CEO Incentives and Acquisitions: Evidence from the Pay Ratio Disclosure Mandate*

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Abstract

We find that the sensitivity of CEO pay to firm size (pay-size sensitivity) drops by 60% after the first-time disclosure of a relatively higher CEO-worker pay ratio following the 2017 Pay Ratio Disclosure Mandate. The sensitivity of CEO "flow" pay to positive performance ("upside" pay-performance sensitivity) also declines by 86%, while downside pay-performance sensitivity remains unchanged. These results are consistent with greater public attention to CEO compensation in high pay ratio firms curbing CEO pay growth. We show that the change in pay sensitivities is associated with a shift in the type of M&A deals firms engage in, as well as the market reaction to deal announcement. Specifically, firms engage in fewer (more) larger (smaller) deals of higher (lower) quality. These results suggest that the weaker link between firm size and pay encourages CEOs to switch screening effort from smaller deals to large deals, as they can no longer benefit from undertaking large-scale but potentially value-destroying deals to the same extent. Our results provide novel evidence on how arguably exogenous changes to the drivers of CEO compensation affect CEO decisions and firm outcomes. We provide a simple model showing that while the magnitude of pay-size sensitivity affects the allocation of screening effort between large and small deals, the magnitude of "upside" pay-performance sensitivity is irrelevant.

Keywords: Pay Ratio Disclosure, pay sensitivity, CEO incentives, M&A

JEL Classification: G34, G38, J31, J38, M48

While there is significant debate surrounding CEO compensation and whether CEOs are paid too much, there is a paucity of evidence about how changes in CEO compensation structure (including the level and composition of pay) affect CEO decision-making or actions, with potential implications for firm value.[1] Understandably, this is not an easy task. Changes to the CEO's contract are likely endogenous to factors that might directly affect the CEO's actions and firm outcomes. It is therefore difficult to isolate the effect of changes in contract features from the other factors influencing the CEO's actions.[2]

The issue is important not only for policymakers, but also for those who are supposed to set CEO pay, i.e., members of the board Remuneration Committee, as well as those who are concerned about the effect of pay on shareholder value (which also includes investors). A recent survey of directors and investors conducted by Edmans, Gosling and Jenter (2023) raises questions about the importance of financial incentives, which the respondents believed to be of secondary importance in motivating CEOs, compared to the importance of "fairness" in pay (e.g., being paid for good performance or being paid like their peers) and ex-post recognition.

One way to tease out how CEO actions respond to changes in compensation contract features is to examine the effect of external pressure on compensation. This approach is not immune from endogeneity concerns, since external pressure exerted on an individual firm (e.g., via a voluntary "Say on Pay" shareholder proposal), is also endogenous. Cuñat, Giné, and Guadalupe (2016) find a way around this problem via a regression discontinuity design around

[1] Throughout this paper, we use "decisions" and "actions" interchangeably. 'Decisions" may be more appropriate in our context, since M&A activities, our main focus, are likely to be closely associated with CEO decisions, and it is not clear what specific "actions" the CEO has to take to pursue an acquisition. In a model we outline in the paper, we emphasize the CEO's project screening effort. Such effort could be rationalized as costly decision making in the sense that there is an opportunity cost of being preoccupied with a particular deal which might result in less attention being given to other deals.

[2] Structural estimation of models of CEO pay can counterfactually address the implications of a pay-setting process that is not designed to maximize shareholder value. Page (2018) estimates a model in which the board sets pay and assigns some weight to the CEO's utility. The weight on the latter component is interpreted as "CEO power". Compared to three other CEO characteristics, CEO influence has a relatively modest impact on firm value. The Economics literature relies on experimental evidence to study how financial incentives affect performance outcomes and often finds weak effects. See, for example, Camerer and Hogarth (1999), who review 74 experiments. Unfortunately, however, experiments involving CEOs do not seem feasible.

voting outcomes on voluntary Say on Pay proposals for the period between 2006 and 2010. They estimate that adopting a SoP leads to a 5 percent increase in firm value. However, the authors find no systematic effect of SoP on CEO compensation, and argue that SoP has heterogeneous impact on compensation (i.e., "one size does *not* fit all") and possibly also affects firm performance by providing shareholders "voice" to express dissatisfaction regarding firm performance.[3]

In this paper, we examine the impact of a recent policy on CEO pay disclosure which, we show, changed how CEO compensation responds to some of its major drivers for one group of firms. For this group, we find that the policy affected one of the most important decisions a CEO makes, namely, an acquisition decision. In 2015, the SEC issued a pay ratio disclosure rule that would require public firms to disclose the median of the annual total compensation of all its employees (excluding the CEO) and the ratio of the CEO's compensation to the median employee's compensation in the annual proxy statement starting from the first fiscal year beginning in or after January 2017. Thereafter, calendar year-end companies started to disclose their 2017 pay ratios for the first time in the first few months of 2018.

Reporting a relatively high ratio can lead to stricter scrutiny from various stakeholders, and higher reputational costs. After the disclosure of pay ratios, both retail and institutional investors seemed concerned about high within-firm pay dispersion and reacted negatively through their portfolio rebalancing (Pan et al., 2022; Chang et al., 2022). Shareholders were also more likely to vote "against" in Say-on-Pay votes and advocate for more governance-related proposals after this regulation (Chang et al., 2022; Xu, 2024). Other studies have documented labor market consequences of this mandate such as diminishing labor productivity

[3] SoP became mandatory after the passage of the Dodd-Frank Act in 2010. In a recent paper, Barry (2024) presents a quantitative model to estimate how much effect a non-binding SoP provision has on CEO pay. In this model, boards take into account the treat of a non-approval when setting pay. He finds that SoP (despite its high approval rate) reduces CEO pay and increases firm value. The author also does a counterfactual exercise and estimates that a binding SoP policy would raise CEO compensation and lower firm value.

(Boone et al., 2023) and higher employee turnover (Dambra et al., 2024). Evidence that firms disclosing higher pay ratios garner more negative-toned media coverage around the filing date of their proxy statement has also been widely explored in these studies. Surprisingly, to the best of our knowledge, what impact the policy had on aspects of CEO pay, incentives, and the quality of CEO decision-making has not been examined.

If the negative publicity associated with the disclosure of high pay ratios is costly for the firm's managers and board members as implied by the aforementioned studies, we would expect CEO pay to increase more slowly for such firms. Moreover, the sensitivity of CEO pay increases to the major drivers of pay would become dampened. Two of the most important drivers of CEO pay are firm performance (Murphy, 1999) and firm size (Kostiuk, 1990). CEO compensation is typically linked to performance benchmarks, and CEOs get higher pay when these benchmarks are attained. CEO compensation is also positively related to firm size (i.e., it increases when firms get bigger).[4] Especially relevant for our arguments, Bakke eta al. (2024) show that one-third of U.S. top executives have bonus incentives that are explicitly tied to the firm's size, and these growth-promoting bonuses encourage more M&A activity.

We begin our analysis by examining whether high pay ratio firms (using median pay ratio in 2017 as a benchmark) curtail CEO compensation after the disclosure mandate. We expect that performance-tied pay would be most affected by this mandate since such pay is generally unavailable to rank-and-file employees and public scrutiny after the disclosure mandate would focus more on them (Yermack, 2006; Kuhnen and Niessen, 2012; Babenko et al., 2024). This notion aligns with our empirical results, which show that there is a sharp decline in CEO equity-based pay, especially in stock pay following the disclosure of a high ratio. We also find that cash-based bonuses, including bonus and non-equity incentive plan drop after

[4] While the effect of firm size on CEO pay is empirically well-established, there are likely several underlying reasons, ranging from more complex management tasks in larger firms to competitive assignment models (Gabaix and Landier, 2008).

2017.

We next examine the change in CEO pay-performance and pay-size sensitivity for high ratio firms and low ratio firms separately.[5] We find that the high ratio firms experience a significant decline in pay-size sensitivity and "upside" pay-performance sensitivity after the disclosure mandate, which means that CEO would not get as much higher pay as before even if the firms size increases or the firm performs better (Zhou, 2000; Bebchuk and Grinstein, 2005; Gabaix and Landier, 2006). However, we find no evidence of a significant change in the "downside" pay-performance sensitivity, which implies that CEOs in high ratio firms would still be penalized for destroying firm value. However, both CEO pay-size and pay-performance sensitivity of low ratio firms remain stable after this mandate.

Next, we turn to the analysis of M&A activities. We consider all completed deals which represent a transfer of control following Rossi and Volpin (2004) and Ortiz (2023), as CEOs are more likely to be involved in such transactions and play a crucial role. Our difference-in-differences (DiD) estimates of the effect of the disclosure mandate on M&A activity of high-and-low pay ratio firms indicate that the number of deals that high ratio firms are involved in as acquirers does not decline after this mandate relative to low ratio firms. However, when we partition our M&A sample into large and small deals based on their transaction value and investigate the effects separately, we find that the number of small deals increases, while that of large deals decreases. Next, we examine the impact on M&A performance for all deals, large deals as well as small deals. We find that there is no significant change in market response upon deal announcement when all deals are analyzed together. However, we find that large deals undertaken by high ratio firms experience a more positive market response, while the market response is negative for small deals.

[5] When considering pay-performance sensitivity, we mainly focus on the sensitivity of "flow" pay to firm performance, rather than the change in the value of their equity holdings (see Edmans et al., 2023).

To shed light on potential mechanisms behind the above results, we propose a simple model in which in a given period, a manager can choose to acquire either a large target or a small target (henceforth referred to as investing in a large or a small project), or both. *Ex ante*, projects can be of either good or bad quality, and the manager can exert effort to screen a project and get an informative signal about project quality. Larger projects require more screening effort, and screening cost is increasing and convex in screening effort. The manager's pay change is assumed to be a function of project size and the net present value (NPV) of projects, reflecting firm size sensitivity and performance sensitivity of pay, respectively. Screening effort is not observable and the manager is not compensated for such effort. Prior to the disclosure mandate, pay-size sensitivity is assumed to be high enough compared to pay-performance sensitivity that the benefit to the manager from investing in a large project outweighs the effect on the manager's pay even if the NPV of the project is negative, which implies that screening is redundant. The situation is quite different for small projects, however. If project NPV exhibits decreasing returns to scale, for small projects, the impact of a negative NPV project is no longer offset by the size benefit, and the manager is willing to incur the relatively small cost of screening a small project. In other words, large projects are accepted without screening, where small projects are accepted only if screening reveals them to be of good quality.

Now suppose that there is a decline in pay-size sensitivity after this mandate. A large project may no longer be preferable without screening. Given that large projects have more serious value implications than small projects, managers may now switch to screening large projects rather than the smaller ones. We assume that if a large project is screened, given increasing and convex screening costs, it is no longer in the manager's interest to screen a small project. Therefore, the likelihood of a large project decreases (note that under screening, a project is only accepted if it is of good quality), while that of the small project increases, as small projects are now accepted without screening. It also follows that the average quality of

the large project increases while that of the small project decreases. Since the gain from screening stems from eliminating the "downside" loss, pay ratio disclosure's effect of weakening the link between pay and ex-post value gain or positive stock return has no impact on the manager's wealth as long as the downside sensitivity to value loss does not change.[6] Thus, the model provides a possible mechanism for our empirical finding that after the mandate, as pay-size sensitivity and upward pay-performance sensitivities decrease but downward pay-performance sensitivity remains unchanged, firms make fewer (more) large (small) acquisitions, and large (small) acquisitions perform better (worse).

Our paper builds on the literature that studies the drivers and determinants of M&A activity, and plausible associates the latter with the nature of CEO compensation. We provide evidence that firms indeed engage in large-scale but value-destroying acquisitions, which we argue is at least in part due to the way CEO pay is related to increase in firm size.[7] However, the Pay Ratio Disclosure Mandate curbs this agency problem to some extent, as pay becomes less sensitive to firm size, leading to more efficient large acquisitions. On the other hand, since large deals require more screening effort, smaller deals are scrutinized less intensively, which negatively affect shareholder wealth.

Our study also contributes to the literature on the relation between disclosure and executive compensation. Many previous studies suggest that changes in disclosure content do not effectively curb CEO pay and certain types of pay are added to CEO pay package instead (Gipper, 2021; Bloomfield, 2021). Two recent works by Knusta and Oesch (2020) and Chang et al. (2022) related to Pay Ratio Disclosure Mandate find no significant changes in total CEO compensation reported in the numerator of the pay ratio for fiscal year 2017. Different from

[6] Our empirical results indeed show that there is no change in downward sensitivity of pay to performance after the disclosure mandate.

[7] The CEO's incentives stemming from the impact of firm size on pay is part of the "empire building" incentive (Masulis et al., 2007; Harford et al., 2012) that may involve non-pecuniary benefits.

them, we consider a longer sample period from 2012 to 2022, which enables us to study the long-term post-policy impacts. Our setting highlights the importance of examining the heterogeneity in firm responses to the regulation and allows us to study the effect of this mandate on firms with more (or less) severe pay disparity issues.

In terms of policy implications, our findings provide evidence of the impact of the Pay Ratio Disclosure Mandate on firms' real decisions. Debate over the necessity and benefit of the policy has continued to intensify since the announcement of the rule. [8] Recent academic studies also call into question whether a cost-benefit analysis would support the disclosure requirement (Crawford, 2020). While our results do not indicate any immediate shareholder wealth effects associated with the mandate, they do show that larger deals are better screened and hence empire building via such deals is less likely. This potentially has important consequences for shareholders since non-performing large assets are likely to be more difficult to divest than small assets, and may drain resources from profitable projects in the future.[9]

1. INSTITUTIONAL BACKGROUND AND RELATED LITERATURE

1.1 Institutional Background

Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), enacted by the U.S. Congress in 2010, mandates that publicly traded companies disclose the ratio of CEO compensation to the median employee compensation. The preliminary rules of pay ratio disclosure was first proposed by the SEC in 2013, sparking

[8] For example, former SEC Commissioner Michael S. Piwowar argues that "no commenter provided us with any data that would allow us to quantify potential benefits given that there are estimated $1.3 billion in initial compliance costs."(https://www.sec.gov/newsroom/speeches-statements/dissenting-statement-open-meeting-pay-ratio-disclosure#_ftn27)

[9] There are several reasons why divesting larger non-performing assets that were created via acquisitions may be difficult. Boot (1992) proposes a model in which managers may not divest underperforming assets because of the reputational costs if these assets were acquired via an acquisition. Larger asset acquisitions and subsequent divestitures may attract more attention than smaller ones, increasing such reputational cost. Other reasons include the lack of a ready market, difficulties of valuation and due diligence, and so on, relative to smaller non-performing assets.

significant interest and debate. The SEC received more than 287,400 comments on the proposal. Proponents of the changes argued that knowledge of the CEO-employee pay ratio would provide investors with useful information in making investment decisions and exercising their shareholder rights, especially in cases where they have Say-on-Pay votes. However, opponents argue that CEO compensation ratios are incomparable across firms and that higher CEO pay ratios may just reflect differences in managerial talent. This argument aligns with a substantial body of literature that justifies CEO-employee pay inequality, finding a positive relationship between pay disparity and firm value (e.g., Edmans, Gabaix, and Landier, 2008; Mueller, Ouimet, and Simintzi, 2017a, 2017b). Critics further contend that regulatory interventions could pressure companies into lowering CEO pay, potentially discouraging CEOs from fully utilizing their effort and talent, which may result in negative economic consequences.

Despite the debate, the SEC adopted final rules in 2015, requiring public firms to disclose pay ratios from the fiscal year 2017.[10] Under the rule, the CEO's pay must align with the figures disclosed in the summary compensation table in the proxy statement, which includes total salary, bonus, equity awards, pension changes, and perquisites. However, the rule provides companies with some flexibility in identifying their median employee and that employee's compensation. For example, the rule allows companies to update the median employee determination every three years and to choose a determination date within the last three months of a company's fiscal year. The rule also allows companies to exclude non-U.S. employees from countries in which data privacy laws or regulations prevent compliance with the rule.

Additionally, the rule includes transition periods for new companies and those undergoing business combinations or acquisitions. The pay ratio rules also allow companies to make supplemental disclosures, such as providing additional ratios or details about the median

[10] Smaller reporting companies, emerging growth companies, foreign private issuers, MJDS filers, and registered investment companies are exempt from this requirement.

employee if desired. A Deloitte analysis of CEO pay ratios, based on data from the pay disclosures of 294 S&P 500 companies, reveal that 21 percent of the S&P companies provide additional context on their median employee, such as employee status, whether the individual is U.S. or non-U.S. based, and job title. Additionally, about 13 percent of companies disclosed supplemental ratios.[11]This voluntary behavior may help mitigate negative stakeholder reactions, especially for companies with high pay ratios (Jung et al., 2018; LaViers et al., 2023).

1.2 Related Literature

Existing research documents that the Pay Ratio Disclosure Mandate has significant capital- and labor market consequences. For instance, Pan et al. (2022) find that firms reporting a relatively high pay ratio experience negative stock market reaction. Additionally, inequality-averse institutional investors rebalance their portfolios away from high pay ratio stocks relative to other investors. Similarly, Chang et al. (2023) find that retail investors care about pay disparity and reduce their allocations to stocks with elevated pay ratios. Boone et al. (2023) find that reporting a relatively or surprisingly high ratio reduces employee perceptions of their pay, views of the CEO, and hampers productivity growth. Dambra et al. (2024) also document a higher employee turnover after this mandate. Overall, these findings align with the idea that stakeholders react negatively to high pay ratios, perceiving such ratios as evidence of undesirable pay practices and weak corporate governance.[12]

Another strand of research investigates firms' response to expected public scrutiny of disclosed high pay ratios and their actions to mitigate the above negative impacts. For instance, Chang et al. (2023) find that boards of directors proactively adjust the mix of CEO compensation to mitigate potential populist criticism related to high pay ratios. Additionally,

[11] See : https://deloitte.wsj.com/cfo/ceo-pay-ratio-disclosure-a-look-at-year-one-results-1530158533

[12] Consistent with this idea, previous studies also find that high ratio firms are more prone to unfavorable Say-on-Pay votes and governance-related proposals from their shareholders (Chang et al.,2023; Xu, 2024).

firms may also provide supplementary pay ratios (Jung et al., 2018), include firm-specific information to explain the ratio rather than boilerplate disclosures similar across firms (LaViers et al., 2023), and employ more complex methods to identify the median employee to lower pay ratios (Alam et al.,2022). Two studies also find that firms lower pay ratios through real actions. Specifically, Yeung (2020) documents that firms increase median employee pay through replacing low-skilled workers with investments in information technology or automation. Cheng and Zhang (2023) find that firms take the pay ratio of peers as a reference and decrease (increase) their CEO-worker pay ratios when their prior pay ratios are relatively high (low).

Our paper differs from the previous studies by focusing on the impact of the pay ratio disclosure on CEO pay sensitivities, as well as how the changed CEO incentives impact firms' acquisition decisions and performance.

2. A Simple Model

We outline a simple model to illustrate how the allocation of project screening effort by the CEO is affected by two drivers of the CEO's compensation: the sensitivity of the CEO's pay to (i) firm size, and (ii) firm performance.

2.1 Setup

Suppose managers need to exert effort if they want to screen projects and determine whether the project is of good quality or not. Effort can be allocated across different projects. Effort (denoted by π) cost function is convex with a kink: For $\pi \leq E$, the marginal cost of effort is 0. For $\pi > E$, the marginal cost of effort is $c > 0$. There are two types of projects: large and small. The size of a small project is normalized to 1. That of a large project is $s > 1$. The NPV of a project of 1 unit size is random and denoted by $\tilde{v}$, with $E(\tilde{v}) = 0$. If the project is of good quality, NPV is $v > 0$. If the project is of bad quality, the NPV is $-v$. Therefore, the ex-ante probability of each quality type is 0.5. The NPV of a project of size S is $f(S) * \tilde{v}$, where $f(S)$ is

an increasing function but $\frac{f(S)}{S}$ is decreasing in *S*, reflecting diminishing return to scale. Note that since $f(1) = 1, \frac{f(S)}{S} < 1$ for *S* > 1(large projects).

A firm's manager (who provides effort) has one larger project and one small project available and can choose either both or any one of these projects. Screening a large project needs effort E and screening a small project only needs effort e < E.

The manager's compensation depends on project size and NPV (corresponding to firm size and firm performance). It is assumed to be of the following linear form:

$$\Delta P = \alpha S + \beta(NPV) \quad (1)$$

where ΔP is the change in compensation due to project choice, *S = {1, s}*, NPV=*S * E (ṽ).*

2.2 Before Pay Ratio Disclosure Mandate

We first provide some conditions under which the pay-size sensitivity is such that larger projects are accepted without screening (consistent with "growth promoting bonuses" driving M&A activity (Bakke et al., (2024)), but smaller projects are screened. We consider this to be the situation prior to the pay ratio disclosure mandate, and then consider how the effect of the mandate on pay-size and pay-performance sensitivities could have changed the CEO's incentives.

Proposition 1. *Suppose (i)* $\alpha - \beta v < 0$ *and (ii)* $\alpha s - \beta f(s) v > 0$ *. Then the manager chooses large project without exerting screening effort and chooses the small project by exerting effort.*

Proof. Note first that conditions (i) and (ii) can both hold for s sufficiently large since $\frac{f(s)}{s}$ is decreasing in s. Now (ii) implies that for a large project, ΔP is positive even in the bad state. Hence, no effort has to be provided, since the project will be taken even if screening reveals it to have negative NPV. For the small project, (i) implies that ΔP is negative in the low state. Taking a small project without screening effort generates an expected payoff of $\Delta P = \alpha$.

If effort is exerted, the expected payoff is $\Delta P = 0.5(\alpha + \beta v)$ (note that effort cost is zero as e < E) since if screening reveals the type is bad, it will be rejected. Hence the gain from screening (compared to no screening) is $0.5(\alpha + \beta v) - \alpha = 0.5(\beta v - \alpha)$ which is positive from condition (i). Thus, the small project will be screened and only when the NPV is positive will the project be chosen. End (proof)

2.3 After Pay Ratio Disclosure Mandate: Decline in Pay-Size Sensitivity

We first consider the effect of a lower pay-size sensitivity (documented in our empirical section as occurring after the pay ratio disclosure mandate) on the CEO's incentive to screen.

Proposition 2. *Suppose* α *changes to* $\alpha' < \alpha$ *such that (i)* $\frac{\beta}{\alpha'}\frac{f(s)-1}{(s-1)}v > 1$ *(which implies* $\frac{\beta}{\alpha'}\frac{vf(s)}{s} > 1$ and also $\frac{\beta v}{\alpha'} > 1$*) and (ii)* $\beta v - \alpha' < 2ce$. *The manager now screens the large project and accept the small project without screening.*

Proof. Since the large and bad project now adversely affects the manager's pay as $\alpha' s - \beta f(s)v < 0$, the manager may choose to screen the large project. The gain from screening the large project is $0.5(\alpha' s + \beta f(s)v) - 0 - \alpha' s = 0.5(\beta f(s)v - \alpha' s) > 0$. The marginal cost of screening any other project (small project) is now c. Consider screening the small project, the net gain is $0.5(\alpha' + \beta v) - ce - \alpha' = 0.5(\beta v - \alpha') - ce$. Under condition (ii), this will not happen. Therefore, the manager accepts the small project without screening and gets $0.5(\alpha' s + \beta f(s)v) + \alpha'$ overall.

Note that the above implies that the manager will not screen both projects. However, he could still choose to screen the small project only. His payoff from screening only the small project and accepting the large project without screening is $0.5(\alpha' + \beta v) + \alpha' s$.

Comparing the manager's payoff from the two options, the manager prefers to screen the large project provided $0.5(\alpha' s + \beta f(s)v) + \alpha' > 0.5(\alpha' + \beta v) + \alpha' s$ or

$\beta[f(s)-1]v > \alpha'(s-1)$, which is true from condition (i). [end proof]

What condition (i) in Proposition 2 requires is that the value gain to the manager from saving a larger loss from screening the large project rather than the small project should exceed the loss of benefit derived from size. This loss saved from screening the large project is $0.5\,\beta f(s)v$ and from screening the small project is $0.5\,\beta v$, so the gain from screening the large project rather than the small is $0.5\,\beta[f(s)-1]v$. Screening, however, leads to a loss of the benefit derived from project size, which is larger when the large project is screened rather than the small, by the amount $0.5\,\alpha(s-1)$. Therefore, screening the large project is overall better if and only if $0.5\,\beta[f(s)-1]v > 0.5\,\alpha(s-1)$.

2.4 After Pay Ratio Disclosure Mandate: Asymmetric Decline in Pay-Performance Sensitivity

We next consider the effect of a asymmetric reduction in pay-performance sensitivity that occurs simultaneously with the decrease in the pay-size sensitivity. The asymmetry is consistent with our empirical results: when performance is negative, there is no larger magnitude of decline in CEO pay after the pay ratio mandate; however, pay increases less when performance is positive.[13] Interestingly, in our model, this asymmetric decline has no effect on the CEO's incentive to screen projects

Proposition 3. *Suppose β decreases to β' when NPV is positive but remains at β when NPV is negative. Assume that the conditions (i) and (ii) in Proposition 2 hold. Then the results of Proposition 2 continue to hold irrespective of the magnitude of β'.*

Proof. The asymmetry implies that the net gains from screening do not change, since the gain from screening comes from eliminating the loss to the manager from accepting the project when the NPV is negative. The manager's payoff from screening the large project and

[13] In their survey of non-executive directors and investors, Edmans, Gosling, and Jenter (2023) suggest why there is resistance to CEO pay reduction.

accepting the small project without screening now is $0.5(\alpha' s + \beta' f(s)v) + \alpha' + 0.5(\beta - \beta')v$, while that from screening the small project and accepting the larger one without screening is $0.5(\alpha' + \beta' v) + \alpha' s + 0.5 f(s)(\beta - \beta')v$. Comparing payoffs, it can be seen that the manager prefers to screen the large project if and only if $\frac{\beta f(s)-1}{\alpha'(s-1)} v > 1$, which is a condition already assumed for Proposition 2. To complete the proof, we note that following the calculations in Proposition 2 regarding the benefit of providing screening effort do not change, and the manager will either screen the large project or the small project, not both. [end of proof]

The intuition for why the magnitude of β' does not matter for the choice between screening the large and the small project is that the "upside" benefit when a project has positive NPV ($v > 0$) goes to the manager (with probability 1/2) irrespective of whether the project is screened or not. However, the "downside" loss is saved when the project has negative NPV ($v < 0$) only when a project is screened. Therefore, as long as only the upward sensitivity changes, and the downward sensitivity does not change, our conclusion in Proposition 2 would not change.

2.5 Implications from Simple Model

These results imply that when the pay-size sensitivity decreases, the weaker relationship between pay and deal or firm size encourages managers' to switch screening from small projects to large projects since performance is now important for large deals in the absence of similar size benefit as before. Therefore, the likelihood of a large project decreases, while that of the small project increases, and the quality of the large project increases while that of the small project decreases. However, pay ratio disclosure's effect of weakening the link between pay and ex-post project NPV or returns has no impact on the manager's wealth as long as it only affects the upward sensitivity, and the downward sensitivity does not change. In this model, the decline in pay sensitivity has a positive impact on the firm value since large projects in general have more serious value implications for shareholders than small deals, given that

$0.5\beta[f(s)-1]v > 0$. Overall, the firm is better off. However, this implication depends on the assumption that the manager has one large and one small project to choose from, the comparability of a large project with multiple small projects of similar total size, and the relationship between project size and screening costs. One reason why the shift towards screening larger projects could be beneficial for shareholders is that non-performing larger projects are more difficult to divest, and could put more strain on future firm performance, compared to smaller ones.

3. DATA AND METHODOLOGY

3.1 Data and Sample Selection

We obtained pay ratio data during 2017-2022 from the University of Alabama Libraries.[14] For each year, the database includes between 2,200 and 2,600 firms.[15] The number of companies disclosing their pay ratio in fiscal year 2017 is lower than subsequent years because firms with June-December 30 fiscal year-ends are not required to report a pay ratio until their 2018 fiscal year-end. The dataset contains information on the median annual compensation of all employees (excluding the CEO), the annual total CEO compensation, and the ratio between these two numbers. Additionally, the database includes details of the companies such as company names, CEO names, industries, and locations. However, it does not provide unique company identifiers such as *gvkey* or *permno.* To address this, we use fuzzy name matching algorithms to link company names in this database to company names in Compustat, followed by a manual verification of each match to ensure accuracy. Through this process, we identify 1,939 unique firms with valid links to Compustat.

We focus on firms with a December 31 fiscal year-end (initial reporting firms) since they are the first to report the pay ratio for the initial fiscal year-end date (December 31, 2017)

[14] The data is available at website: https://guides.lib.ua.edu/c.php?g=879087&p=9004058.
[15] Note that smaller firms and emerging growth companies are exempt from the disclosure requirement.

in the first few months of 2018. Firms with non-12/31 FYE are delayed reporting firms. To ensure that all CEOs in our sample have a similar decision-making timeframe, we exclude these delayed reporting firms, leaving us with 1,869 unique firms. We further require firms to have CEO information available in ExecuComp, which leaves us with 1,215 unique firms in the final sample.[16]

We extract M&A deals announced during 2012-2022 from the Securities Data Company (SDC) Platinum database. We follow the literature and require the deals to meet the following criteria: i) The deal status is "completed", ii) The deal represents a transfer of control, meaning acquirors owns less than 50% of the target six months prior to the deal announcement and gains control of more than 50% of the target, iii) The acquirer can be matched to the Compustat, CRSP and Execuomp databases.

Our sample period covers the 11-year period from 2012-2022 that surrounds the initiation of pay-ratio disclosure. Table 1 presents descriptive statistics for the main variables used in our analyses. Panels A and B provide firm- and CEO-level summary statistics. Panel A shows that our sample firms on average initiate 0.62 M&A deals each year. Panel B shows that the average age of CEOs is 56 years old and 95% of CEOs in our sample are men. The median pay ratio in 2017 is 87, so firms with a 2017 pay ratio higher than 87 are classified as high ratio firms, while those with lower 2017 pay ratios are classified as low-ratio firms. The standard deviation for the pay ratio in 2017 is 323.23, indicating that pay ratios vary significantly across companies.[17] In Panel C of Table 1, we report the summary statistics for the M&A deals.

[16] The significant reduction in the number of firms is due to the fact that ExecuComp contains only S&P 1500 firms.

[17] The minimum pay ratio is zero for six firms in 2017. For example, as a testament to his commitment to and belief in Twitter's long-term value creation potential, Twitter's CEO, Jack Dorsey, declined all compensation for 2017. The other four firms with pay ratio of zero are RE/MAX Holdings, Inc., Fossil Group, Inc., Alphabet Inc. Inc., Annaly Capital Management Inc and Shutterstock Inc. The maximum value for pay ratio is 5907.9 from WW International, Inc., which mentioned in their proxy statement that annual total compensation for the CEO in fiscal 2017 included several one-time compensation awards and benefits that the company does not expect to provide in future years.

Acquirers on average experience a relatively small announcement return of around 0.5%. Smaller deals and deals with non-public targets have a more positive market response than larger deals and public-target deals. Only 14.3% of M&A involve a public company as the target, while 52.1% of the transactions are classified as diversified M&As. Since our sample only includes deals representing a transfer of control, the acquirer holds almost all (99.3%) of the target company's shares after deal completion.

Panel D of Table 1 highlights the differences in the main characteristics between high pay ratio firms and low pay ratio firms at the end of 2017. High pay ratio firms tend to be larger and are more likely to engage in M&A compared to low pay ratio firms. Additionally, high pay ratio firms are, on average, more profitable and exhibit lower stock return volatility than low pay ratio firms. In contrast, low pay ratio firms conduct more investment activities as evidenced by their higher capital expenditures and PPE ratios.

3.2 Empirical Design

Before analyzing the impact of Pay Ratio Disclosure Mandates on firm acquisitions, we first examine changes in CEO pay-size and pay-performance sensitivity after this mandate. Drawing on the framework established by Gabaix and Landier (2006), we measure the elasticity of CEO pay with respect to firm size by regressing change in the logarithm of compensation on the change in firm size. For pay-performance sensitivity, we adopt the methodology of Murphy (1998). Specifically, we regress the change in the logarithm of compensation on the change in shareholder wealth as the elasticity of pay with respect to performance, where the change in shareholder wealth can be approximated by annual return. The regression models are as follows:

$$\Delta Ln(CEO\ Pay_{i,t}) = \beta_1 \Delta Size_{i,t} + \beta_2 \Delta Size_{i,t} \times Post_t + X'\Gamma + \eta_i + \Theta_t + \varepsilon_{i,t} \quad (2)$$

$$\Delta Ln(CEO\ Pay_{i,t}) = \beta_1 Ret_{i,t} + \beta_2 Ret_{i,t} \times Post_t + X'\Gamma + \eta_i + \Theta_t + \varepsilon_{i,t} \quad (3)$$

where the dependent variable, $\Delta Ln(CEO\ Pay_{i,t})$is change in the natural logarithm of CEO

compensation, measured by item TDC1 in ExecuComp. The main independent variable is the interaction term between $\Delta Size_{i,t}$ and $Post_t$. $Post_t$ is a time dummy variable equal to one for years from 2018 to 2022 and zero otherwise. $Size_{i,t}$ is measured by the natural logarithm of book value of total assets or total sales. [18] The change in pay-size sensitivity after this mandate is captured by $\Delta Size_{i,t} \times Post_t$. X is a vector of control variables including ROA, leverage, Tobin Q, stock returns, stock return volatility, CEO tenure, duality, age and gender. Γ is the vector of corresponding coefficients. We include firm fixed effects to account for any possible time-invariant heterogeneity across firms and also include year fixed effects to account for the general time trends in CEO pay. [19] Robust standard errors, adjusted for heteroskedasticity and clustered at the firm level, are used to calculate t-statistics.

We hypothesize that firms with high pay ratios will face increased scrutiny after the mandate, potentially limiting further increases in CEO pay even as firm size grows. Thus, for high ratio firms, the coefficient β_2 is expected to be significantly negative.

To examine changes in CEO pay-performance sensitivity following the mandate, we use annual stock returns ($Ret_{i,t}$) as a proxy for firm performance and re-run the regression. To account for the potential asymmetry in pay-performance sensitivity, we design the test to capture pay sensitivities to both positive and negative performance. Specifically, we construct dummy variables $Positive_{i,t}$ and $Negative_{i,t}$ which equal the annual stock return if it is positive or negative , respectively, and zero otherwise. Then, we interact the two return variables with the time indicator variable ($Post_t$) to capture possible differential sensitivities of pay to performance for sample firms after the mandate.

To further explore the mechanism through which this mandate affects pay sensitivity, we examine whether and how firms adjust the mix of compensation awarded to CEOs after the

[18] We avoid using market capitalization as a proxy for firm size, as it may contain information about stock return, which partially captures the effect of firm performance on pay.
[19] The industry fixed effects are based on two-digit NAICS classifications.

pay ratio disclosure. We employ difference-in-differences (DiD) as follows:

$$Ln(Each\ Component\ of\ CEO\ Pay_{i,t}) = \beta \times High_i \times Post_t + X'\Gamma + \eta_i + \Theta_t + \varepsilon_{i,t} \quad (4)$$

where the dependent variable, $Ln(Each\ Component\ of\ CEO\ Pay_{i,t})$is the natural logarithm of each part of CEO compensation: salary, cash-based bonus (including bonus and non-equity incentive plan), equity-based awards (including stock awards and option awards)[20] .The independent variable is $High_i \times Post_t$, a dummy variable equal to 1 for high ratio firms after 2017, zero otherwise.

Then, we use difference-in-differences (DiD) methodology to examine the impact of Pay Ratio Disclosure Mandates on firm acquisitions. The regression models are specified as follows:

$$Number\ of\ deals_{i,t} = \beta \times High_i \times Post_t + X'\Gamma + \eta_i + \Theta_t + \varepsilon_{i,t} \quad (5)$$

$$CAR_{i,j,t} = \beta \times High_i \times Post_t + X'\Gamma + \eta_i + \Theta_t + \varepsilon_{i,t} \quad (6)$$

In model (5), the dependent variable is the number of M&A events announced by firm *i* in year *t.* The independent variable is $High_i \times Post_t$, a dummy variable equal to 1 for high ratio firms after 2017, zero otherwise. Control variables include firm size, leverage, ROA, Tobin's Q, cash holding, capital expenditure, PPE, CEO age, gender, tenure and duality for the fiscal year preceding the acquisition announcement date. We include firm-fixed effects to control for time-invariant unobservable factors across firms that may affect M&A probability. Year or industry-year fixed effects are also incorporated to account for the general or industry-specific time trends in M&A probability unrelated to the pay ratio adoption.

In Model (6), the dependent variable is the cumulative abnormal return for different event windows, calculated under the market model. Here, i indexes firms, *t* indexes years, and *j* indexes deals. We use trading days 150 through 50 relatives to the event date as the estimation

[20] Salary, bonus plus non-equity incentive plan, stock(option)_award_fv in ExecuComp.

period for each transaction in the sample to estimate the expected return. Over this estimation period, the company's daily returns are regressed on the market return. We require that a stock has at least 70 non-missing daily returns in days 150 through 50 to be included in the estimation. The difference between the actual daily return and market model predicted daily return using the estimated factor loadings from the regression results is the daily abnormal return. We cumulate the daily abnormal returns over the event window and use it as dependent variable. We also control deal characteristics (e.g., relative deal size, the percentage of cash payment, diversification, target public status) for each M&A deal following previous studies (Cai and Sevilir, 2012; Hauser, 2018; Gokkaya et al., 2023).

4. EMPIRICAL RESULTS

4.1 The Effect of Pay Ratio Disclosure on Components of CEO Pay

We begin by examining the impact of the Pay Ratio Disclosure Mandate on the different components of CEO compensation in high ratio firms. We expect that high ratio firms facing heightened external scrutiny of their pay practice will reduce more controversial components of the CEOs' pay package such as bonus and stock grants. Table 2 presents the results. In Panel A, the dependent variables are the natural logarithm of separate components of CEO compensation. The results indicate a modest reduction in CEO salary, with a 5.3% decline (p-value < 0.10). In contrast, there is a significant effect on CEO bonus and equity-based pay (31.4% and 32.9% decline, p-value < 0.01). Further analysis in column (4) and (5) reveals that the reduction in equity-based pay is primarily attributable to stock awards rather than option awards, probably because the value of stock grants is easier for ordinary investors and the public to assess compared to option grants. Overall, the results in Panel A of Table 2 align with the notion that large payouts from incentive awards attract more attention from the media and public than regular salary, prompting firms to reduce these components more aggressively.

Given that some components of CEO pay, especially bonus, stock and option pay, may

equal zero in certain years, we investigate the extensive margin, i.e., the likelihood of a CEO receiving a particular type of pay in Panel B of Table 2. The results indicate that CEOs are approximately 2.9% and 4.0% less likely to receive bonus and stock awards, respectively. We also employ Poisson regressions since log transformations may produce biased percentage estimates when there are too many "zero" value observations (Cohn, Liu, and Wardlaw, 2022; Chen and Roth, 2024). Results in Panel C show that CEO bonus and stock pay is approximately 12.9% (= exp (−0.139) – 1) and 18.1% (= exp (−0.200) – 1) lower following the introduction of Pay Ratio Disclosure Mandate.

A crucial assumption for the consistency of the DiD estimator is that treated and control firms would exhibit parallel trends in the absence of this mandate. To examine this assumption and explore the dynamics of the treatment effects, we replace $High_i \times Post_t$ with a series of dummy variables $High_i \times Pre_{-5}$, $High_i \times Pre_{-4}$, $High_i \times Pre_{-3}$, $High_i \times Pre_{-2}$, $High_i \times Pre_{-1}$, $High_i \times Post_0$, $High_i \times Post_{+1}$, $High_i \times Post_{+2}$, $High_i \times Post_{+3}$, $High_i \times Post_{+4}$. Pre_{-n} are dummy variables representing one, two, three, four, five or more years before implementation of Pay Ratio Disclosure Mandate, respectively. $Post_0$ is a dummy variable for the current year 2018. $Post_{+n}$ are dummy variables representing one to four years after the implementation of this mandate. The dynamic impact of this mandate on CEO pay is illustrated in Figure 1. The figure shows little changes in CEO stock pay, bonus and salary during the pre-event period and a noticeable decline in the post-event period.

Collectively, results in Table 2 and Figure 1 demonstrate that high ratio firms significantly reduced CEO incentive pay relative to low ratio firms as they face heightened external scrutiny from the public following this mandate.

4.2 The Effect of Pay Ratio Disclosure on Pay-Size Sensitivity

Table 3 displays the result of CEO pay-size sensitivity before and after 2018 estimated

using Equation (2). Column (1) demonstrates a significant positive correlation between changes in CEO pay and changes in firm size for all firms in the sample. In the meantime, the coefficient on the interaction term between firm size and the post-2017 period is negative but statistically insignificant.

Next, we conduct separate tests for high ratio and low ratio firms. In Column (2), we observe that firm size contributes significantly to CEO pay in high ratio firms, with a coefficient 0.292 (p-value<0.01) before the mandate. Importantly, after this mandate, high ratio firms experienced a 60.6% (-0.177/0.292) decline in pay-size sensitivity, as reflected by the coefficient for $\Delta Size_{i,t} \times Post_t$. Column (3) presents the result for low ratio firms, where the coefficient on $\Delta Size_{i,t}$ is positive but statistically insignificant. Additionally, Column (3) shows no significant change in pay-size sensitivity for low ratio firms. These results are in line with our expectations. Column (4) to (6) are similar to Column (1) to (3) except that we replace year fixed effects with industry-year fixed effects, where our results continue to hold. For robustness, we also use total sales to measure firm size and the results hold in Panel B of Table 3. Therefore, the results in Table 3 indicate that, consistent with our prediction, high pay-ratio firms, relative to low pay-ratio firms, experience a significant decline in pay-size sensitivity after the mandate.

4.3 The Effect of Pay Ratio Disclosure on CEO Pay-Performance Sensitivity

Next, we examine CEO pay-performance sensitivity before and after 2018 estimated using Equation (3) in Table 4. We use contemporary annual stock market return to measure firm performance. Splitting stock return into positive and negative return shows that changes in CEO pay are strongly related to both negative return and positive return for all firms before the mandate, with coefficients of 0.256 and 0.330, respectively. However, the negative coefficient on the interaction of positive return and post ($Positive_{i,t} \times Post_t$) indicates that a large part of the positive baseline relation between good stock performance and changes in pay

is eliminated after the mandate. In contrast, the coefficient on the interaction of negative return is insignificant, suggesting that the sensitivity for poor stock performance remains unchanged after the mandate.

Results in column (2) further show that the post-mandate decline in upside pay-performance sensitivity in column (1) comes from high ratio firms, which experience about 86.98% (-0.274/0.315) decline after 2017. The downside pay-performance sensitivity remains unaffected for high ratio firms. Thus, while CEOs in high ratio firms continue to be penalized for poor performance, they are not awarded as much as before for good performance. Additionally, Column (3) shows that low ratio firms experience little decline in upside pay-performance sensitivity, which is consistent with low ratio firms face less pressure to curb CEO pay following good performance.

We further examine whether this mandate has spillover effects on non-CEO executives' pay. The results in Table B1 of Appendix B show that the introduction of this mandate has a smaller effect on the compensation of named executive officers than the CEO, with their bonus pay and stock pay decreasing by approximately 20.7% and 24.3%, respectively in panel C. These findings suggest that the mandate increases public attention on company-wide executive compensation. As a result, not only the CEO pay, but also other executives' pay has become the subject of stakeholders' scrutiny.

As a robustness check, we follow a large literature that uses delta (Core and Guay, 2002; Coles et al.,2006; Chava and Purnanandam, 2010) and alignment (Kale et al., 2009; Dasgupta et al., 2017) as alternative measures of pay-performance sensitivity in Table B2 and B3. Delta is CEO's stock and option value sensitivities to a one percent change in stock price. Alignment is CEO's stock and option value sensitivities to a $100 change in shareholder wealth. As shown in Table B2, before 2018, a 1% change in stock price ($100 change in shareholder wealth) results in a $1,250,000 ($2.21) change in CEO wealth for high ratio firms. However, after 2018,

the corresponding change in CEO wealth is reduced to just $950,000 ($1.59). For low ratio firms, CEO delta and alignment remain relatively stable before and after 2018. The difference-in-difference analysis in Table B3 also shows that delta and alignment are lower for CEOs in high ratio firms following this mandate, compared to CEOs in low ratio firms. It is worth noting that these two measures consider only stock and option value, excluding other components of CEO compensation. Additionally, these measures cannot distinguish asymmetric pay-performance sensitivities as Equation (3). Nevertheless, these results still provide us with some additional evidence that this new mandate curbs the excessive growth of CEO pay driven by strong stock market performance.

4.4 The Effect of Pay Ratio Disclosure on M&A Activity: Decisions to Acquire

In this subsection, we investigate the effect of Pay Ratio Disclosure on acquisitions using DiD regressions. In Table 5, the dependent variables are the number of M&A deals announced by a firm in a given year. The coefficient of interaction term between *High* and *Post* is insignificantly negative, suggesting this mandate has no impact on M&A probability of high ratio firms when all types of deals are considered collectively.

In Table 6, we examine whether the Pay Ratio Disclosure Mandate affects different types of M&A deals in distinct ways. All M&A deals with non-missing transaction value are classified into two categories: large and small deals. Deals with transaction value exceeding the median value in our sample ($150 million) are classified as large deals, otherwise small deals. Panel A reports the results for small deals. The dependent variables in column (1) to (4) are the raw number of small deals. OLS regressions are employed in column (1) and (2), while Poisson regressions are used in column (3) and (4). The coefficients on $High_i \times Post_t$ are statistically and economically positive. For instance, when firm and industry-year fixed effects are included in column (2), the increase in the number of small deals is 0.049, corresponding to a 7.9% increase (compared with the standard deviation of the number of small deals 0.62),

which is economically large enough. The dependent variables in column (5) to (6) are the natural logarithm of the number of M&A deals plus 1 for each firm in a given year. In column (7) to (8), the dependent variables are aggregate deal value for each firm-year. Evidence suggests a potential increase in aggregate deal value as well.

The results for large deals in Panel B show an opposite pattern. High ratio firms experience a decrease of approximately 6.4% in the number of large deals (0.027 scaled by the standard deviation of the number of large deals 0.42). The coefficients are much larger in column (3) and (4) since singletons are excluded under Poisson regressions.

We also examine the dynamic effects of this mandate in Figure 2. Panel A indicates that the difference in the number of small deals between high and low ratio groups remains stable prior to the mandate, suggesting no pre-event trend. Starting from 2018, the gap gradually narrows. However, year 2020 saw an exceptional trend, as reflected by an insignificant positive coefficient. This deviation can be attributed to the fact that low ratio firms, typically smaller in size were more likely to cancel plans for large deals when COVID-19 pandemic occurs, due to their weaker anti-risk capacity and organizational ability. This weakens the original declining trend in the number of large deals for high ratio firms compared to low ratio firms under this mandate. Similarly, as shown in Panel B, 2021 saw an insignificant negative coefficient for large deals. Low ratio firms were more likely to re-engage in small acquisitions when the epidemic was under control, thereby weakening the original increasing trend in the number of small deals for high ratio firms compared to low ratio firms.

4.5 The Effect of Pay Ratio Disclosure on M&A Performance

To further support our main argument that CEOs shift their effort from small deals to large deals, we continue to examine M&A performance for after this mandate. Table 7 reports the treatment effect on overall M&A performance, considering all deals. We find little evidence that M&A performance changes in response to the disclosure of pay ratio as none of the

coefficients under different event windows are statistically significant. However, when the performance of large and small deals is examined separately in Table 8, the results align with our predictions. Large deals exhibit a 1.8% increase in three-day abnormal return, while small deals experience a 1.9% decline instead. These findings are consistent with what our model predicts. The likelihood of undertaking a large acquisition decreases, but deal quality improves after the rule. This is because CEOs exert more effort in screening large projects and only proceed with those expected to deliver strong performance. Conversely, the likelihood of small projects increases, while the quality declines, as the effort previously devoted to them is now redirected toward large projects.

In addition to transaction value, acquisitions can be classified according to other criteria. Acquisitions of public targets are always more influential and contribute more to firm size than those of non-public targets (private, subsidiary, etc.). It has long been argued that acquisitions of public target tend to elicit more negative stock market reactions than those of private target, which, on average, destroy shareholders' wealth (Koeplin et al., 2000; Cooney et al., 2009; Fuller et al., 2002).[21] We compare the change in their M&A performance after this policy in Table 9 and find that high ratio firms experience a more positive market response if they do acquire public targets after this mandate, while they face more negative market reactions upon announcement of non-public target acquisitions.

In addition to examining M&A probability and performance, we also analyze changes in M&A payment, which is relevant to CEO pay and a crucial feature of acquisitions. Given that the use of stock payment is associated with lower stock return upon the takeover announcement (Travlos,1987; Faccio and Masulis, 2005), CEOs could be cautious about using stock payment as such payment would lower stock prices and in turn the value of their stock grants. Since our previous results (Table 2) show that CEO stock grants decline after the

[21] The average CAR for public target M&A in our sample is -0.9%, while that of non-public target M&A is 0.6%.

mandate, we would expect that CEOs are more willing to use stock payment as it now has less impact on their compensation. We test this prediction and present the results in Table B4 of Appendix B, which show that, consistent with our prediction, there is an increase in the likelihood of using stock payment for high ratio firms relative to low ratio firms following the mandate.

4.6 The Effect of Pay Ratio Disclosure on CEO Pay around M&A

Existing literature shows that CEOs in bidding firms are richly rewarded for growth through acquisitions with substantial new stock and option grants (Harford and Li, 2007) and also large cash bonuses (Grinstein and Hribar, 2004). We therefore explore the impact of the mandate on CEO pay changes around M&As. Our previous results indicate that for high ratio firms, small deals and deals involving non-public targets exhibit worse performance following the mandate, and the downside pay-performance sensitivity remains unchanged after the mandate. As a result, we expect that, following the mandate, high ratio firms' CEOs receive lower bonus and pay growth after deal completion. Additionally, we find that for high ratio firms, large deals and deals involving public targets perform better following the mandate, but the upside pay-performance sensitivity declines. As a result, we expect that following the mandate, high ratio firms' CEOs will not experience an increase in pay growth around a large deal.

Table 10 presents the regression analysis where the dependent variables are acquiring CEO's pay changes around M&A. Similar to Harford and Li (2007), we start with CEO pay in the year prior to the deal announcement and then capture the pay differential that acquiring CEOs realize in the year after the acquisition (from year *ayr-1* to *cyr+1*). We exclude deal-firm-year observations where a firm undertakes both large and small (public and non-public targets) deals in the same year, as it can be difficult to isolate the dominant type of deal influencing the CEO pay during that period. Thus, we restrict our analysis to deal-firm-year

observations that only engage in either large or small deals (or only public or non-public target deals) in a given year, ensuring more accurate estimates.

The results in Table 10 are consistent with the asymmetric decline in pay-performance sensitivity for high ratio firms in Table 3. Panel A shows that around small deals, CEO pay growth decreases by 44.6% if high ratio firms undertake small deals after the mandate, however, no significant change for large deals. Panel B reveals that CEO pay growth decreases by 21.3% if high ratio firms undertake non-private target deals after the mandate, however, no significant change for public target deals. Overall, our results show that CEOs do not receive additional awards for making better-quality investments following this mandate, but they would still be penalized for making poor investments decisions. In summary, we have analyzed the significant impact of this new policy on several key stages of M&A process, including early-stage M&A decisions, mid-stage M&A performance and payment choices and changes in CEO pay following M&A. Overall, our results are broadly consistent with the notion that this new mandate curbs the rapid growth of CEO pay and generates unintended consequences on corporate policies and value through CEO pay-related incentives.

5. CONCLUSION

In this paper, we explore the contentious issue of CEO compensation, particularly how changes in compensation structures influence CEO decision-making and actions. To do so, we focus on a significant policy introduced in 2015 by the SEC, which mandates public companies to disclose the ratio between CEO compensation and the median employee's pay. This disclosure requirement, intended to enhance transparency, has subjected companies to greater scrutiny and reputational risks, especially those revealing high pay ratios.

We investigate how the pay ratio disclosure affects the sensitivity of CEO compensation to key factors like firm performance and size, and its subsequent impact on M&A activities. We find that firms with high pay ratios show a marked decrease in CEO pay growth relative to

low pay ratio firms. Moreover, the link between CEO pay and both firm size and performance gains becomes weaker. This altered compensation structure leads to a shift in M&A activities. Firms engage in fewer larger deals, but of higher quality, and more smaller deals of lower quality.

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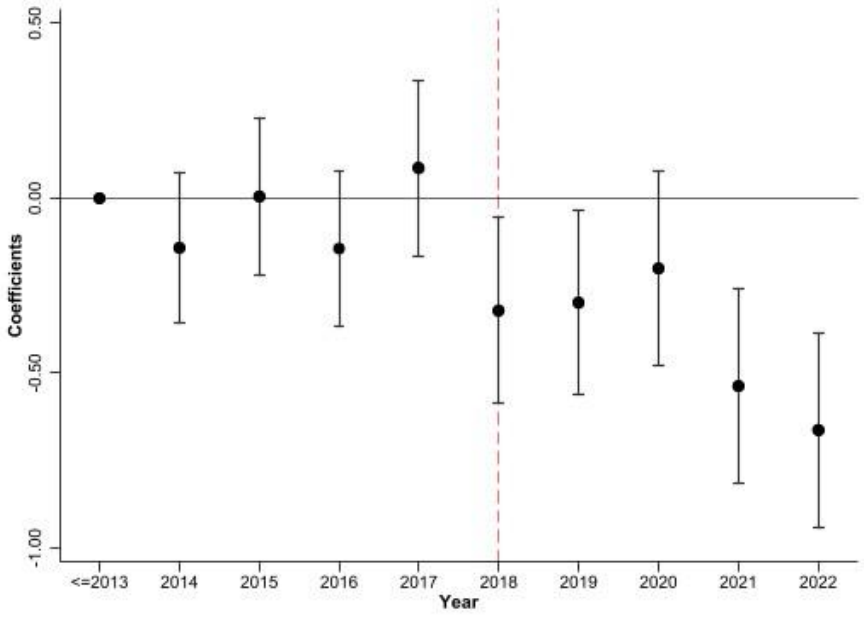
Figure 1

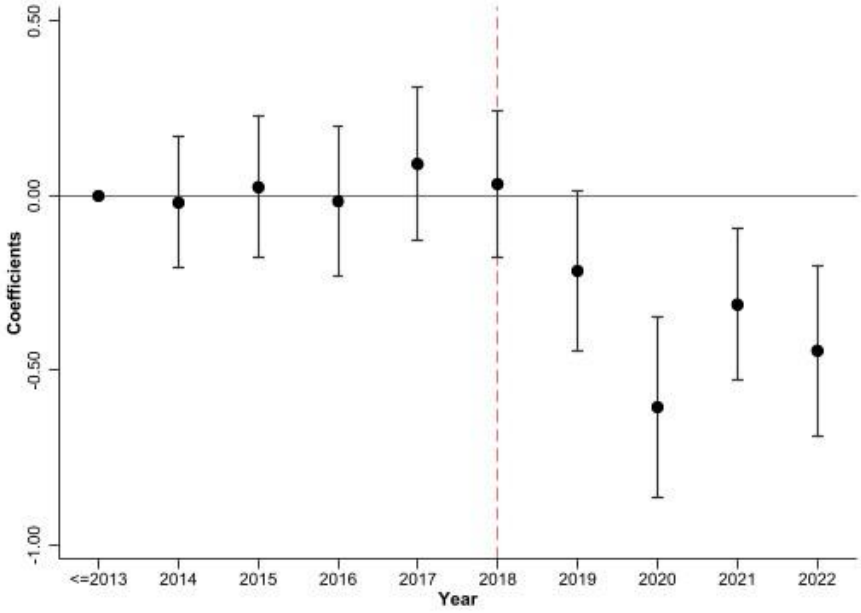
The Dynamic Impacts of Pay Ratio Disclosure Reform on CEO Compensation

This figure presents the dynamic impact of Pay Ratio Disclosure Reform on CEO Pay, especially salary, cash bonus and stock pay. In panel A, the dependent variable is the natural logarithm of one plus the stock award each year. In panel B, the dependent variable is the natural logarithm of one plus the cash bonus each year. In panel C, the dependent variable is the natural logarithm of one plus the salary each year. The independent variables are $High \times Year_n$. *High* is a dummy variable equal to 1 if a firm has pay ratio higher than sample median pay ratio in 2017. $Year_{-n}$ are dummy variables that equal one if year t is four or more years, three years, two years or one year before 2018, respectively, and zero otherwise. $Year_0$ is a dummy variable set to one for the year 2018. Similarly, $Year_{+n}$ variables are defined to capture the years following 2018. Control variables include both firm characteristics and CEO characteristics. The solid dots represent the estimated coefficients with the first year as the reference, while the solid vertical line segments present two-sided 90% confidence intervals. All models include firm and year fixed effects, and t-statistics are clustered at the firm level.

Panel A: The Dynamic Impact of Pay Ratio Disclosure Reform on CEO Stock Pay



Panel B: The Dynamic Impact of Pay Ratio Disclosure Reform on CEO Cash Bonus



Panel C: The Dynamic Impact of Pay Ratio Disclosure Reform on CEO Salary

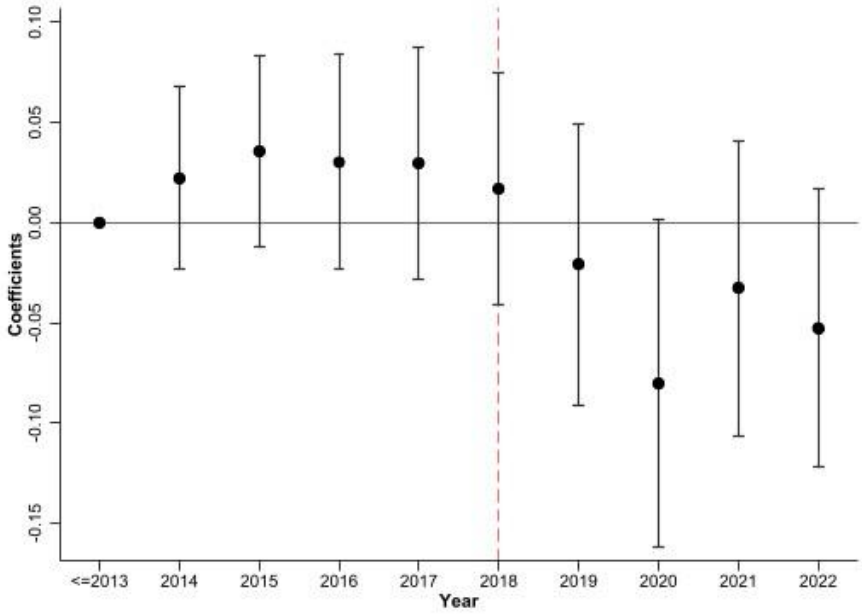
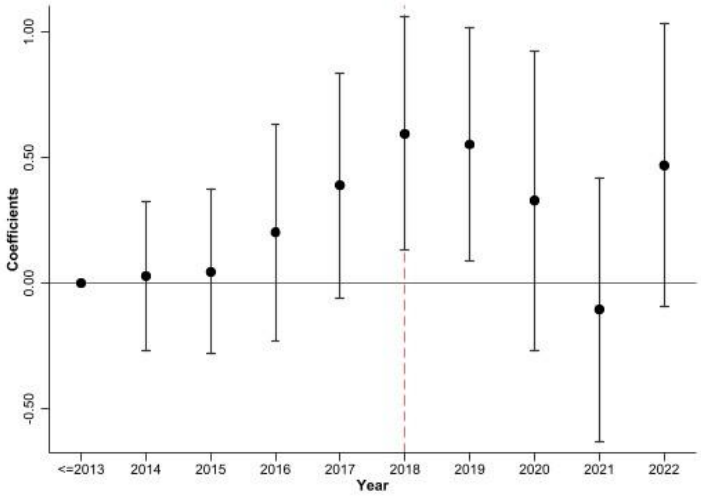


Figure 2

The Dynamic Impacts of Pay Ratio Disclosure Reform on Corporate Takeover Decisions

This figure presents the dynamic impact of Pay Ratio Disclosure Reform on corporate takeover. In panel A (B), the dependent variable is the number of small (large) M&A deals announced by the firm in each year. The independent variables are $High \times Year_n$. *High* is a dummy variable equal to 1 if a firm has pay ratio higher than sample median pay ratio in 2017. $Year_{-n}$ are dummy variables that equal one if year t is four or more years, three years, two years or one year before 2018, respectively, and zero otherwise. $Year_0$ is a dummy variable set to one for the year 2018. Similarly, $Year_{+n}$ variables are defined to capture the years following 2018. Control variables including firm and CEO characteristics. The solid dots represent the estimated coefficients with the first year as the reference, while the solid vertical line segments present two-sided 90% confidence intervals. Poisson regression is used in this specification. All models include firm and year fixed effects, and t-statistics are clustered at the firm level.

Panel A: The Dynamic Impact of Pay Ratio Disclosure Reform on the Number of Small Deals



Panel B: The Dynamic Impact of Pay Ratio Disclosure Reform on the Number of Large Deals

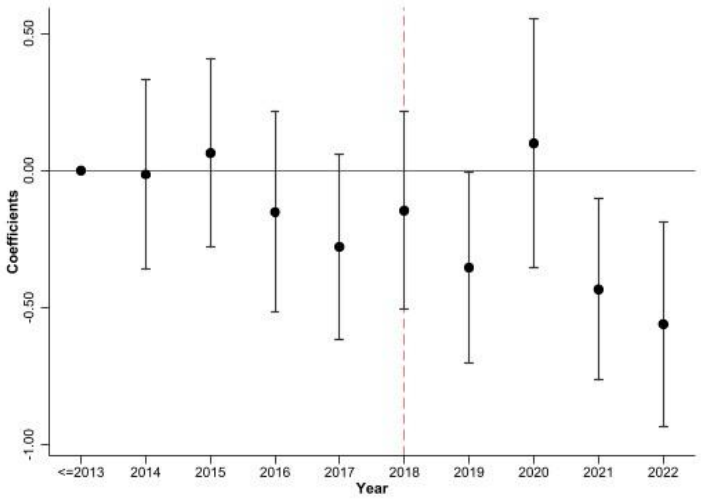


Table 1
Descriptive Statistics

Panel A reports summary statistics for firm characteristics from 2012 to 2022. # of deals is the number of M&A deals initiated by each year. *Size* is the natural logarithm of total assets. *ROA* is net income scaled by total assets. *Leverage* is total debt scaled by total assets. *Tobin's Q* is market value divided by book value of total assets. *Cash_holding* is cash scaled by total assets. *Cap* is capital expenditure scaled by total assets. *PPE* is net property, plant and equipment scaled by total assets. *Ret is* annual stock return. *Sigma* is annual stock volatility computed by monthly stock return. Panel B reports summary statistics for CEO characteristics and CEO pay from 2012 to 2022. *Ln (Age)* is the natural logarithm of CEO age. *Gender* is a dummy variable equal to 1 if the CEO is male, otherwise zero. *Ln (Tenure)* is the natural logarithm of CEO tenure plus 1. *Duality* is a dummy variable equal to 1 if CEO also serves as chairman of the board. *Ln (CEO Pay)* is the natural logarithm of total CEO pay, measured by item TDC1 from Execucomp. *Ln (Stock)* is the natural logarithm of stock awards plus 1. *Ln (Option), Ln (Salary)* and *Ln (Bonus)* are similarly defined. Panel C reports summary statistics for M&A events from 2012 to 2022. *CAR* is cumulative abnormal return around M&A announcement using market model. *Cross_border* is a dummy variable equal to 1 if the acquirer and the acquiree are in different countries,0 otherwise. *Deal_size,* measured by the transaction value divided by the acquirer's total market value. *Diversify* is a dummy variable equal to 1 if the acquirer and the acquiree share different 2-digit SIC codes. *Cash%* is the percentage of cash payment in total deal value. *Public* is a dummy variable equal to 1 if the target is public firm, otherwise 0. *Length* is the time period from deal announcement day to deal complete day. *No.bidders* is the number of bidders involved in the M&A process. Panel D compares the main characteristics between high and low ratio firms by the end of 2017.

Panel A: Firm-Level Variables

Var.	Obs.	Mean	SD	P10	P25	Median	P75	P90
# of deals	12333	0.620	1.558	0.000	0.000	0.000	1.000	2.000
Size	12333	8.420	1.761	6.225	7.220	8.358	9.537	10.698
ROA	12333	0.037	0.084	-0.021	0.010	0.035	0.072	0.120
Leverage	12333	0.281	0.209	0.014	0.100	0.268	0.417	0.555
Tobin's Q	12333	1.981	1.509	0.986	1.094	1.456	2.198	3.565
Cash_holding	12333	0.129	0.151	0.009	0.024	0.071	0.173	0.341
Cap	12333	0.037	0.046	0.000	0.005	0.022	0.049	0.086
PPE	12333	0.227	0.254	0.002	0.024	0.122	0.350	0.681
Ret	12311	0.149	0.373	-0.282	-0.082	0.118	0.332	0.585
Sigma	12311	0.093	0.052	0.044	0.058	0.079	0.112	0.157

Panel B: CEO Characteristics

Var.	Obs.	Mean	SD	P10	P25	Median	P75	P90
Ln (Age)	12333	4.037	0.126	3.871	3.970	4.043	4.111	4.174
Gender	12333	0.952	0.214	1.000	1.000	1.000	1.000	1.000
Ln (Tenure)	12333	1.613	1.019	0.000	0.693	1.792	2.398	2.890
Duality	12333	0.455	0.498	0.000	0.000	0.000	1.000	1.000
Pay Ratio	1215	161.328	323.231	25.900	47.000	87.000	164.70	319.700
Ln (CEO Pay)	12311	8.531	1.154	7.337	8.019	8.654	9.196	9.640
Ln (Salary)	12311	6.649	0.840	6.196	6.479	6.775	6.981	7.209
Ln (Bonus)	12310	6.388	2.315	1.557	6.223	7.028	7.662	8.200
Ln (Stock)	12311	6.621	3.121	0.000	6.612	7.804	8.556	9.073
Ln (Option)	12311	2.701	3.585	0.000	0.000	0.000	6.909	7.970

Panel C: Deal Variables

Var.	Obs.	Mean	SD	P10	P25	Median	P75	P90
CAR [-1,1]	3347	0.005	0.051	-0.038	-0.014	0.004	0.022	0.051
CAR [-3,3]	3347	0.004	0.064	-0.058	-0.023	0.004	0.030	0.069
CAR_small	1572	0.005	0.056	-0.051	-0.021	0.004	0.028	0.062
CAR_large	1517	0.004	0.070	-0.065	-0.025	0.002	0.031	0.077
CAR_public	332	-0.009	0.066	-0.086	-0.041	-0.007	0.022	0.069
CAR_nonpublic	2810	0.006	0.063	-0.051	-0.021	0.005	0.031	0.068
Cross_border	3347	0.199	0.400	0.000	0.000	0.000	0.000	1.000
Deal_size	3347	0.089	0.158	0.003	0.011	0.033	0.089	0.233
Diversify	3347	0.521	0.500	0.000	0.000	1.000	1.000	1.000
Cash%	3347	0.386	0.453	0.000	0.000	0.000	1.000	1.000
Public	3347	0.143	0.350	0.000	0.000	0.000	0.000	1.000
Length	3347	2.529	2.208	0.000	0.000	3.401	4.454	5.176
No. bidders	3347	1.006	0.077	1.000	1.000	1.000	1.000	1.000

Panel D: Comparison between High and Low Pay Ratio Firms before 2018

	Low Ratio		High Ratio		
Variables	N	Mean	N	Mean	Low-High Difference
Number of deals	3326	0.527	3356	0.824	-0.297***
Size	3326	7.513	3356	8.934	-1.422***
ROA	3326	0.024	3356	0.048	-0.024***
Leverage	3326	0.235	3356	0.285	-0.051***
Tobin's Q	3326	1.924	3356	1.892	0.033
Cash_holding	3326	0.153	3356	0.119	0.034***
Cap	3326	0.042	3356	0.039	0.003**
PPE	3326	0.229	3356	0.222	0.007
Duality	3326	0.450	3356	0.565	-0.115***
Tenure	3326	1.697	3356	1.566	0.131***
Age	3326	4.020	3356	4.032	-0.012***
Gender	3326	0.958	3356	0.96	-0.002
Ln (CEO Pay)	3312	7.806	3356	8.82	-1.015***
Ret	3326	0.188	3356	0.193	-0.005
Sigma	3325	0.087	3354	0.073	0.014***

Table 2
The Effect of Pay Ratio Disclosure on Components of CEO Pay

This table reports the treatment effect of Pay Ratio Disclosure Reform on the components of CEO pay. Panel A presents the results of difference-in-differences tests where the dependent variables are the natural logarithm of separate components of CEO compensation in the form of salary, cash bonus, equity-based pay, annual stock awards, annual option awards. The dependent variables in Panel B are indicator variables equal to one if a specific component of CEO pay is non-zero in a given year. The dependent variables in Panel C are CEO cash bonus, equity pay, stock pay, and option pay and the models are estimated using Poisson regressions. The difference-in-differences estimator is captured by the interaction term between an indicator variable, *High*, equal to one for firms with pay ratio higher than the median of sample firms in 2017, and an indicator variable, *Post*, set to one for fiscal years from 2018 to 2022. Control variables include stock return, stock volatility, firm size, leverage, ROA, Tobin's Q CEO duality, age, gender and tenure. Firm and year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Components of CEO Pay (OLS Regressions)

Dep. Var.	Ln (Salary)	Ln (Bonus)	Ln (Equity)	Ln (Stock)	Ln (Option)
	(1)	(2)	(3)	(4)	(5)
High×Post	**-0.053***	**-0.314*****	**-0.329*****	**-0.291****	**-0.161**
	(-1.76)	**(-3.73)**	**(-3.21)**	**(-2.30)**	**(-1.20)**
Ret	-0.024	0.815***	0.012	0.127*	-0.192***
	(-1.42)	(14.44)	(0.19)	(1.74)	(-2.70)
Sigma	-0.482***	-3.358***	-1.634**	-2.098**	-0.491
	(-2.62)	(-5.79)	(-2.32)	(-2.53)	(-0.66)
Size	0.094***	0.085	0.728***	0.695***	0.599***
	(4.59)	(1.24)	(7.33)	(6.25)	(5.70)
ROA	0.043	3.135***	0.184	0.058	-0.121
	(0.48)	(7.96)	(0.42)	(0.12)	(-0.24)
Leverage	-0.073	-0.045	-0.281	0.218	-0.262
	(-0.83)	(-0.20)	(-0.88)	(0.59)	(-0.77)
Tobin's Q	0.038***	0.032	0.111***	0.051	0.131***
	(3.15)	(1.31)	(2.83)	(1.12)	(2.62)
Duality	0.025	0.054	0.107	0.173*	-0.030
	(0.90)	(0.67)	(1.22)	(1.65)	(-0.26)
Age	0.066	-0.919**	-1.138**	-0.375	-1.334**
	(0.28)	(-2.23)	(-2.12)	(-0.60)	(-2.35)
Gender	0.007	-0.083	0.204	0.119	-0.130
	(0.10)	(-0.46)	(1.15)	(0.55)	(-0.47)
Tenure	0.026	0.016	0.056	0.007	0.045
	(1.21)	(0.43)	(1.27)	(0.13)	(0.84)
Constant	5.525***	9.500***	5.443**	2.106	3.002
	(5.82)	(5.45)	(2.37)	(0.79)	(1.23)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	12,311	12,311	12,311	12,311	12,311
Adj. R-squared	0.732	0.494	0.485	0.519	0.631

Panel B: The Likelihood of Receiving Pay of Particular Type

Dep. Var.	Bonus Pay Indicator	Equity Pay Indicator	Stock Pay Indicator	Option Pay Indicator
	(1)	(2)	(3)	(4)
High×Post	**-0.029****	**-0.032****	**-0.040****	**-0.008**
	(-2.45)	**(-2.47)**	**(-2.42)**	**(-0.44)**
Ret	0.077***	0.005	0.018*	-0.019**
	(9.79)	(0.62)	(1.87)	(-2.00)
Sigma	-0.421***	-0.156*	-0.241**	-0.043
	(-4.96)	(-1.74)	(-2.21)	(-0.42)
Size	-0.020**	0.058***	0.062***	0.070***
	(-2.06)	(4.61)	(4.30)	(4.83)
ROA	0.361***	0.016	0.014	-0.037
	(6.25)	(0.30)	(0.22)	(-0.55)
Leverage	0.000	-0.035	0.039	-0.035
	(0.00)	(-0.85)	(0.80)	(-0.75)
Tobin's Q	-0.001	0.003	-0.001	0.010
	(-0.41)	(0.74)	(-0.19)	(1.58)
Duality	-0.002	0.004	0.013	-0.011
	(-0.22)	(0.39)	(0.96)	(-0.70)
Age	-0.172***	-0.128*	-0.005	-0.210***
	(-3.01)	(-1.93)	(-0.06)	(-2.68)
Gender	-0.010	0.022	0.015	-0.020
	(-0.40)	(1.02)	(0.52)	(-0.54)
Tenure	-0.003	0.002	-0.007	0.005
	(-0.50)	(0.30)	(-0.95)	(0.68)
Constant	1.807***	0.921***	0.339	0.643*
	(7.52)	(3.23)	(1.01)	(1.91)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	12,311	12,311	12,311	12,311
Adj. R-squared	0.378	0.385	0.447	0.618

Panel C: Poisson Regression

Dep. Var.	Bonus Pay	Equity Pay	Stock Pay	Option Pay
	(1)	(2)	(3)	(4)
High×Post	**-0.139*****	**-0.188*****	**-0.200*****	**0.049**
	(-3.68)	**(-3.10)**	**(-2.95)**	**(0.41)**
Controls	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	12,107	12,119	11,914	7,702
Pseudo R-squared	0.721	0.649	0.629	0.578

Table 3
The Effect of Pay Ratio Disclosure on CEO Pay-Size Sensitivity

This table studies the impact of Pay Ratio Disclosure Reform on CEO pay-size sensitivity. The dependent variable is change in the natural logarithm of CEO compensation, measured by item TDC1 in ExecuComp. The change of Pay-Size Sensitivity after this mandate is captured by *ΔSize×Post. Size* is measured by the natural logarithm of total assets or total sales. *Post* is a time dummy variable equal to 1 for years after 2017. Firms with pay ratios higher than the median of sample firms in 2017 belong to high ratio group, otherwise belong to low ratio group. Firm characteristics and CEO characteristics are included as control variables. Firm and year or industry-year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Size Measured by Total Assets

Dep. Var.	Δ Ln (CEO Pay)					
	Full Sample	High Ratio	Low Ratio	Full Sample	High Ratio	Low Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Size × Post	**-0.021**	**-0.177****	**0.076**	**-0.028**	**-0.170***	**0.064**
	(-0.36)	**(-2.16)**	**(0.85)**	**(-0.42)**	**(-1.95)**	**(0.64)**
Δ Size	**0.160*****	**0.292*****	**0.059**	**0.154*****	**0.286*****	**0.042**
	(3.55)	**(4.37)**	**(0.99)**	**(3.37)**	**(4.18)**	**(0.68)**
Ret	0.200***	0.236***	0.168***	0.210***	0.237***	0.185***
	(7.53)	(6.69)	(4.24)	(7.43)	(6.41)	(4.51)
Sigma	-0.605**	-0.532*	-0.613	-0.690**	-0.569*	-0.787*
	(-2.36)	(-1.89)	(-1.58)	(-2.53)	(-1.94)	(-1.78)
Tobin's Q	-0.001	-0.003	0.004	-0.002	-0.005	-0.001
	(-0.06)	(-0.26)	(0.40)	(-0.27)	(-0.41)	(-0.10)
Leverage	0.036	0.058	0.021	0.030	0.048	-0.024
	(0.65)	(0.80)	(0.26)	(0.50)	(0.63)	(-0.27)
ROA	-0.148	-0.174	-0.108	-0.191	-0.261	-0.134
	(-1.21)	(-0.96)	(-0.63)	(-1.46)	(-1.35)	(-0.73)
Duality	0.025	0.023	0.025	0.025	0.024	0.019
	(1.36)	(1.09)	(0.87)	(1.31)	(1.06)	(0.63)
Age	-0.192*	-0.107	-0.230	-0.199*	-0.103	-0.269*
	(-1.79)	(-0.89)	(-1.41)	(-1.84)	(-0.84)	(-1.70)
Gender	0.076**	0.067**	0.104*	0.066*	0.068*	0.090
	(2.24)	(2.05)	(1.76)	(1.89)	(1.94)	(1.53)
Tenure	0.014	0.025**	-0.001	0.015	0.025**	0.004
	(1.03)	(2.17)	(-0.03)	(1.13)	(2.17)	(0.17)
Constant	0.745*	0.361	0.915	0.794*	0.357	1.122*
	(1.77)	(0.76)	(1.43)	(1.87)	(0.74)	(1.82)
High-Low Diff		-0.253**(0.038)			-0.234*(0.070)	
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	NO	NO	NO
Ind-Year FE	NO	NO	NO	YES	YES	YES
Observations	12,107	6,149	5,958	12,097	6,139	5,943
Adj R-squared	0.047	0.074	0.042	0.067	0.116	0.073

Panel B: Size Measured by Total Sales

Dep. Var.	Δ Ln (CEO Pay)					
	Full Sample	High Ratio	Low Ratio	Full Sample	High Ratio	Low Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
ΔSize × Post	**-0.033**	**-0.295*****	**0.040**	**-0.050**	**-0.314*****	**0.024**
	(-0.49)	**(-2.84)**	**(0.56)**	**(-0.75)**	**(-2.93)**	**(0.35)**
ΔSize	**0.113****	**0.433*****	**0.007**	**0.107****	**0.432*****	**-0.008**
	(2.41)	**(6.15)**	**(0.17)**	**(2.20)**	**(5.69)**	**(-0.18)**
Ret	0.203***	0.231***	0.172***	0.212***	0.233***	0.189***
	(7.43)	(6.40)	(4.26)	(7.28)	(6.14)	(4.61)
Sigma	-0.593**	-0.515*	-0.609	-0.684**	-0.571*	-0.773*
	(-2.29)	(-1.79)	(-1.56)	(-2.49)	(-1.90)	(-1.73)
Tobin's Q	-0.005	-0.007	0.001	-0.006	-0.010	-0.004
	(-0.59)	(-0.65)	(0.09)	(-0.71)	(-0.89)	(-0.38)
Leverage	0.063	0.085	0.050	0.057	0.081	0.003
	(1.12)	(1.17)	(0.61)	(0.93)	(1.05)	(0.03)
ROA	-0.096	-0.214	-0.036	-0.123	-0.261	-0.064
	(-0.81)	(-1.31)	(-0.22)	(-0.97)	(-1.50)	(-0.35)
Duality	0.027	0.022	0.029	0.027	0.022	0.022
	(1.50)	(1.06)	(0.99)	(1.42)	(1.00)	(0.75)
Age	-0.196*	-0.075	-0.244	-0.204*	-0.073	-0.286*
	(-1.82)	(-0.62)	(-1.50)	(-1.89)	(-0.60)	(-1.82)
Gender	0.069**	0.053*	0.095	0.058*	0.051	0.080
	(2.08)	(1.67)	(1.63)	(1.71)	(1.47)	(1.39)
Tenure	0.014	0.024**	-0.001	0.015	0.025**	0.003
	(1.03)	(2.08)	(-0.06)	(1.13)	(2.12)	(0.15)
Constant	0.770*	0.246	0.982	0.826*	0.255	1.198*
	(1.82)	(0.52)	(1.54)	(1.94)	(0.53)	(1.95)
High-Low Diff		0.335***(0.008)			0.338***(0.008)	
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	NO	NO	NO
Industry FE	NO	NO	NO	YES	YES	YES
Observations	12,090	6,146	5,944	12,080	6,136	5,929
Adj R-squared	0.047	0.080	0.041	0.067	0.120	0.073

Table 4

The Effect of Pay Ratio Disclosure on CEO Pay-Performance Sensitivity

The table below studies the asymmetric impact of Pay Ratio Disclosure Reform on CEO compensation sensitivity to firm performance. The dependent variable is change in the natural logarithm of CEO compensation, measured by item TDC1 in ExecuComp. *Positive* return equals the annual stock return if it is positive, and zero otherwise. *Negative* return is analogously set equal to the annual stock return if it is negative, and zero otherwise. The change of Pay-Performance Sensitivity after this mandate is captured by the interaction term between *Positive (Negative)* and *Post*. Control variables include stock volatility, firm size, leverage, ROA, Tobin's Q, CEO duality, age, gender and tenure. Firm and year fixed effects are included in models (1) to (3). Firm and industry-year fixed effects are included in models (4) to (6). T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Dep. Var.	Δ Ln (CEO Pay)					
	Full Sample	High Ratio	Low Ratio	Full Sample	High Ratio	Low Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Positive×Post	**-0.181*** **	**-0.274*** **	**-0.128**	**-0.184*** **	**-0.269*** **	**-0.155**
	(-2.70)	**(-3.12)**	**(-1.34)**	**(-2.62)**	**(-3.09)**	**(-1.49)**
Positive	**0.256*** **	**0.315*** **	**0.216*** **	**0.262*** **	**0.308*** **	**0.230*** **
	(6.17)	**(5.61)**	**(3.82)**	**(5.87)**	**(5.11)**	**(3.84)**
Negative×Post	**-0.032**	**0.225**	**-0.178**	**-0.082**	**0.256**	**-0.260**
	(-0.20)	**(1.33)**	**(-0.75)**	**(-0.50)**	**(1.47)**	**(-1.08)**
Negative	**0.330** **	**0.298*** **	**0.312**	**0.378** **	**0.307*** **	**0.407***
	(2.05)	**(2.63)**	**(1.23)**	**(2.39)**	**(2.59)**	**(1.67)**
Sigma	-0.588**	-0.433	-0.679*	-0.661**	-0.459	-0.834*
	(-2.25)	(-1.49)	(-1.72)	(-2.39)	(-1.52)	(-1.85)
Size	-0.014	-0.014	-0.019	-0.012	-0.006	-0.019
	(-0.74)	(-0.83)	(-0.60)	(-0.62)	(-0.32)	(-0.57)
Tobin's Q	-0.003	-0.008	0.002	-0.004	-0.008	-0.003
	(-0.38)	(-0.70)	(0.17)	(-0.46)	(-0.67)	(-0.23)
Leverage	0.083	0.118	0.057	0.071	0.104	0.009
	(1.44)	(1.61)	(0.68)	(1.15)	(1.32)	(0.10)
ROA	0.009	0.007	0.029	-0.058	-0.117	-0.023
	(0.07)	(0.04)	(0.17)	(-0.44)	(-0.64)	(-0.12)
Duality	0.026	0.020	0.028	0.026	0.021	0.022
	(1.41)	(0.96)	(0.97)	(1.36)	(0.93)	(0.75)
Age	-0.190*	-0.107	-0.226	-0.198*	-0.102	-0.270*
	(-1.79)	(-0.88)	(-1.40)	(-1.84)	(-0.82)	(-1.72)
Gender	0.074**	0.063*	0.101*	0.063*	0.064*	0.085
	(2.15)	(1.92)	(1.67)	(1.78)	(1.82)	(1.40)
Tenure	0.014	0.028**	-0.001	0.016	0.028**	0.004
	(1.09)	(2.43)	(-0.04)	(1.18)	(2.38)	(0.18)
Constant	0.863*	0.505	1.058	0.905*	0.420	1.293*
	(1.82)	(1.06)	(1.41)	(1.87)	(0.85)	(1.70)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Ind-Year FE	NO	NO	NO	NO	NO	NO
Observations	12,107	6,149	5,958	12,097	6,139	5,943
Adj. R-squared	0.011	0.023	0.007	0.011	0.021	0.008

Table 5
The Effect of Pay Ratio Disclosure On M&A Activity

This table represents firm-level DiD regressions on the number of acquisitions from 2012 to 2022. We require M&A deals to be completed, the bidder to own less than 50% of the target six months prior to M&A announcement and control more than 50% of the target following the transaction. The main dependent variable is the number of M&A deals announced by the firm in each year. The independent variable is *High×Post*, a dummy variable equal to one for the firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandate, and zero otherwise. Firm-level characteristics and CEO characteristics are included as control variables. Firm and year or industry-year fixed effects are included in all columns. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Dep. Var.	# Deals		Ln (1+ # Deals)		Ln (1+ Deal Value)	
	(1)	(2)	(3)	(4)	(5)	(6)
High×Post	**-0.056**	**-0.058**	**-0.023**	**-0.021**	**-0.046**	**-0.081**
	(-1.12)	**(-1.07)**	**(-1.21)**	**(-1.11)**	**(-0.51)**	**(-0.88)**
Size	-0.104**	-0.088*	-0.039**	-0.034*	-0.292***	-0.269***
	(-2.22)	(-1.87)	(-2.20)	(-1.92)	(-3.82)	(-3.65)
ROA	1.016***	1.083***	0.479***	0.522***	2.396***	2.766***
	(6.13)	(6.22)	(7.53)	(7.70)	(6.92)	(7.74)
Leverage	-0.372***	-0.476***	-0.190***	-0.231***	-0.967***	-1.148***
	(-2.70)	(-3.57)	(-3.72)	(-4.61)	(-4.03)	(-4.86)
Tobin's Q	0.057***	0.063***	0.020***	0.022***	0.109***	0.113***
	(3.29)	(3.32)	(3.30)	(3.45)	(3.61)	(3.64)
Cash_holding	0.327	0.371**	0.241***	0.255***	1.503***	1.532***
	(1.64)	(1.97)	(3.20)	(3.41)	(4.04)	(4.05)
Cap	-1.108***	-0.579	-0.572***	-0.299	-2.498**	-1.208
	(-2.67)	(-1.25)	(-3.22)	(-1.47)	(-2.47)	(-1.09)
PPE	0.381	0.359	0.182	0.168	1.532***	1.385***
	(1.03)	(0.94)	(1.63)	(1.46)	(3.28)	(2.75)
Duality	0.001	-0.009	0.007	0.003	-0.047	-0.052
	(0.02)	(-0.21)	(0.46)	(0.20)	(-0.62)	(-0.68)
Tenure	-0.017	-0.019	-0.007	-0.008	-0.021	-0.024
	(-0.85)	(-0.97)	(-0.95)	(-1.10)	(-0.60)	(-0.66)
Age	-0.072	-0.009	-0.110	-0.084	-0.494	-0.382
	(-0.31)	(-0.04)	(-1.30)	(-1.00)	(-1.44)	(-1.13)
Gender	0.022	0.031	0.022	0.027	-0.132	-0.104
	(0.38)	(0.51)	(0.82)	(0.96)	(-0.84)	(-0.64)
Constant	1.673*	1.281	1.017***	0.864**	5.327***	4.683***
	(1.82)	(1.39)	(2.91)	(2.46)	(3.69)	(3.26)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	NO	YES	NO	YES	NO
Ind-Year FE	NO	YES	NO	YES	NO	YES
Observations	12,333	12,322	12,333	12,322	12,333	12,322
Adj. R-squared	0.596	0.601	0.392	0.402	0.187	0.192

Table 6

The Effect of Pay Ratio Disclosure on M&A Activity: Large vs. Small Deals

This table presents the effect of pay ratio disclosure reform on CEOs' decisions on different types of M&A deals. In panel A (B), the main dependent variable is the number of small (large) deals announced by the firm in each year. The independent variable is *High×Post*, a dummy variable equal to one for firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandates, and zero otherwise. Firm-level characteristics and CEO characteristics are included as control variables. Poisson regressions are applied in column (3) and (4) as robustness check. Firm and year or industry-year fixed effects are included in all columns. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Small Deals

Dep. Var.	# Deals				Ln (1+ # Deals)		Ln(1+Deal Value)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High×Post	**0.064*****	**0.049****	**0.282***	**0.255**	**0.027****	**0.022****	**0.092***	**0.075**
	(2.74)	**(2.08)**	**(1.82)**	**(1.39)**	**(2.45)**	**(1.96)**	**(1.80)**	**(1.43)**
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	NO	YES	NO	YES	NO	YES	NO
Ind-Year FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	12,333	12,322	5,924	5,722	12,333	12,322	12,333	12,322
Adj. R-squared	0.360	0.365	0.259	0.275	0.265	0.268	0.175	0.177

Panel B: Large Deals

Dep. Var.	# Deals				Ln (1+ # Deals)		Ln (1+ Deal Value)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High×Post	**-0.024**	**-0.027***	**-0.209****	**-0.240****	**-0.017***	**-0.020****	**-0.121**	**-0.137***
	(-1.58)	**(-1.65)**	**(-1.98)**	**(-2.11)**	**(-1.90)**	**(-2.08)**	**(-1.53)**	**(-1.67)**
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	NO	YES	NO	YES	NO	YES	NO
Ind-Year FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	12,333	12,322	7,086	6,896	12,333	12,322	12,333	12,322
Adj. R-squared	0.167	0.169	0.129	0.151	0.161	0.164	0.156	0.159

Table 7
The Effect of Pay Ratio Disclosure on Acquisition Performance

This table reports the treatment effect of Pay Ratio Disclosure Reform on announcement period abnormal returns. We use trading days 150 through 50 relative to the event date as the estimation period for each transaction in the sample to estimate the expected return. Over this estimation period, the daily returns are regressed on the market return. We require that a stock have at least 70 non-missing daily returns in days 150 through 50 to be included in the estimation. The difference between the actual daily return and market model predicted daily return using the estimated factor loadings from the regression results is the daily abnormal return. We cumulate the daily abnormal returns over the event window and use it as dependent variable. The independent variable is *High×Post*, a dummy variable equal to one for firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandate, and zero otherwise. Firm-level characteristics and deal characteristics are included as control variables. Firm and year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Dep. Var.	CAR [-1,1]	CAR [-2,2]	CAR [-3,3]	CAR [-5,5]
	(1)	(2)	(3)	(4)
High×Post	**-0.000**	**-0.000**	**-0.001**	**-0.007**
	(-0.02)	**(-0.02)**	**(-0.17)**	**(-0.96)**
Size	-0.013***	-0.015***	-0.016***	-0.016**
	(-2.62)	(-2.69)	(-2.72)	(-2.43)
Leverage	0.001	-0.006	-0.009	-0.013
	(0.04)	(-0.23)	(-0.33)	(-0.42)
Tobin's Q	-0.003	-0.005*	-0.005*	-0.008**
	(-1.11)	(-1.69)	(-1.70)	(-2.17)
Cash_holding	0.002	-0.026	-0.036	-0.062
	(0.06)	(-0.80)	(-0.99)	(-1.45)
Cap	-0.161*	-0.126	-0.124	-0.088
	(-1.92)	(-1.44)	(-1.22)	(-0.75)
PPE	0.032	0.028	0.028	0.014
	(1.46)	(1.19)	(1.06)	(0.49)
Cross_border	-0.006**	-0.005	-0.005	-0.008*
	(-2.03)	(-1.43)	(-1.41)	(-1.71)
Deal_size	-0.003	-0.011	-0.012	-0.006
	(-0.16)	(-0.52)	(-0.56)	(-0.27)
Diversify	-0.005*	-0.005*	-0.006*	-0.007*
	(-1.90)	(-1.78)	(-1.80)	(-1.82)
Cash%	0.007***	0.007***	0.008**	0.010***
	(3.12)	(2.65)	(2.43)	(2.79)
Public	-0.022***	-0.018***	-0.017***	-0.021***
	(-5.05)	(-3.86)	(-3.28)	(-3.71)
Length	0.002***	0.001**	0.001*	0.001
	(2.99)	(2.13)	(1.76)	(0.97)
Bidders	0.010	0.003	-0.011	-0.007
	(0.52)	(0.13)	(-0.49)	(-0.33)
Constant	0.109**	0.139***	0.168***	0.178***
	(2.34)	(2.76)	(3.09)	(2.86)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	3,347	3,347	3,347	3,347
Adj. R-squared	0.151	0.127	0.109	0.101

Table 8

The Effect of Pay Ratio Disclosure on Acquisition Performance: Large vs Small Deals

This table reports the treatment effect of Pay Ratio Disclosure Reform on announcement period abnormal returns for large deals and small deals. The M&A sample is categorized into large deals and small deals based on deal value. Deals with transaction value higher than median sample value (150 million dollars) are classified as large deals, otherwise small deals. We compute cumulative abnormal return for different event windows as in the previous table. The independent variable is *High×Post*, a dummy variable equal to one for firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandate, and zero otherwise. Firm-level characteristics and deal characteristics are included as control variables. Firm and year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

	Large Deals			Small Deals		
CAR	[-1,1]	[-2,2]	[-5,5]	[-1,1]	[-2,2]	[-5,5]
	(1)	(2)	(3)	(4)	(5)	(6)
High×Post	**0.018****	**0.017***	**0.019**	**-0.019*****	**-0.018****	**-0.035*****
	(2.06)	**(1.75)**	**(1.57)**	**(-2.93)**	**(-2.57)**	**(-3.55)**
Size	-0.025***	-0.027***	-0.024**	-0.010**	-0.010*	-0.011
	(-2.99)	(-2.82)	(-2.23)	(-2.18)	(-1.80)	(-1.38)
Leverage	0.016	-0.003	-0.011	-0.023	-0.033	-0.041
	(0.46)	(-0.07)	(-0.24)	(-1.29)	(-1.40)	(-1.20)
Tobin's Q	-0.004	-0.005	-0.010*	-0.003	-0.005	-0.009
	(-0.93)	(-1.21)	(-1.70)	(-0.70)	(-1.04)	(-1.53)
Cash_holding	0.041	0.030	0.048	0.017	-0.030	-0.111*
	(0.77)	(0.55)	(0.75)	(0.41)	(-0.66)	(-1.93)
Cap	-0.237**	-0.229*	-0.070	-0.204**	-0.077	-0.147
	(-2.05)	(-1.73)	(-0.36)	(-1.99)	(-0.89)	(-1.24)
PPE	0.046	0.027	0.040	0.050**	0.033	0.039
	(0.59)	(0.30)	(0.41)	(2.32)	(1.58)	(1.62)
Cross_border	-0.008*	-0.010**	-0.014**	-0.005	-0.002	-0.002
	(-1.82)	(-2.36)	(-2.45)	(-1.18)	(-0.27)	(-0.29)
Deal_size	-0.018	-0.031	-0.024	0.043	0.048	0.129*
	(-0.70)	(-1.20)	(-0.89)	(0.94)	(1.04)	(1.74)
Diversify	-0.010**	-0.010**	-0.013**	-0.005	-0.008*	-0.008
	(-2.34)	(-2.24)	(-2.30)	(-1.23)	(-1.71)	(-1.24)
Cash%	0.011***	0.010**	0.012**	-0.001	0.000	0.003
	(3.15)	(2.53)	(2.32)	(-0.18)	(0.09)	(0.48)
Public	-0.021***	-0.017***	-0.018**	-0.007	0.001	-0.012
	(-3.72)	(-2.93)	(-2.57)	(-1.14)	(0.15)	(-1.07)
Length	0.000	0.000	-0.000	0.002*	0.002	0.002
	(0.37)	(0.04)	(-0.21)	(1.82)	(1.50)	(1.17)
Bidders	0.016	0.007	-0.002	-0.105***	-0.099***	-0.065***
	(0.97)	(0.39)	(-0.08)	(-21.09)	(-19.36)	(-8.95)
Constant	0.220**	0.257***	0.239**	0.195***	0.200***	0.195***
	(2.52)	(2.64)	(2.17)	(5.38)	(4.67)	(3.19)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	1,517	1,517	1,517	1,572	1,572	1,572
Adj. R-squared	0.236	0.199	0.147	0.121	0.099	0.096

Table 9

The Effect of Pay Ratio Disclosure on Acquisition Performance: Public vs Non-Public Targets

This table reports the treatment effect of Pay Ratio Disclosure Reform on announcement period abnormal returns for public and private targets. We compute cumulative abnormal return for different event windows as in the previous table. The independent variable is *High×Post* which is a dummy variable that equals to one for firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandate, and zero otherwise. Firm-level characteristics and deal characteristics are included as control variables. Firm and year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

	Public Targets			Non-Public Targets		
CAR	[-1,1]	[-2,2]	[-5,5]	[-1,1]	[-2,2]	[-5,5]
	(1)	(2)	(4)	(5)	(6)	(8)
High×Post	**0.016**	**0.022***	**0.042****	**-0.006**	**-0.010***	**-0.019****
	(1.46)	**(1.74)**	**(2.39)**	**(-1.15)**	**(-1.67)**	**(-2.58)**
Size	0.016	0.015	0.010	-0.015***	-0.018***	-0.018**
	(1.63)	(1.22)	(0.80)	(-2.64)	(-3.04)	(-2.28)
Leverage	0.088	0.095	0.009	0.009	-0.002	-0.010
	(1.64)	(1.31)	(0.09)	(0.34)	(-0.06)	(-0.30)
Tobin's Q	-0.004	-0.009	-0.014	-0.002	-0.004	-0.007*
	(-0.60)	(-1.03)	(-1.34)	(-0.74)	(-1.27)	(-1.81)
Cash_holding	0.028	-0.056	-0.127	0.029	0.003	-0.032
	(0.48)	(-0.76)	(-1.26)	(0.81)	(0.09)	(-0.65)
Cap	-0.468***	-0.228	-0.317	-0.068	-0.048	-0.035
	(-3.61)	(-1.14)	(-1.50)	(-0.72)	(-0.48)	(-0.26)
PPE	0.178*	0.164	0.406**	0.012	0.014	0.004
	(1.95)	(1.28)	(2.44)	(0.48)	(0.55)	(0.14)
Cross_border	-0.017	-0.024	-0.023	-0.005	-0.004	-0.006
	(-0.98)	(-1.36)	(-0.98)	(-1.62)	(-1.14)	(-1.13)
Deal_size	-0.050***	-0.044**	-0.027	0.030	0.017	0.023
	(-3.05)	(-2.21)	(-0.98)	(0.85)	(0.48)	(0.62)
Diversify	0.006	0.011	0.007	-0.006**	-0.006*	-0.008*
	(0.71)	(0.99)	(0.53)	(-2.06)	(-1.90)	(-1.89)
Cash%	0.016*	0.020**	0.038***	0.004*	0.004	0.007*
	(1.67)	(2.00)	(2.98)	(1.68)	(1.50)	(1.85)
Length	-0.003	-0.002	-0.012	0.002**	0.001	0.001
	(-0.37)	(-0.24)	(-0.94)	(2.29)	(1.49)	(1.04)
Bidders	0.009	-0.001	-0.022	0.020	0.015	0.027
	(0.32)	(-0.04)	(-0.58)	(0.30)	(0.26)	(0.52)
Constant	-0.189	-0.163	-0.071	0.108	0.151**	0.147*
	(-1.63)	(-1.08)	(-0.44)	(1.38)	(2.05)	(1.82)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	332	332	332	2,810	2,810	2,810
Adj. R-squared	0.401	0.360	0.337	0.129	0.103	0.088

Table 10
The Effect of Pay Ratio Disclosure on Post-M&A CEO Pay Change

This table reports the treatment effect of Pay Ratio Disclosure Reform on change in CEO pay after M&A. The dependent variables are changes in CEO pay around acquisitions between ayr-1 to cyr+1 year, where ayr is the merger announcement year and cyr is the merger completion year. The independent variable is *High×Post*, a dummy variable equal to one for firm-year combinations for high ratio firms after the adoption of Pay Ratio Disclosure mandate, and zero otherwise. Firm-level characteristics and deal characteristics are included as control variables. Firm and year fixed effects are included in all models. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Large vs Small Deals

Dep. Var.	Δ CEO Pay % (ayr-1, cyr+1)		
	Full Sample	Large Deals	Small Deals
	(1)	(2)	(3)
High×Post	**-0.147**	**-0.059**	**-0.446****
	(-1.38)	**(-0.40)**	**(-2.40)**
Size	-0.364***	-0.026	-0.350*
	(-2.90)	(-0.24)	(-1.86)
Leverage	0.454	0.380	0.451
	(0.97)	(0.91)	(0.45)
Tobin's Q	-0.084	-0.027	-0.025
	(-1.09)	(-0.28)	(-0.23)
Cash_holding	0.128	0.118	0.030
	(0.27)	(0.24)	(0.03)
Cap	0.061	-1.417	1.376
	(0.04)	(-0.97)	(0.49)
PPE	-0.198	0.982	-0.774
	(-0.48)	(1.42)	(-1.49)
Cross_border	-0.023	-0.030	0.013
	(-0.45)	(-0.39)	(0.18)
Deal_size	0.109	0.646***	0.200
	(0.56)	(2.66)	(0.43)
Diversify	0.073	0.054	0.141**
	(1.62)	(0.89)	(2.14)
Cash%	-0.018	0.015	-0.021
	(-0.38)	(0.25)	(-0.23)
Public	-0.008	-0.045	-0.046
	(-0.14)	(-0.68)	(-0.38)
Length	0.011	0.015	0.042**
	(0.79)	(1.01)	(2.03)
Bidders	-0.395**	-0.232	-0.166
	(-2.10)	(-1.50)	(-1.17)
Constant	3.807***	0.396	3.086**
	(3.41)	(0.34)	(2.31)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	2,548	1,090	1,195
Adj. R-squared	0.332	0.392	0.404

Panel B: Public vs Non-Public Target

Dep. Var.	ΔCEO Pay % (ayr-1, cyr+1)		
	Full Sample	Public Targets	Non-Public Targets
	(1)	(2)	(3)
High×Post	**-0.168**	**0.064**	**-0.213***
	(-1.55)	**(0.13)**	**(-1.78)**
Controls	YES	YES	YES
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	2,879	193	2,486
Adj R-squared	0.308	0.599	0.317

Appendix A
Variable Definitions

Variables	Definitions	Source
Panel A: Firm-Level Variables		
High	A dummy variable which equals to 1 if pay ratio of the firm is higher than sample median ratio in 2017.	The University of Alabama Libraries.
Post	A time dummy variable which equals to 1 if year t is after 2017.	
Size	The natural logarithm of total assets.	Compustat
ROA	Net income scaled by total assets	Compustat
Leverage	Total debt scaled by total assets.	Compustat
Tobin's Q	Market value (prcc_f*csho+at-ceq-txdb) divided by total assets.	Compustat
Cap	Capital expenditures scaled by total assets.	Compustat
PPE	Net property, plant, and equipment scaled by total assets.	Compustat
Cash_holding	Cash and short-term investments (che) scaled by total assets	Compustat
Ret	Annual stock return computed by monthly return	CRSP
Sigma	Annual stock volatility computed by monthly stock return.	CRSP
Panel B: CEO Characteristics		
Age	The natural logarithm of CEO age.	Execucomp
Gender	A dummy variable equals to 1 if CEO is male, otherwise 0.	Execucomp
Tenure	The natural logarithm of years serving as CEO in the firm plus1.	Execucomp
Duality	A dummy variable equals to 1 if CEO also serves as chairman of the board.	Execucomp
Ln (TDC1)	The natural logarithm of CEO pay ($000s), measured by item #TDC1 in ExecuComp. Total compensation comprised of the following: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black Scholes), Long-Term Incentive Payouts, and All Other Total.	Execucomp
Ln (Salary)	The natural logarithm of CEO salary, $000s.	Execucomp
Ln (Cash Bonus)	The natural logarithm of CEO cash bonus, measured by the sum of nonequity incentive pay and bonus, $000s.	Execucomp
Ln (Equity)	The natural logarithm of CEO equity-based pay, measured by the sum of stock and option pay, $000s.	Execucomp
Ln (Stock)	The natural logarithm of CEO stock pay, $000s.	Execucomp
Ln (Option)	The natural logarithm of CEO option pay, $000s.	Execucomp
Cash Bonus Indicator	An indicator equal to one if CEO receives nonequity incentive pay or bonus during a given year.	Execucomp
Equity Pay Indicator	An indicator equal to one if CEO receives stock or option pay during a given year.	Execucomp

Stock Pay Indicator	An indicator equal to one if CEO receives stock pay during a given year.	Execucomp
Option Pay Indicator	An indicator equal to one if CEO receives option pay during a given year.	Execucomp
Panel C: Deal Characteristics		
Number of deals	The number of M&A events announced by the firm in a given year.	SDC Database
CAR	The cumulative abnormal return around M&A announcement date.	CRSP
Deal_size	The transaction value divided by acquirer's market value.	SDC Database, Compustat
Diversify	A dummy variable equals to 1 if the acquirer doesn't share the same 2-digit SIC codes with the target, otherwise 0.	SDC Database
Cross_border	A dummy variable equals to 1 if the acquirer and the acquiree are in different countries, otherwise 0.	SDC Database
Cash%	The percentage of cash payment in total deal value	SDC Database
Public	A dummy variable equal to 1 for public targets.	SDC Database
Length	The natural logarithm of time interval from announcement date to effective (completion) date plus 1.	SDC Database
Bidders	The number of bidders in M&A process.	SDC Database
Shares_owned	The percentage of shares owned by acquirer after the transaction	SDC Database
ΔCEO Pay	CEO pay in year cyr+1 minus CEO pay in year ayr-1, scaled by CEO pay in year ayr-1, where ayr is the merger announcement year and cyr is the merger completion year.	SDC Database and Execucomp

Appendix B: Additional Empirical Results

Table B1
The Effect of Pay Ratio Disclosure on non-CEO Executives Pay

This table studies the impact of Pay Ratio Disclosure Reform on non-CEO Executives pay. The dependent variables in panel A and B are the natural logarithm of non-CEO compensation, measured by item TDC1 in ExecuComp. The change of pay-size and pay-performance sensitivity for non-CEO executives after this mandate is captured by *Size* × *Post* in panel A and *Ret* × *Post* in panel B. Firm and year fixed effects are included in models (1)-(3). Firm and industry-year fixed effects are included in models (4)-(6). High-Low Diff reports Fisher's permutation tests for differences on *Size* × *Post* for high ratio group and low ratio group. T-statistics based on standard errors clustered by firm are reported in brackets. Panel C presents the effect of Pay Ratio Disclosure on components of non-CEO Pay. The dependent variables are the natural logarithm of separate components of non-CEO compensation in the form of salary, cash bonus, equity-based pay, annual stock awards, annual option awards. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: The Effect of Pay Ratio Disclosure on non-CEO Executives Pay-Size Sensitivity

Dep. Var.	Ln (non-CEO Pay)					
	Full Sample	High Ratio	Low Ratio	Full Sample	High Ratio	Low Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Size ×Post	-0.017***	-0.024***	0.010	-0.018***	-0.022***	0.014
	(-2.95)	(-3.38)	(0.77)	(-2.70)	(-2.59)	(0.77)
Size	0.316***	0.314***	0.304***	0.308***	0.291***	0.300***
	(17.64)	(11.76)	(12.92)	(17.07)	(11.27)	(12.48)
Ret	0.038***	0.038**	0.039**	0.046***	0.048***	0.056***
	(3.09)	(2.20)	(2.32)	(3.61)	(2.65)	(3.35)
Sigma	-0.441***	-0.346**	-0.516***	-0.428***	-0.330**	-0.454***
	(-3.73)	(-2.16)	(-2.99)	(-3.60)	(-2.02)	(-2.64)
Tobin's Q	0.049***	0.064***	0.040***	0.047***	0.063***	0.038***
	(5.91)	(5.00)	(3.72)	(5.75)	(5.37)	(3.45)
Leverage	-0.129**	-0.151**	-0.072	-0.142**	-0.143*	-0.114
	(-2.24)	(-2.04)	(-0.83)	(-2.48)	(-1.91)	(-1.37)
ROA	0.192**	0.143	0.220*	0.206***	0.107	0.217*
	(2.51)	(1.57)	(1.94)	(2.63)	(1.17)	(1.87)
Age	0.238***	0.301***	0.189**	0.233***	0.297***	0.183**
	(4.62)	(5.46)	(2.33)	(4.53)	(5.31)	(2.27)
Gender	0.121***	0.143***	0.094***	0.122***	0.145***	0.093***
	(10.59)	(9.57)	(5.50)	(10.76)	(9.60)	(5.46)
Constant	3.817***	3.709***	3.888***	3.911***	3.927***	3.939***
	(13.81)	(11.30)	(9.50)	(14.21)	(12.07)	(9.61)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	NO	NO	NO
Industry-Year FE	NO	NO	NO	YES	YES	YES
Observations	52,288	26,970	25,318	52,288	26,970	25,318
Adj. R-squared	0.609	0.603	0.474	0.611	0.607	0.484

Panel B: The Effect of Pay Ratio Disclosure on non-CEO Executives Pay-Performance Sensitivity

Dep. Var.	Ln (non-CEO Pay)					
	Full Sample	High Ratio	Low Ratio	Full Sample	High Ratio	Low Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Positive×Post	0.035	-0.016	0.064	0.043	-0.016	0.054
	(1.18)	(-0.44)	(1.47)	(1.40)	(-0.42)	(1.27)
Positive	0.021	0.037	0.014	0.025	0.048*	0.025
	(1.08)	(1.38)	(0.49)	(1.22)	(1.71)	(1.00)
Negative×Post	-0.036	0.008	-0.027	-0.020	0.062	-0.036
	(-0.50)	(0.08)	(-0.29)	(-0.28)	(0.63)	(-0.39)
Negative	0.065	0.061	0.048	0.069	0.034	0.098
	(1.09)	(0.81)	(0.57)	(1.22)	(0.47)	(1.28)
Controls	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	NO	NO	NO
Industry-Year FE	NO	NO	NO	YES	YES	YES
Observations	52,288	26,970	25,318	52,288	26,970	25,318
Adj. R-squared	0.609	0.603	0.474	0.611	0.606	0.484

Panel C: The Effect of Pay Ratio Disclosure on Components of non-CEO Executives Pay

Dep. Var.	Ln (Total)	Ln (Salary)	Ln (Bonus)	Ln (Equity)	Ln (Stock)	Ln (Option)
	(1)	(2)	(3)	(4)	(5)	(6)
High×Post	-0.083***	-0.024*	-0.207***	-0.220***	-0.243***	-0.091
	(-4.47)	(-1.82)	(-3.17)	(-3.06)	(-2.60)	(-0.79)
Controls	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Industry-Year FE	YES	YES	YES	YES	YES	YES
Observations	52,288	52,288	52,286	52,288	52,288	52,288
Adj. R-squared	0.611	0.466	0.380	0.398	0.471	0.623

Table B2
Univariate Analysis on CEO Alignment before and after Mandate

Panel A. Delta ($1000)

	High Ratio	Low Ratio
	(1)	(2)
Before 2018	1250.03	608.96
After 2018	950.19	1166.85
After-Before Difference	-299.84**	557.89
(p-value)	(0.04)	(0.85)

Panel B: Alignment ($)

	High Ratio	Low Ratio
	(1)	(2)
Before 2018	2.21	2.99
After 2018	1.59	2.60
After-Before Difference	-0.63***	-0.39
(p-value)	(0.00)	(0.23)

Table B3
The Effect of Pay Ratio Disclosure on CEO Alignment

This table reports the treatment effect of pay ratio disclosure on CEO alignment. The dependent variable in column (1) is *CEO Delta*, defined as dollar change in the executive's wealth for a 1% change in stock price. The dependent variable in column (2) is *CEO Alignment*, defined as dollar change in the executive's wealth for $100 change in shareholder wealth. The difference-in-differences estimator is captured by the interaction between an indicator variable, *High*, set equal to one for firms with pay ratio higher than its median of sample firms in 2017, and an indicator variable, *Post*, set to one for fiscal years from 2018 to 2022. Firm and year fixed effects are included in all models. The model is estimated using Poisson regressions. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Dep. Var.	Pay-Performance Sensitivity	
	Delta ($1000)	Alignment ($)
	(1)	(2)
High×Post	**-0.456****	**-0.265***
	(-2.14)	**(-1.85)**
Ret	0.206***	-0.128
	(2.87)	(-1.19)
Sigma	2.041*	4.889*
	(1.74)	(1.86)
Size	0.476***	-0.416***
	(2.80)	(-4.18)
ROA	1.287***	0.236
	(3.28)	(0.63)
Leverage	1.148*	1.477**
	(1.75)	(2.09)
Tobin's Q	-0.018	0.009
	(-0.26)	(0.37)
Duality	-0.520*	0.694***
	(-1.86)	(3.84)
Age	1.797**	1.112
	(2.39)	(1.43)
Gender	-0.155	0.319
	(-0.70)	(1.21)
Tenure	0.464***	0.149
	(4.23)	(0.93)
Constant	-3.632	-1.080
	(-1.01)	(-0.36)
Firm FE	YES	YES
Year FE	YES	NO
Observations	12,211	12,299
Pseudo. R-squared	0.892	0.705

Table B4
The Effect of Pay Ratio Disclosure on M&A Payment

This table represents firm-level DiD regressions on the number of acquisitions with stock payment from 2012 to 2022. We require the percentage of stock payment in the whole payment package is higher than 0 and then count the number of such deals. The dependent variables in column (1) and (2) are the number of M&A deals with stock payment in each year. Results for log-transformation are shown in column (3) and (4). The independent variable is *High×Post*, a dummy variable that equals to one for the firm-year combination if the firm has pay ratio above median pay ratio in 2017 after the adoptions of Pay Ratio Disclosure mandates, and zero otherwise. Firm-level characteristics and CEO characteristics are included as control variables. Firm and year or industry-year fixed effects are included in all columns. T-statistics based on standard errors clustered by firm are reported in brackets. *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Dep. Var.	# Deals with Stock Payment		Ln (1+# Deals with Stock Payment)	
	(1)	(2)	(3)	(4)
High×Post	**0.016***	**0.017***	**0.009***	**0.010***
	(1.90)	**(1.91)**	**(1.74)**	**(1.74)**
Size	-0.048***	-0.045***	-0.031***	-0.030***
	(-5.15)	(-4.57)	(-5.50)	(-5.11)
ROA	0.097***	0.124***	0.064***	0.084***
	(2.65)	(3.47)	(2.66)	(3.51)
Leverage	-0.027	-0.035	-0.016	-0.021
	(-1.10)	(-1.43)	(-1.05)	(-1.36)
Tobin's Q	0.004	0.003	0.003	0.002
	(1.35)	(1.10)	(1.39)	(1.11)
Cash_holding	0.052	0.051	0.035	0.034
	(1.27)	(1.18)	(1.35)	(1.28)
Cap	-0.277**	-0.221*	-0.172**	-0.136
	(-2.23)	(-1.72)	(-2.16)	(-1.63)
PPE	0.180***	0.190***	0.121***	0.128***
	(3.30)	(3.15)	(3.34)	(3.21)
Duality	0.013	0.015	0.009*	0.010*
	(1.35)	(1.54)	(1.65)	(1.80)
Tenure	-0.000	-0.001	0.000	-0.000
	(-0.03)	(-0.24)	(0.09)	(-0.08)
Age	-0.079**	-0.074**	-0.053**	-0.050**
	(-2.39)	(-2.24)	(-2.39)	(-2.25)
Gender	-0.002	-0.006	-0.001	-0.003
	(-0.22)	(-0.50)	(-0.19)	(-0.42)
Constant	0.720***	0.682***	0.475***	0.453***
	(4.84)	(4.56)	(4.89)	(4.69)
Firm FE	YES	YES	YES	YES
Year FE	YES	NO	YES	NO
Industry-Year FE	No	YES	No	YES
Observations	12,333	12,322	12,333	12,322
Adj. R-squared	0.158	0.151	0.152	0.145