from those with lower degrees of tax sophistication. The results reveal that all firms, even those with less tax sophistication, responded to the tax hike. Indeed, the coefficient on the $Affected \times Post\text{-}Tax$ term in Column 1 is significant and indicates that executive compensation fell 18.6% at less sophisticated firms in response to the tax change.

The results cannot confirm that more sophisticated firms cut pay more aggressively than their less sophisticated counterparts. The triple interaction term $Affected \times Post\text{-}Tax \times Optimize$ captures this differential. Its coefficient is negative—

sophisticated firms cut executives' pay by 4.9% more—but the standard error is too large to conclude that this differential is statistically significant. In other words, the sample does not provide enough statistical power to establish significant differences between firms with higher and lower degrees of tax sophistication.

While we cannot necessarily conclude that firms with higher degrees of tax sophistication cut pay more aggressively, the results suggest that these firms were more likely to differentiate between their executives when making pay cuts. Table 11, for example, examines whether firms with higher degrees of tax sophistication are more likely to treat CEOs differently in their response to the 2013 tax change.

To explore these differences, Table 11 extends the previous triple differences framework by introducing interactions between CEO and all combinations of $Affected$, $Post\text{-}Tax$, and $Optimize$. The focus is on $Affected \times Post\text{-}Tax \times Optimize \times CEO$ in particular, which captures the difference between how CEOs are treated at more sophisticated firms relative to how they are treated at less sophisticated firms.

The coefficient on the quadruple interaction term is highly significant and positive. It indicates that CEOs at firms with higher degrees of tax sophistication experience 31.5% less of an impact in response to the 2013 tax change relative to CEOs at firms with lower degrees of tax sophistication. Column (3) documents that this differential is driven by reductions in performance pay, which results in a mix shift toward salary.

These results suggest that while firms of all types cut executive compensation in response to the 2013 tax change, firms with higher degrees of sophistication are more likely to treat CEOs specially—that is, more likely to spare them from the pay cuts endured by their less senior colleagues.

Panel B explores whether more sophisticated and less sophisticated firms differ in their approach to executives with MBA degrees. In other words, it repeats the same analysis as in Panel A but uses executives' educational profile—that is, whether or not they received an MBA degree—as a differentiator.

The $Affected \times Post\text{-}Tax \times Optimize \times MBA$ coefficient captures the difference between how executives with MBAs are treated at more sophisticated firms relative to how they are treated at less sophisticated firms. The significant positive coefficient on the quadruple interaction term in Column (1) indicates that more sophisticated firms are far less likely to pass the additional tax burden onto their executives who hold MBA degrees. In other words, sophisticated firms tend to protect executives with MBA degrees from the pay cuts endured by their less credentialed colleagues.

This finding suggests that firms' statements to shareholders regarding their approach to tax deductibility are not merely filler. They appear to convey information about the degree of nuance firms apply in their response to the tax.

On balance, it lends credence to the notion that compensation reflects a competitive labor market, in which some managerial talent—for example, those with MBA degrees—is more scarce than others. Firms may be reluctant to pass the burden of a tax hike onto their most credentialed executives as these executives are presumably the most sought after and are therefore more likely to leave in response to lower pay.

6. Conclusion

The ACA tax provision targeting executives who earn more than $500,000 is unusual in a number of respects that allow researchers to better identify how firms react to prodding by the Tax Code. This study is the first to gather data on all executives affected by the tax hike and offer a detailed analysis of its impact on compensation outcomes.

The results show that labor market or governance factors can often overwhelm whatever tax incentives Congress provides. Indeed, the ACA provision seems to have had little to no impact on CEO pay. It did, however, have a considerable impact on younger executives, those with shorter tenures at the firm, and those paid less than $2

million prior to the tax change. These less senior executives saw their pay decline by more than 30% relative to unaffected peers.

These differences in impact may reflect the varying desirability of executives' skill sets on the labor market. The results suggest, however, that governance played at least some role in how firms responded. Boards led by an independent chairman, for example, were far more likely to cut executive compensation in response to the tax hike than boards led by a CEO chairman. Boards who held more stock in the firm were more likely to cut compensation as well. These relations raise fears that a misalignment of incentives at the board level might be contributing to higher levels of executive compensation.

While many unanswered questions remain, this paper offers important stylized facts that ground our understanding going forward. They highlight that government policy targeting CEO pay is unlikely to yield its intended result unless it confronts the deeper labor market or governance forces contributing to the rise in pay. Tweaking tax incentives appears to have had an impact at the margin, but not on the CEOs and highly paid executives that Congress sought to target.

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Figure 1: Hypothesis Development

Hypotheses	Explanations	Predictions for Firm-Level Variation	Predictions for Executive-Level Variation
1. Efficient Contracting	Boards set pay to attract scarce managerial talent	Minimal variation	More desirable executives see less impact on pay
2. Managerial Power	Boards cater to entrenched executives	Weak governance is associated with less impact on pay	More entrenched executives see less impact on pay
3. Lack of Sophistication	Boards may set pay in a suboptimal manner	More sophisticated firms are more likely to differentiate between executives	Same as Efficient Contracting at more sophisticated firms Minimal variation at less sophisticated firms

Figure 2: Tax Provisions Targeting Executive Compensation[1]

Took Effect	Internal Revenue Code	Firms Affected	Deductibility Limit	% of C-level Executives[2] Above Deductibility Limit	Exclusions (i.e., Not Taxed)	Grandfathering[3] of Existing Contracts
1994	§ 162(m)(1)	Public Companies	$1 million	26%	Performance Pay[4]	Yes
2013	§ 162(m)(6)	Parents of Health Insurers	$500,000	98%	None	No
2018	§ 162(m)(1)	Public Companies	$1 million	78%	None	Yes

[1]Excludes § 162(m)(5), which affected only those firms that received and had not fully repaid capital under the U.S. Treasury's Troubled Asset Relief Program (TARP).
[2]C-level executives at S&P 1500 firms in year before tax provision took effect.
[3]Compensation paid under a binding contract signed before the law was passed is exempt from the new tax provision.
[4]Stock options generally qualify as performance pay as long as the exercise price is at or above the grant-date price. Bonuses and restricted stock also qualify as performance pay if they are conditioned on performance goals that have been approved in advance by shareholders.

Figure 3: Firms' Previous Statements Regarding Tax Deductibility

This figure categorizes firms in the sample based on their previous statements regarding the tax deductibility of executive compensation. *Optimize* indicates firms that explicitly stated that they intend to optimize executive compensation for tax deductibility purposes. *Only One Factor* indicates firms that acknowledged limits on the tax deductibility of executive compensation under the 1994 provision but stated that those limits are only one factor among many that they consider. *No Intention Stated* indicates firms that acknowledged limits on the tax deductibility of executive compensation but do not state how those limits factor into their compensation policies. *Tax Not Mentioned* indicates firms that did not acknowledge limits on the deductibility of executive compensation.

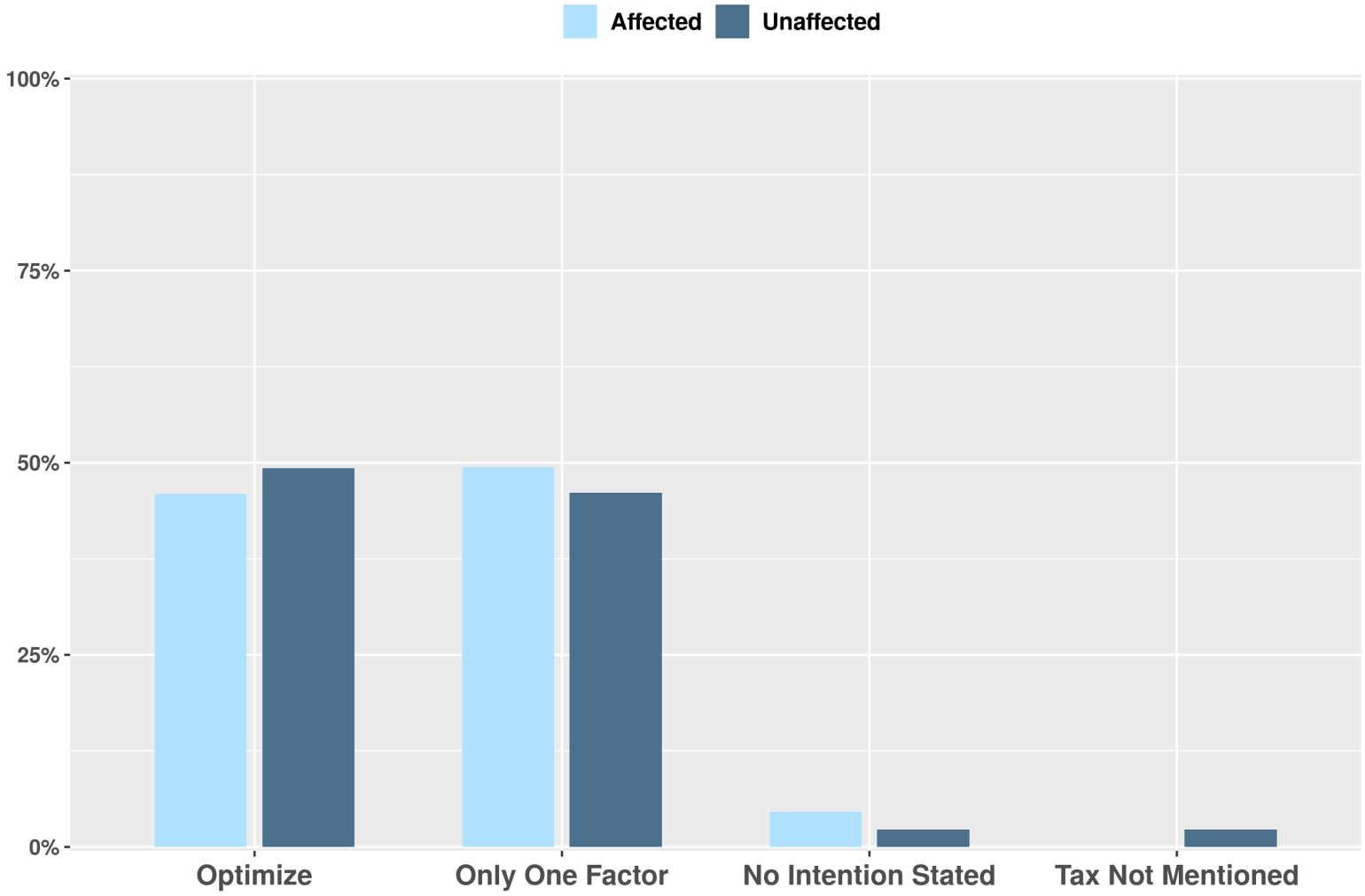


Figure 4: Compensation Trends Prior to 2013 Tax Change

This figure explores compensation trends prior to the 2013 tax change at affected firms and their unaffected peers. To ensure consistency, the data is displayed in the same form used in the baseline specification. It presents log transformed compensation after accounting for peer group fixed effects and the controls using in the baseline analysis.

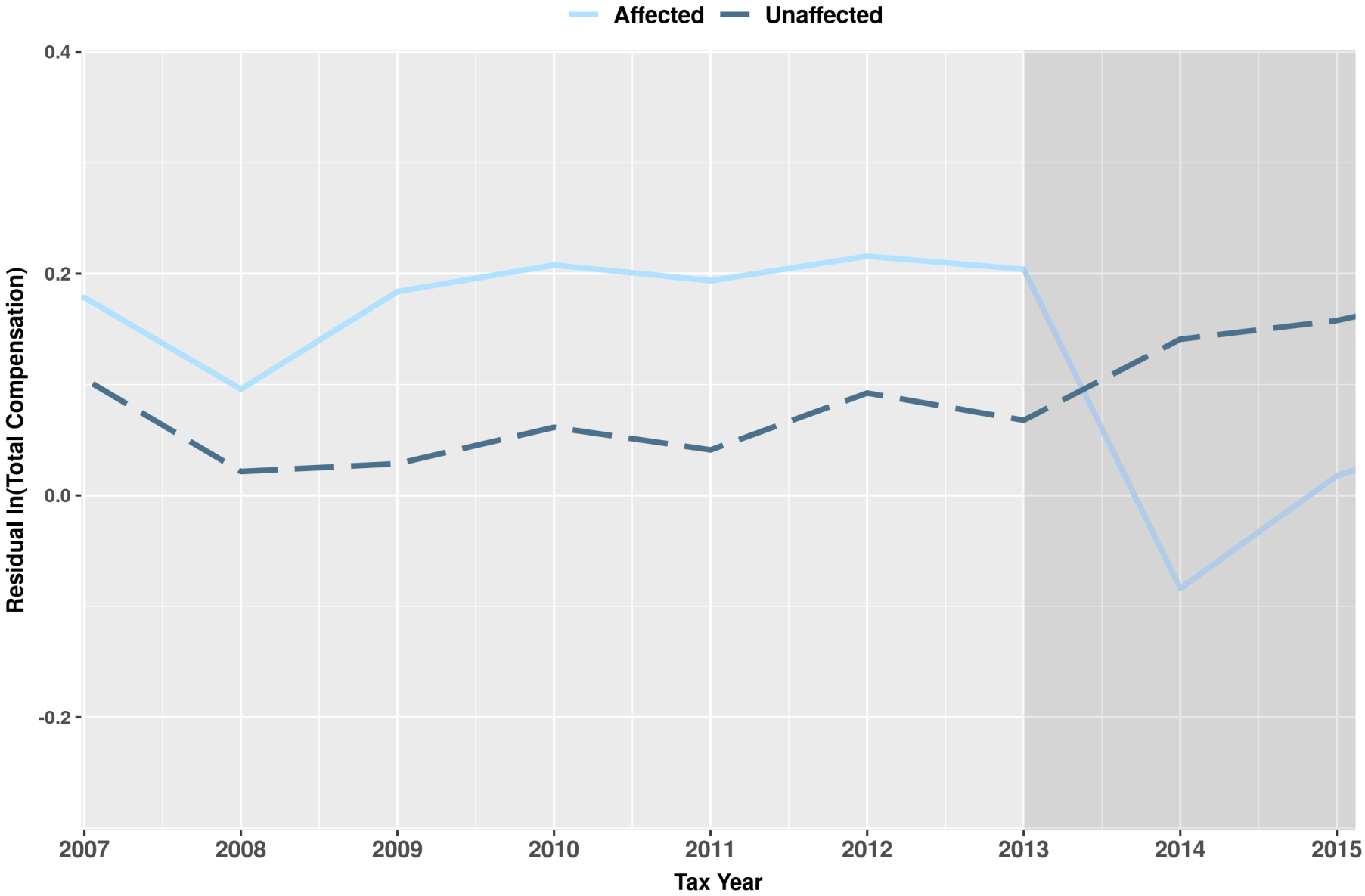
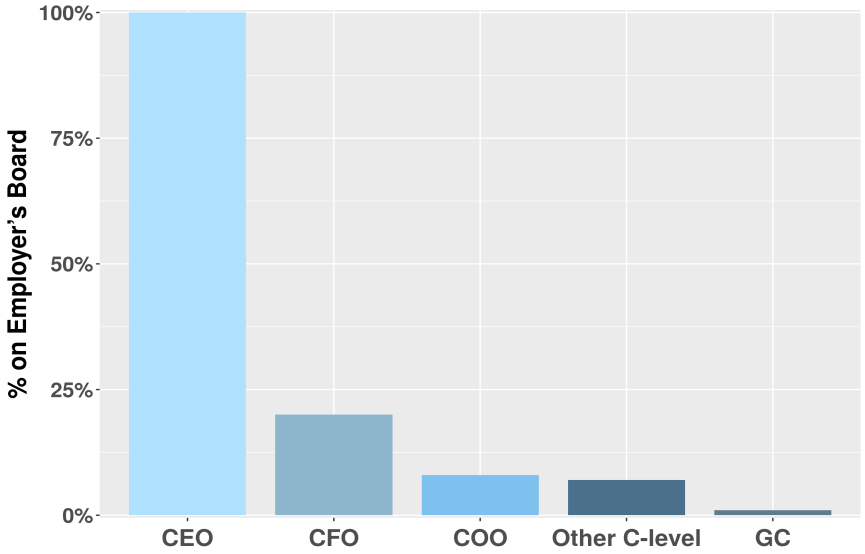


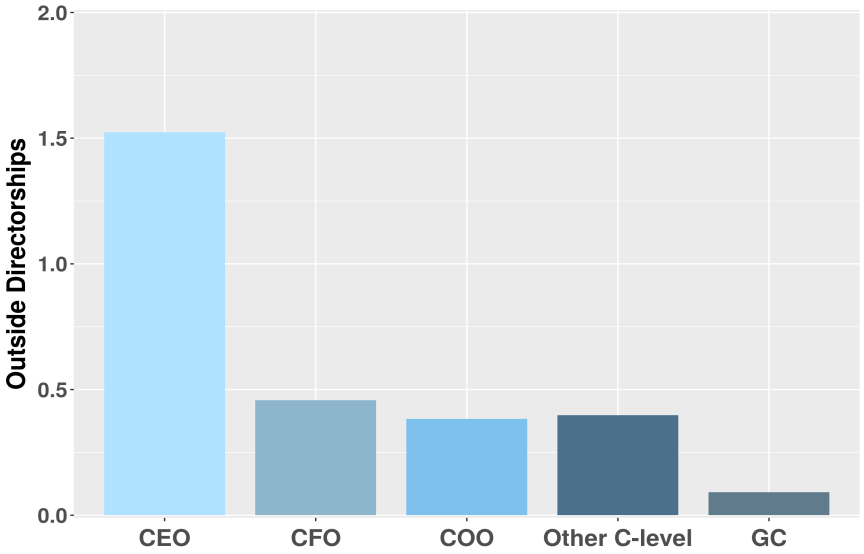
Figure 5: How CEOs Differ From Rest of Executive Team

This figure explores how CEOs in the sample differ from the rest of the executive team along metrics that proxy for boardroom influence and managerial ability. *CEO* indicates executives that served as Chief Executive Officer in the current year, *CFO* indicates executives that served as Chief Financial Officer, *COO* indicates executives that served as Chief Operating Officer, and *GC* indicates executives that served as General Counsel or Chief Legal Officer. *Other C-level* indicates senior executives who were among the five highest paid at their firm but did not have a *CEO*, *CFO*, *COO*, or *GC* title.

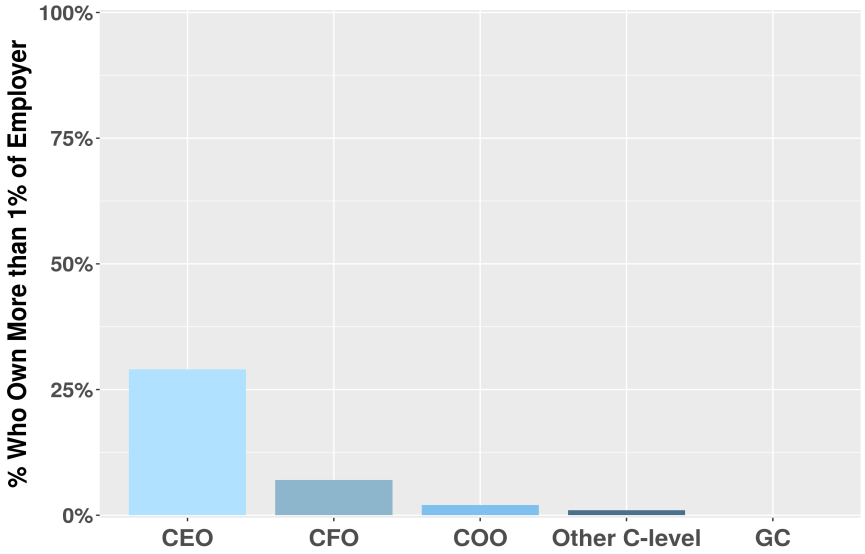
(a) CEOs Are More Likely to Serve on Employer's Board



(b) CEOs Are More Likely to Serve on Outside Boards



(c) CEOs Are More Likely To Be Major Shareholders



(d) CEOs Are More Likely to Hold an MBA Degree

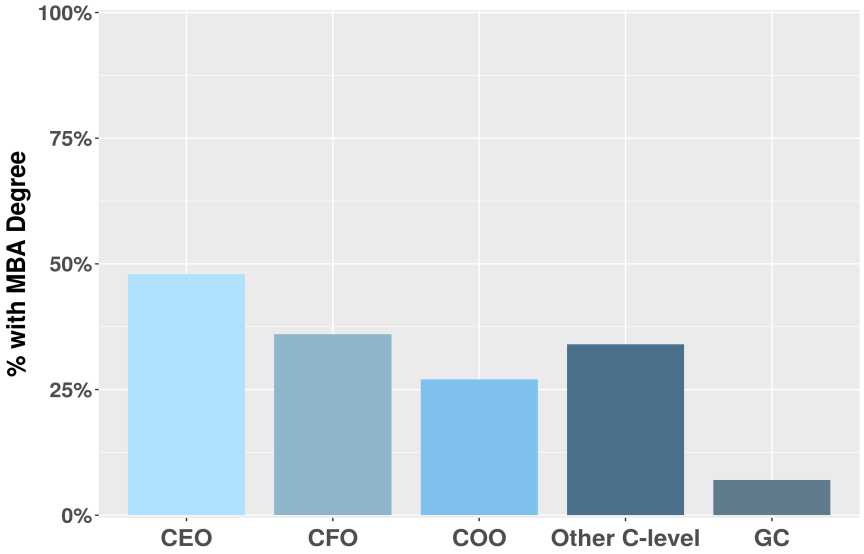


Table 1: Summary Statistics

This table presents summary statistics for the sample used in the difference in differences analysis. The annual panel begins three years before the 2013 tax change and continues until three years after. Observations are at the executive × year level. The table is divided between executives employed by firms affected by the 2013 tax change and those employed by firms outside its purview. All statistics are weighted by executive compensation peer group.

Total Compensation includes all forms of compensation reported in the firm's proxy statement. *Performance Pay* includes all forms of compensation apart from salary. Grant-date fair market values are used for options and stock awards. Non-equity incentive pay is reported in the year the performance criteria was satisfied. *Golden Parachute Clause* is set to 1 if the executive is entitled to additional severance compensation in the event of a change in control and to 0 if not.

	Unaffected by 2013 Tax Change					Affected by 2013 Tax Change				
	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
Compensation Outcomes										
Total Compensation	4,769	6,514	1,695	3,024	5,881	4,836	4,162	1,922	3,604	6,290
Salary	684	393	455	598	831	674	274	500	628	835
Performance Pay	4,089	6,308	1,234	2,367	5,027	4,167	3,955	1,388	2,936	5,594
% Salary	0.230	0.147	0.139	0.200	0.285	0.218	0.138	0.119	0.181	0.285
Golden Parachute Clause	0.857	0.353	1	1	1	0.843	0.367	1	1	1
Executive Attributes										
Years at C-level	6.59	5.16	3	5	9	5.89	4.92	2	4	8
Age	54.17	6.63	50	55	59	53.88	7.12	50	55	59
Female	0.107	0.311	0	0	0	0.193	0.397	0	0	0
Employee Director	0.237	0.428	0	0	0	0.196	0.400	0	0	0
Outside Directorships	0.587	1.164	0	0	1	0.531	1.164	0	0	1
Firm Ownership										
% Executive Ownership	0.331	1.218	0.023	0.079	0.259	0.438	1.649	0.011	0.045	0.151
% Insider Ownership	1.642	2.677	0.288	0.799	2.228	2.249	5.046	0.262	0.466	1.597
% Institutional Ownership	84.96	14.33	74.84	89.74	96.89	89.33	9.708	87.88	91.46	94.88

Operating Income is presented before depreciation. *Net Income* is presented before any extraordinary items or discontinued operations. *Volatility* reflects the standard deviation of logarithmic daily firm returns over the year. *Implied Volatility* reflects the interpolated implied volatility of at-the-money stock options that expire in one year.

% Independent is the percent of directors who are not currently employed by the firm. *Average Time On Board* is the tenure of the average director on the firm's board. *Average Directorships* is the number of directorships held by the average director. *Average Board Age* is the age of the average director. *Average Board Ownership* is the amount of equity held by the average director (in $10 million). *Classified Board* is set to 1 if only a fraction of the firm's board is elected each year and to 0 if the entire board is elected each year.

	Unaffected by 2013 Tax Change					Affected by 2013 Tax Change				
	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
Firm Attributes										
Market Capitalization	28,924	58,175	1,862	7,656	27,829	19,547	24,468	2,303	11,989	26,919
Sales	23,302	34,088	3,760	10,216	26,144	39,619	38,241	9,357	32,380	60,469
Operating Income	4,064	8,009	276	1,150	4,464	3,228	3,494	335	2,470	5,188
Net Income	1,872	3,931	138	476	2,270	1,563	1,743	115	1,231	2,560
Assets	95,727	246,163	6,358	30,592	100,804	31,550	29,606	3,568	23,466	55,116
Return on Assets	3.94	4.76	1.10	2.67	7.17	3.98	2.56	2.81	4.42	5.15
Return on Equity	13.16	26.44	6.63	11.45	16.20	12.06	7.04	10.45	12.77	17.62
Volatility	0.335	0.256	0.202	0.272	0.360	0.338	0.129	0.254	0.290	0.428
Implied Volatility	0.298	0.104	0.227	0.282	0.341	0.328	0.069	0.276	0.310	0.376
Board Attributes										
Number of Directors	10.45	2.101	9	10	12	10.52	1.509	10	10	11
% Independent	87.68	5.472	87.5	88.89	90.91	89.85	4.174	88.89	90	90.91
CEO is Chairman	0.674	0.472	0	1	1	0.489	0.504	0	0	1
Average Time On Board	8.23	3.26	6.12	7.58	9.80	8.74	2.40	7.38	8.77	10.57
Average Directorships	1.96	0.67	1.56	1.88	2.20	1.91	0.38	1.66	1.90	2.25
% of Board with MBA	0.402	0.139	0.333	0.402	0.500	0.326	0.190	0.125	0.300	0.493
% Male	0.817	0.095	0.769	0.820	0.889	0.793	0.101	0.722	0.818	0.889
Average Board Age	63.03	3.52	61.23	63.60	65.31	63.83	3.96	62.16	64.70	66.19
Average Board Ownership	5.489	42.958	0.147	0.305	0.753	2.291	4.523	0.183	0.388	1.642
Classified Board	0.408	0.496	0	0	1	0.417	0.498	0	0	1
Observations	6,561					1,796				

Table 2: Comparing Placebo Treatment Years to the 2013 Tax Change

This table examines if placebo treatment years yield the same difference in differences results as the 2013 tax change. Given that these placebo tax changes are fictitious, no significant treatment effect should be observed. For comparison, specification (8) reports the true treatment—that is, the ACA tax provision that went into effect in 2013. The year above each specification is the year the placebo purportedly went into effect. Each specification tests a separate annual panel beginning three years before the placebo and extending until three years after.

Affected is set to 1 if the executive is employed by a firm affected by the ACA tax provision and to 0 if employed by a firm outside its purview. *Post-Tax* is set to 1 if the observation occurred after the tax provision went into effect and to 0 if it occurred before.

Observations are at the executive × year level. Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. Controls include executive attributes (gender, age, tenure at the firm, and equity ownership in the firm), firm size (measured by the natural logarithms of sales, assets, and market capitalization), as well as recent firm performance (measured by three year total return to shareholders, including the monthly reinvestment of any dividends). *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)							
	Placebo Treatment Years							True Treatment
	2007	2008	2009	2010	2011	2015	2016	2013
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Affected	−0.101	−0.060	0.014	−0.018	0.133	0.031	−0.044	0.192
	(0.196)	(0.178)	(0.167)	(0.131)	(0.133)	(0.127)	(0.190)	(0.123)
Affected × Post-Tax	0.057	0.091	0.056	0.073	0.039	−0.077	0.046	−0.207***
	(0.121)	(0.131)	(0.119)	(0.084)	(0.108)	(0.098)	(0.104)	(0.062)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,412	8,570	8,862	8,858	8,795	8,156	7,926	8,357
Adjusted R^2	0.490	0.492	0.492	0.493	0.515	0.531	0.519	0.521

Table 3: Baseline Difference in Differences

This table tests the robustness of baseline difference in differences results. Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change).

Affected is set to 1 if the executive is employed by a firm affected by the 2013 tax change and to 0 if employed by a firm outside its purview. *Post-Tax* is set to 1 if the observation occurred after the 2013 tax change and to 0 if it occurred before. Total compensation includes all forms of compensation reported in the firm's proxy statement. Performance pay includes all forms of compensation apart from salary.

Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. Controls include executive attributes (gender, age, tenure at the firm, and equity ownership in the firm), firm size (measured by the natural logarithms of sales, assets, and market capitalization), as well as recent firm performance (measured by three year total return to shareholders, including the monthly reinvestment of any dividends). Lagged controls, on the other hand, lag measures of firm size and recent firm performance by one year. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Impact (in %) on Total Compensation

	ln(Total Compensation)			
	Peer Group FE	Peer Group & Industry FE	Firm FE	Lagged Controls
	(1)	(2)	(3)	(4)
Affected	0.308***	0.192		0.086
	(0.089)	(0.123)		(0.132)
Affected × Post-Tax	−0.209***	−0.207***	−0.191***	−0.166**
	(0.070)	(0.062)	(0.062)	(0.069)
Controls	Yes	Yes	Yes	
Lagged Controls				Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes		Yes
Industry (SIC-4) Fixed Effects		Yes		Yes
Firm Fixed Effects			Yes	
Observations	8,357	8,357	8,357	8,345
Adjusted R^2	0.438	0.521	0.598	0.518

Panel B: Impact on Compensation Mix (% Salary)

	Compensation Mix (% Salary)			
	Peer Group FE	Peer Group & Industry FE	Firm FE	Lagged Controls
	(1)	(2)	(3)	(4)
Affected	-0.041^{***}	-0.022		-0.010
	(0.016)	(0.031)		(0.033)
Affected × Post-Tax	0.046^{**}	0.048^{***}	0.040^{**}	0.042^{**}
	(0.018)	(0.017)	(0.017)	(0.019)
Controls	Yes	Yes	Yes	
Lagged Controls				Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes		Yes
Industry (SIC-4) Fixed Effects		Yes		Yes
Firm Fixed Effects			Yes	
Observations	8,357	8,357	8,357	8,345
Adjusted R^2	0.254	0.349	0.462	0.347

Panel C: Impact (in %) on Salary and Performance Pay

	ln(Salary+1)				ln(Performance Pay+1)			
	Peer Group FE	Peer Group & Industry FE	Firm FE	Lagged Controls	Peer Group FE	Peer Group & Industry FE	Firm FE	Lagged Controls
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Affected	0.039	0.033		0.002	0.379***	0.228		0.102
	(0.066)	(0.105)		(0.103)	(0.111)	(0.177)		(0.189)
Affected × Post-Tax	0.042	0.045	0.040	0.063	−0.307***	−0.313***	−0.271***	−0.259**
	(0.056)	(0.058)	(0.054)	(0.055)	(0.100)	(0.090)	(0.091)	(0.102)
Controls	Yes	Yes	Yes		Yes	Yes	Yes	
Lagged Controls				Yes				Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes		Yes	Yes	Yes		Yes
Industry (SIC-4) Fixed Effects		Yes		Yes		Yes		Yes
Firm Fixed Effects			Yes				Yes	
Observations	8,357	8,357	8,357	8,345	8,357	8,357	8,357	8,345
Adjusted R^2	0.199	0.294	0.363	0.294	0.364	0.459	0.572	0.456

Table 4: Impact on CEO Pay Slice

This table explores the impact of the 2013 tax change on CEO Pay Slice, a metric first introduced by Bebchuk, Cremers, and Peyer (2011). CEO Pay Slice is the slice (in %) of compensation paid to the firm's top five executives that goes to the CEO. Observations are at the firm level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change).

Affected is set to 1 if the executive is employed by a firm affected by the 2013 tax change and to 0 if employed by a firm outside its purview. *Post-Tax* is set to 1 if the observation occurred after the 2013 tax change and to 0 if it occurred before. Total compensation includes all forms of compensation reported in the firm's proxy statement. Performance pay includes all forms of compensation apart from salary.

Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. Controls include firm size (the natural logarithms of sales, assets, and market capitalization) as well as recent firm performance (measured by three year total return to shareholders, including the monthly reinvestment of any dividends). *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	CEO Slice (in %) of Top 5 Executives'		
	Total Compensation	Salary	Performance Pay
	(1)	(2)	(3)
Affected	−0.019	−0.020	−0.033
	(0.035)	(0.028)	(0.038)
Affected × Post-Tax	0.040***	0.027	0.047**
	(0.015)	(0.021)	(0.018)
Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes
Observations	1,493	1,493	1,493
Adjusted R^2	0.305	0.316	0.298

Table 5: Heterogeneity in Executives' Seniority

This table explores the interaction between proxies for executive seniority and the difference in differences estimated in Table 3, Panels A and C. The first is *CEO*, which is set to 1 if the executive served as Chief Executive Officer in the current year and to 0 if not. The second is *C-Level5+*, which is set to 1 if the executive has served at the C-Level for 5 or more years and to 0 if not. The third is *Age55+*, which is set to 1 if the executive is 55 or older and to 0 if not.

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)			Compensation Mix (% Salary)		
	CEO	5+ Years at C-Level	Age 55+	CEO	5+ Years at C-Level	Age 55+
	(1)	(2)	(3)	(4)	(5)	(6)
Affected × Post-Tax (β_1)	−0.226***	−0.300***	−0.345***	0.049***	0.064***	0.072***
	(0.073)	(0.101)	(0.075)	(0.019)	(0.023)	(0.019)
Affected × Post-Tax × CEO (β_2)	0.171**			−0.011		
	(0.086)			(0.021)		
Affected × Post-Tax × C-Level5+ (β_2)		0.217**			−0.035	
		(0.098)			(0.022)	
Affected × Post-Tax × Age55+ (β_2)			0.305***			−0.051***
			(0.107)			(0.020)
p-value: $\beta_1 + \beta_2 = 0$	0.568	0.269	0.654	0.082	0.093	0.281
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,357	8,357	8,357	8,357	8,357	8,357
Adjusted R^2	0.631	0.629	0.524	0.374	0.352	0.352

Table 6: Heterogeneity in Executives' Compensation Prior to Tax Change

This table explores the interaction between an executive's compensation prior to the tax change and the difference in differences estimated in Table 3, Panels A and C. *FirmStar* is set to 1 if the executive's total compensation prior to the 2013 tax change was in the 60th percentile or higher relative to other C-level executives at the firm and to 0 if not. *PeerStar* is set to 1 if the executive's total compensation prior to the 2013 tax change was in the 60th percentile or higher relative to other C-level executives in their firm's peer group and to 0 if not. *More$2* is set to 1 if the executive earned more than $2 million in total annual compensation prior to the 2013 tax change and to 0 if not.

Observations are at the executive $\times$ year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)			Compensation Mix (% Salary)		
	Star Among Firm	Star Among Peer Group	More $2 million	Star Among Firm	Star Among Peer Group	More $2 million
	(1)	(2)	(3)	(4)	(5)	(6)
Affected $\times$ Post-Tax (β_1)	-0.248^{***}	-0.221^{***}	-0.390^{***}	0.062^{***}	0.060^{***}	0.108^{***}
	(0.071)	(0.065)	(0.090)	(0.020)	(0.019)	(0.020)
Affected $\times$ Post-Tax $\times$ FirmStar (β_2)	0.174^{**}			-0.043^{**}		
	(0.086)			(0.020)		
Affected $\times$ Post-Tax $\times$ PeerStar (β_2)		0.228^{***}			-0.053^{***}	
		(0.079)			(0.018)	
Affected $\times$ Post-Tax $\times$ More$2m ($\beta_2$)			0.270^{***}			-0.080^{***}
			(0.098)			(0.024)
p-value: $\beta_1 + \beta_2 = 0$	0.351	0.863	0.076	0.269	0.536	0.089
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,357	8,357	8,357	8,357	8,357	8,357
Adjusted R^2	0.633	0.751	0.554	0.435	0.484	0.413

Table 7: Heterogeneity in Executives' Directorships

This table explores the interaction between an executive's directorships and the difference in differences estimated in Table 3, Panels A and C. *EmployeeDirector* is set to 1 if the executive serves on his employer's board of directors and to 0 if not. *OutsideDirectorships* is the number of public company boards that the executive serves on, apart from that of his employer.

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)		Compensation Mix (% Salary)	
	Employee Director	Outside Directorships	Employee Director	Outside Directorships
	(1)	(2)	(3)	(4)
Affected × Post-Tax (β_1)	-0.242^{***}	-0.257^{***}	0.052^{***}	0.053^{***}
	(0.075)	(0.067)	(0.019)	(0.019)
Affected × Post-Tax × EmployeeDirector (β_2)	0.126		-0.019	
	(0.085)		(0.017)	
Affected × Post-Tax × OutsideDirectorships		0.112^{***}		-0.011^{*}
		(0.036)		(0.006)
p-value: $\beta_1 + \beta_2 = 0$	0.226		0.082	
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,045	8,045	8,045	8,045
Adjusted R^2	0.626	0.535	0.364	0.339

Table 8: Heterogeneity in Firm Ownership

This table explores the interaction between firm ownership and the difference in differences estimated in Table 3, Panels A & C. *%ExecutiveOwns* is the percent of the firm's common stock beneficially owned by the executive. Shares not outstanding are nevertheless deemed beneficially owned if the executive has the right to acquire them within 60 days. *%InsidersOwn* is the percent of the firm's common stock beneficially owned by all current executives of the firm. *%InstitutionsOwn* is the percent of the firm's common stock beneficially owned by institutions—that is, mutual funds or institutional investment managers who exercise investment discretion over $100 million or more in assets.

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)			Compensation Mix (% Salary)		
	% Executive Ownership	% Insider Ownership	% Institutional Ownership	% Executive Ownership	% Insider Ownership	% Institutional Ownership
	(1)	(2)	(3)	(4)	(5)	(6)
Affected × Post-Tax	−0.208***	−0.238***	0.848*	0.046***	0.054***	−0.252**
	(0.061)	(0.065)	(0.507)	(0.015)	(0.016)	(0.117)
Affected × Post-Tax × %ExecutiveOwns	0.118***			−0.014**		
	(0.026)			(0.006)		
Affected × Post-Tax × %InsidersOwn		0.040**			−0.007***	
		(0.016)			(0.003)	
Affected × Post-Tax × %InstitutionsOwn			−0.010*			0.003**
			(0.006)			(0.001)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,357	8,357	5,723	8,357	8,357	5,723
Adjusted R^2	0.502	0.497	0.581	0.353	0.356	0.389

Table 9: Heterogeneity in Board Leadership

This table explores the interaction between board attributes and the difference in differences estimated in Table 3, Panels A & C. *CEOIsChairman* is set to 1 if the firm's CEO is also chairman of its board and to 0 if not. *AverageBoardOwnership* is the amount of equity held by the average director on the firm's board (in $10 million).

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)		Compensation Mix (% Salary)	
	CEO Is Chairman	Average Board Ownership	CEO Is Chairman	Average Board Ownership
	(1)	(2)	(3)	(4)
Affected × Post-Tax (β_1)	−0.360***	−0.186**	0.084***	0.043**
	(0.098)	(0.088)	(0.025)	(0.019)
Affected × Post-Tax × CEOIsChairman (β_2)	0.364**		−0.082**	
	(0.162)		(0.035)	
Affected × Post-Tax × AverageBoardOwnership		−0.028***		0.003*
		(0.009)		(0.002)
p-value: $\beta_1 + \beta_2 = 0$	0.971		0.917	
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,357	6,386	8,357	6,386
Adjusted R^2	0.519	0.398	0.394	0.202

Table 10: Heterogeneity in Firm Sophistication

This table explores the interaction between proxies for firm sophistication and the difference in differences estimated in Table 3, Panels A and C. The first is *Optimize*, which is set to 1 if the firm has explicitly stated in its proxy statement its intention to optimize executive compensation for tax deductibility purposes and to 0 if not. The second is *%BoardWithMBA*, which is the percent of the firm's board of directors that hold a Master of Business Administration (MBA) degree.

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)		Compensation Mix (% Salary)	
	Optimize for Tax Deductibility	% of Board with MBA	Optimize for Tax Deductibility	% of Board with MBA
	(1)	(2)	(3)	(4)
Affected × Post-Tax	−0.186**	0.035	0.030	−0.017
	(0.082)	(0.173)	(0.021)	(0.037)
Affected × Post-Tax × Optimize	−0.049		0.039	
	(0.116)		(0.028)	
Affected × Post-Tax × %BoardWithMBA		−0.653*		0.174**
		(0.385)		(0.078)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,357	8,252	8,357	8,252
Adjusted R^2	0.525	0.525	0.355	0.345

Table 11: More Sophisticated Firms Are More Likely To Differentiate Between Executives

This table examines if more sophisticated firms are more likely to treat CEOs differently in their response to the 2013 tax change. Firm sophistication is proxied by *Optimize* and *%BoardWithMBA*, which are defined as in Table 10. *CEO* is set to 1 if the executive served as CEO in the current year and to 0 if not.

Observations are at the executive × year level. The annual panel begins in 2010 (three years prior to the tax change) and continues until 2015 (three years subsequent to the tax change). Standard errors appear in parentheses and are clustered by firm. Industry fixed effects are specified using 4 digit SIC codes. *Affected*, *Post-Tax*, compensation measures, and controls are defined as in Table 3. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	ln(Total Compensation)		Compensation Mix (% Salary)	
	Optimize for Tax Deductibility	% of Board with MBA	Optimize for Tax Deductibility	% of Board with MBA
	(1)	(2)	(3)	(4)
Affected × Post-Tax	−0.156*	0.154	0.022	−0.037
	(0.083)	(0.177)	(0.020)	(0.040)
Affected × Post-Tax × CEO	0.029	−0.171	0.027	0.074**
	(0.108)	(0.160)	(0.026)	(0.029)
Affected × Post-Tax × Optimize	−0.150		0.058**	
	(0.124)		(0.029)	
Affected × Post-Tax × Optimize × CEO	0.315**		−0.084***	
	(0.124)		(0.030)	
Affected × Post-Tax × %BoardWithMBA		−1.019***		0.231***
		(0.354)		(0.084)
Affected × Post-Tax × %BoardWithMBA × CEO		0.919**		−0.229***
		(0.399)		(0.084)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Peer Group Fixed Effects	Yes	Yes	Yes	Yes
Industry (SIC-4) Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,357	8,252	8,357	8,252
Adjusted R^2	0.636	0.640	0.381	0.373