

EXECUTIVE OPTIONS AND PAYOUT POLICY IN THE 21ST CENTURY

**A STUDY OF EQUITY INCENTIVES, CORPORATE PAYOUT
POLICY, AND THE EFFECTS OF DISCLOSURE REGULATION**

ERIK AMÉR

JACK BECKMAN

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Executive Options and Payout Policy in the 21st Century: A Study of Equity Incentives, Corporate Payout Policy, and the Effects of Disclosure Regulation

Abstract

In this paper, we examine the relationships between executive equity-incentives and corporate payout policy. Using data on S&P 1500 firms from 2000 to 2019, we find that firms with higher executive options have lower total payouts, but that this relationship is weaker than found in earlier literature. We also find a negative relationship between executive stock ownership and total payout, casting doubt on the role of executive share ownership in mitigating the free cash flow problem. Furthermore, we examine the effects of a 2006 SEC regulation concerning executive compensation disclosure, hypothesizing that reduced information asymmetry could have mitigated agency conflicts associated with executive options and payout policy. Using a difference-in-differences estimation, we find that the regulation had no discernible impact on the relationship between executive options and total payout. In short, our findings suggest that executive equity-incentives alter the size and composition of firm payouts, and that the effectiveness of disclosure regulation in mitigating such issues is unclear.

Keywords

Executive Equity-Incentives, Stock Options, Payout Policy, Free Cash Flow Problem

Authors

Erik Amér (25062)

Jack Beckman (24946)

Tutors

Olga Obizhaeva, Assistant Professor, Department of Finance

Examiner

Adrien d'Avernas, Assistant Professor, Department of Finance

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I. Introduction

Executive equity-based incentives are commonly used to better align the interests of managers with those of shareholders. Such incentives should incentivize executives to increase firm-value through exposing them to the financial impacts of their decisions. Meanwhile, executives cannot only increase the value of their equity-based compensation by improving firm performance, but also through decisions on corporate payout policy.

There is a body of literature that examines the relationships between executive equity-based incentives and payout policy. Fenn and Liang (2001) found that executive option usage alters the payout policies of firms. Cuny, Martin, and Puthenpurackal (2009) found that firms with more executive options have lower total payout, potentially exacerbating the free cash flow problem, described by Michael C. Jensen (1986) as one of the most severe agency conflicts between managers and shareholders.

Yet, there is little research on the relationship between executive stock options and payout policy in the 21st century, despite significant changes in payout policies. At the beginning of the century, financial economists worried that dividends were substantially decreasing (Fama and French, 2001). This has changed. For example, the inflation-adjusted amount paid out through dividends and repurchases by public industrial firms was three times larger from 2000-2019, than from 1971-1999, where a higher payout rate accounts for most of the change (Kahle, 2021). Furthermore, since previous literature finding agency problems associated with executive options, regulations have been implemented to reduce information asymmetry regarding executive compensation. In 2006, the SEC adopted disclosure requirements intended to provide investors with a clearer and more complete picture of executive compensation, including options and stock awards (SEC, 2006).

This paper revisits the relationships between executive equity-incentives, particularly stock options, and corporate payout policy in the 21st century. Furthermore, we evaluate the effects of the executive compensation regulation implemented in 2006, to examine the effects of improved information on the relationship between executive options and payout policy.

Such an analysis is timely, given that the SEC recently highlighted the issue of executive options, incentives misalignment, and payout policy. As a motivation for a regulation proposal from 2021, the SEC underscore the incentive for executives to make share repurchases to artificially inflate EPS and share price, in order to maximize compensation from share price- or EPS-tied compensation arrangements.

Furthermore, the SEC raised concerns of opportunistic use of share repurchases by insiders. Specifically, they highlight the “(...) potential for share repurchases to be used by issuers as a mechanism to inflate the compensation of their executives in a manner that is not transparent to investors or the market” (SEC, 2021).

In light of these concerns, the SEC proposed, among other things, a requirement for issuers to disclose: “The objective or rationale for its share repurchases and process or criteria used to determine the amount of repurchases”. According to the SEC, the proposed amendments would allow investors to gain insight into any potential relationship between executive compensation, share repurchases, and stock sales (SEC, 2021). Having been recently emphasised by the SEC shows that the issues of executive compensation and incentives misalignment concerning payout policy remain relevant. As such, we argue that it is appropriate to evaluate the

effects of previous SEC regulations, which aimed to mitigate information asymmetry with regard to executive compensation and payout policy, in light of the new regulation proposals.

Stock options, in particular, could affect corporate payout policy in multiple ways. Executive stock options are generally not dividend-protected (Lambert et al., 1989; Murphy, 1999). Consequently, the exercise price of executive stock options does not decrease in conjunction with dividend payments, which implies that the value of outstanding stock options, like any call option, is negatively associated with future dividend payments. This negative relationship could provide a disincentive for executives who hold stock options to make dividend payments. If this mechanism dominates, stock options would exacerbate potential agency conflicts between shareholders and executives.

It is argued by Fenn and Liang (2001) that executive stock options imply executives being indifferent between using excess cash for repurchases or retaining it. But, an increase in repurchases could be used to offset the dividend reduction to achieve the target payout ratio of a firm. Such usage of share repurchases could potentially leave the total payout of a firm unaffected by the reduction in dividends.

Executive stock options could also provide another incentive to use share repurchases. Specifically, share repurchases could be used to counter stock options' dilutive effect on EPS (earnings per share) – as the number of shares outstanding decreases with repurchases (Brav et al., 2005; Cuny et al. 2009). In addition to this anti-dilution incentive, there can also be another incentive for option-holding managers to prefer share repurchases over dividends. Since share repurchases reduce the number of shares outstanding, the fraction of the firm underlying each share increases, which can induce an increase in price per share. Consequently, the value of executives' outstanding options may increase (Cuny et al., 2009).

In theory, the board of directors of a firm decide on payout policy. However, the relationship between executives, the board of directors, and payout policy appears to be more complex in practice. Brav, Graham, Harvey and Michaely's (2005) survey and interviews of CFOs shed light on this relationship. Most of the financial executives suggested that it is the executives who determine appropriate levels of dividends and repurchases, and that the board then later approves their decision. If so, the decision is initiated within the firm – yet, it is likely that executives will only propose payout levels that the board will approve.

This paper investigates the relationship between executive stock-based compensation, particularly stock options, and corporate payout policy for public U.S. firms in the S&P 1500 index from 2000 to 2019. This paper also examines the effect of regulatory changes regarding executive compensation adopted by the SEC in 2006, which aimed to reduce information asymmetry between executives and shareholders. This paper examines if and how these regulatory efforts affected relationships between executive options and corporate payout policy.

Our empirical findings are as follows. Using a Tobit model with various controls and industry fixed effects, we find that firms with higher executive option ownership have lower total payouts, but that this relationship is weaker than found in earlier literature. Specifically, we show that a one standard-deviation increase in option ownership is associated with an 11-bp decrease in total payout for the median firm in the full sample, and a 22-bp decrease in dividend payout. We also find a negative relationship between executive stock ownership and total payout, which stands in contrast to conventional theory, and casts doubt on the role of executive share ownership in mitigating the free cash flow problem.

This paper also examines the effects of a 2006 SEC regulation concerning executive compensation. Through difference-in-differences estimations, we find that the regulation had no discernible effect on the relationship between executive options and total payout. We also find an unexpected negative treatment effect on dividends for firms with above median executive option holdings. This raises a question on the effectiveness of improved information, and regulatory disclosure, in mitigating the agency problem associated with executive options-incentives and payout policy.

II. Related literature

Prior literature suggests that executive stock options reduce incentives to pay out dividends while possibly increasing the incentives to repurchase shares (Fenn and Liang, 2001; Kahle, 2002; Cuny et al., 2009). Specifically, Fenn and Liang (2001) found, among other things, that firms with more executive stock options exhibit lower dividend payouts - an effect that is only partially offset by share repurchases. They also found a positive relationship between executive stock options and the decision to repurchase shares.

Kahle (2002) studied how executive options affect the share repurchase decision aspect of corporate payout policy, but not the effect of options on total payout, and found that share repurchases are announced when executives have large amounts of stock options outstanding, among other things.

Cuny et al. (2009) comprehensively examine how executive stock option incentives affect total payout. They found, among other things, that firms with higher managerial stock options have lower total payouts. Their findings suggest a potential unintended consequence of executive option usage - that it creates incentives to lower dividends and by extension, possibly total payout, potentially worsening the free cash flow problem.

It could be argued that, theoretically, payout policy is firm-specific and depends on where profits are optimally invested; through retention of earnings, reinvestment, or payouts. A conventional example would be a high-growth firm considering net profits best used for reinvestment, while a mature company with few investment opportunities would tend to pay out more to shareholders. If the payout decision were solely rational (and in the best interest of shareholders), in line with these conventions, it would be expected that the composition of executive compensation, among other things, should be inconsequential to the payout decision. For example, Modigliani and Miller (1958) argue that firm value is driven by operating and investment decisions rather than financing or payout decisions.

However, Brav et al. (2005) showed that dividend and investment decisions are undertaken simultaneously (rather than being based on free cash flow in excess of investment opportunities), while the repurchase decision is made later. Specifically, interviewed managers stated that they would pass up on some NPV-positive investment projects to avoid cutting dividends. From the survey responses, Brav et al. conclude that dividends are not residual free cash flow as the Miller and Modigliani (1961) theorem suggested they should be. Therefore, factors such as the design of executive equity incentives cannot be viewed as inconsequential to the payout decision - and by extension, the agency problem between managers and shareholders.

It could also be argued that the composition of executive equity incentives should be unimportant to the payout, reinvestment, or retention decision - as executives holding shares or

options should ultimately want to maximize firm value. If so, self-interested managers would use free cash flows to maximise firm value, with incentives aligned with other shareholders.

However, there are two main points which counteract this argument. First, optioned executives are incentivized to cut dividends even in the absence of better uses of free cash flows, to the detriment of external shareholders, so as not to lower the value of their options. Second, executives might prefer dividends due to their liquidity benefits. Specifically, executives who own shares are dissimilar to external shareholders as they generally cannot easily sell their shares and realize capital gains, as they are insiders often possessing material and non-public company information. Furthermore, selling company shares could signal negative sentiments to financial markets, which can have a negative effect on the share price. As such, self-interested managers who own shares, as opposed to options, could prefer dividends due to their liquidity benefits.

III. Hypotheses and research design

The first hypothesis of our study is that there will be a negative relationship between executive stock options and total payout and a positive (negative) relationship with share repurchases (dividends).

These relationships are supported by previous literature (Cuny et al. (2009), Fenn and Liang (2001), Kahle (2002)) and the notion that stock options are generally not dividend-protected, which disincentivizes executives from paying dividends. This paper revisits these issues in a longer and more recent sample period (specifically, from 2000-2019) than previous literature on these issues. However, there have been significant developments in both executive compensation and payout policy in the past two decades. Thus, we do not expect our results to display the same magnitude of relationships as previous literature.

In terms of research design, the empirical study examines the relationship between executive stock options and corporate payout policy, using a large set of data over a large sample period. Using payout and its components as the dependent variables, we employ an MLE Tobit model censored at zero since there are a number of observations where the firm payout is zero (Weisbenner, 2000; Fenn and Liang, 2001) and neither dividends, repurchases, or the sum of the two, can be negative. We use industry-fixed effects, using the four-digit GICS codes (Global Industry Classification Standard) as industry dummy variables. It should be noted that using a non-fixed effect model leaves the possibility of omitting firm-specific effects, and unobserved heterogeneity, such as differences in management quality corporate governance.

Total payout, dividends, and repurchases are the dependent variables in our regressions. To make the observations comparable, we scale by the market value of equity, of a given firm-year. The two main explanatory variables of interest are executive options and executive shares owned (both scaled by total shares outstanding). In addition to this, various control variables are included, which have been found in previous literature to affect payout policy, which are described further in the data section.

The second hypothesis of our study is that the relationships between executive stock options and payout policy were weakened following regulation changes by the SEC in 2006 (as well as in 2009, to a lesser extent). These regulations imposed stricter disclosure requirements regarding executive compensation, and particularly executive options, with the aim of mitigating information asymmetry between executives and shareholders. Thus, we hypothesize that the regulation imposed by the SEC in 2006 mitigated the agency conflict associated with the free cash

flow problem, defined by Jensen (1986), and consequently weakened the negative relationship between executive options and firm total payouts. Such an effect would imply firms with large amounts of executive options (*ceteris paribus*) exhibiting relatively greater payouts after 2006 than they would have without the regulation changes (*i.e.*, in the counterfactual).

We apply a difference-in-differences model as an identification strategy, to examine the effects of the 2006 SEC regulation on the relationships between stock options and total payout and its components. Here, we focus on a shorter sample period from 2003-2010, resulting in four years prior to the regulation implementation and four years post (as the regulation was implemented in November 2006.) We treat 2007-2010 as the post-treatment period and construct a dummy variable equal to zero (one) for 2003-2006 (2007-2010). To examine the effects of the regulation on the relationship between executive options and payout policy, we divide firms into a treatment and control group based on executive option ownership, which should affect the degree of treatment.

An ideal treatment and control group split would consist of firms with executive options and firms without them. However, there are few firms in the sample which had not used executive options for any year prior to the 2006 SEC regulation, leading to a small control group of less than one hundred firm-year observations. As such, we split the sample into firms with above (as the treatment group) and below (as the control group) the median quantile in executive options owned, scaled by common shares outstanding, in years prior to the 2006 SEC regulation.

Specifically, we hypothesize that the implementation of strict disclosure requirements on executive options would lead to greater scrutiny of executive compensation, and its ties to payout policy decisions, by external stakeholders. We hypothesize that this could deter option-holding managers from pursuing payout policies specifically to maximize their own equity-based compensation. This relies on two assumptions. First, that information asymmetry is reduced as external shareholders and other stakeholders will be attentive to this disclosed information. Second, that external stakeholders, particularly investors, can effectively punish executives who pursue self-interested payout policies, for example through voting rights or in the financial market through lower valuations and demand for shares of the firm.

The study is limited to a sample of U.S. firms in the S&P 1500. The sample selection was restricted through data availability, as Execucomp only provides data on U.S. firms in the S&P 1500. Yet, the sample of U.S. firms has various benefits. First, the U.S. is the largest economy in the world. Second, more than 90 % of the U.S. market capitalization is represented in the S&P (S&P Global, 2022). And in turn, the U.S. economy accounted for approximately 59.9 % of the total equity market in the world as of January 2022 (Statista, 2022). As such, the S&P 1500 sample provides a large scope for the study. Furthermore, domestic regulatory environments are distinct with regard to executive compensation legislation & payout policy. Consequently, significant unobserved differences across countries are to be expected, rendering a cross-national sample, of for example European firms, problematic.

IV. Data sources, Sample Selection and Variable Construction

A. Data Sources and Sample Selection

The data for the sample period is between 2000–2019. We chose this sample period for three reasons. First, we aim to capture a large enough sample period for a more recent data period

compared to previous literature, in particular Cuny et al. (2009). Studying the effect of a more recent data period is relevant as corporate payout has increased substantially in size and has also changed in composition. Kahle and Stulz (2021) found that the average annual inflation-adjusted payout of dividends and repurchases has increased by more than three years times for public industrial companies in the U.S between the years 2000-2019 compared to the years 1971-1999, they find that this increase is explained by 63% increase in payout rates.

Secondly, we aim to examine the effect of SEC 2006 regulation on the relationship between executive options and payout policy. We purposefully limit the sample period to 2019, as not to capture effects specific to the covid-19 pandemic. For example, legislations such as the Coronavirus Aid, Relief, and Economic Security Act (CARES act) prohibited a company from conducting repurchase if had procured a loan under the CARES act for a period of time. Thus, we end the sample period in 2019 to omit such unrepresentative effects.

The data for the sample period 2000–2019, was obtained by merging data from Compustat and Execucomp. The sample was refined by removing companies with operations mainly in financial services as well as heavily regulated industries such as banks and insurance companies¹ and utilities². Analogous to previous literature, we exclude these industries as their payout policies may be severely affected by regulatory factors (Smith and Watts (1992), Fenn and Liang (2001), Cuny et al. (2009)). Followingly, firms SIC codes corresponding to the aforementioned industries (see footnotes) were excluded.

We also removed any companies that had missing values for any of our variables, as well as companies that only had data for less than three years. To account for events such as leveraged recapitalizations, targeted repurchases or liquidations, we omit outlier observations of payouts exceeding 25% of market value of equity, analogous to Cuny et al. (2009). The refined full sample for the 2000-2019 period consists of 21,729 firm-year observations. The sample used for the difference-in-differences estimation (Section D.) is shortened from the full sample, covering the 2003-2010 period, and consists of 7,853 firm-year observations.

As we hypothesize that the dividend-disincentive originates from the fact that options are non-dividend protected, it would have been ideal to be able to distinguish firms utilizing dividend-protected options from those who do not. However, Execucomp does not provide data to distinguish between non-dividend and dividend protected option. Nonetheless, previous literature has shown that options are rarely dividend protected (Lang and Litzenberger (1986), Lambert et al. (1989), Murphy (1999)). Thus, we rely on this notion, and assume that the executive options in our data are non-dividend protected.

B. Variable construction

B1. Payout Variables

Payout to shareholders consists of either dividends or repurchases. Therefore, total payout is defined as the sum of dividends paid to shareholders and share repurchases. As in Fenn and Liang (2001) and Kahle (2002), all payout variables are scaled to the company's market value of equity [Compustat item CSHO $\times$ Compustat item PRCC] to make them comparable. Dividend Payout

¹ SIC codes 6000-6999

² SIC codes 4813 and 4900-4999

is calculated as total dividend payout divided by market value of equity $[(\text{Compustat item DVC}) / (\text{Compustat item CSHO} \times \text{Compustat item PRCC})]$.

With regards to share repurchases, the Compustat item PRSTKC includes both purchases of common and preferred stock. This Compustat item can overstate actual share repurchase in multiple ways. For example, it can include other types of stock repurchases, such as self-tender offer or privately negotiated transactions, and it aggregates other security classes that are converted into common or preferred stock (Jagannathan et al. (2000), Stephens and Weishbach, 1998).

As we are solely interested in the repurchases of common shares, we adjust this measure and use a similar definition to Cuny et al. (2009). Furthermore, we restrict our measure of share repurchases to positive values. Thus, share repurchase are defined as purchases of common and preferred stock adjusted for any decreases in preferred stock divided by market value of equity $[\text{MAX}(0, (\text{Compustat item PRSTKC} + \text{MIN}(0, \Delta \text{Compustat item PSTKRV})) / (\text{Compustat item CSHO} \times \text{Compustat item PRCC}))]$. After adjusting repurchases for decreases in preferred stock, we perform a 98% trim of share repurchases to mitigate the exaggeration of actual repurchases of common stock, and to exclude outliers such as self-tender offers, in order to avoid distorting effects.

B2. Managerial incentives variables

As we hypothesize that executive incentive programs of options and stocks will influence the decision on corporate payout policy, we construct variables for executive-held options and stock incentives. Furthermore, we use one-year lagged variables for the managerial incentives, as these would influence corporate payout policy during the fiscal year. Executive Options Owned are calculated as the sum of unexercised exercisable options and unexercised unexercisable options divided by common shares outstanding $[(\text{Execucomp item UNEX_EXCER_NUM} + \text{Execucomp item UNEX_UNEX_NUM}) / (\text{Compustat item CSHO} \times \text{Compustat item PRCC})]$.

Executive Shares Owned is calculated as shares owned excluding options divided by common shares outstanding $[\text{Execucomp item SHROWN_EXL_OPTS} / (\text{Compustat item CSHO} \times \text{Compustat item PRCC})]$. To measure the executive stock and options incentives for a given firm- year, we aggregate the executive options and shares held by all executives reported for a firm by ExecuComp, analogous to Fenn and Liang (2001) and Cuny et al. (2009).

B3. Antidilution incentive variable

The rationale behind the antidilution incentive variable is that stock options, which both executives and non-executives may hold, become dilutive when the options are in-the-money. This dilutive nature of options, therefore, reduces earnings per share and the fractional claim to the firm per share and option. Followingly, we would expect an incentive for managers to use share repurchases to counter the dilution caused by stock options (as Cuny et al. (2009) found evidence of). As such, a positive relationship between repurchases and the antidilution incentive variable would be expected.

The antidilution incentive variable is calculated as the change in total annual fully diluted shares outstanding while accounting for any repurchases made during the year by adding them back $[(\text{Compustat item CSHFD}_t + \text{"Share Repurchases"}_t / \text{Compustat item PRCC}_t) / (\text{Compustat item CSHFD}_{t-1} + \text{"Share Repurchases"}_{t-1} / \text{Compustat item PRCC}_{t-1})]$. Furthermore, we omit outliers that arise from adding back share repurchases, as these can be severely overstated by

Compustat (as discussed in section B1.), and perform a 98 % trim of the antidilution incentive variable.

We make two additional adjustments to total shares outstanding fully diluted [Compustat item CSHFD].. As Compustat's data is not adjusted for stock splits or stock dividends, we use Compustat's adjustment factor [Compustat item AJEX] to adjust the shares outstanding. Furthermore, to avoid a notable reduction in sample size, we use [Compustat Item CSHPRI] when [Compustat item CSHFD] is missing and use [Compustat item CSHO] when [Compustat item CSHPRI] is missing.

B3. Firm Characteristics Variables

Previous research has found various firm characteristics to have an effect on payout policy (Fenn and Liang (2001)). These characteristics include, but are not limited to, firm size, investment opportunities, and free cash flow. Therefore, we include a number of control variables to account for firm characteristics.

Firm size, calculated as the natural logarithm of total assets [Compustat item AT] is used as a proxy for external financing costs, as one would expect larger firms to be able to acquire external financing at a lower cost than smaller firms (Fenn and Liang (2001), Smith and Watts (1992), Oppler and Titman (1993)). Therefore, if external financing costs are lower for larger firms, a positive relationship between size and total payout is to be expected. We also use firm size as a control for differences in corporate finance structure as it could be the case that there is a difference in incentive programs between large and small firms. In line with Jagannathan, Stephens and Weisbach (2000), we include a proxy variable for free cash flow, calculated as earnings before interest, tax, depreciation and amortization minus capital expenditures [Compustat item OIBDP - Compustat item CAPEXV], as we expect the size and predictability of free cash flow to have a positive effect on payout.

We use the ratio of tangible to intangible assets to proxy for the variability of funds. The variable is calculated as total assets less intangible assets divided by total assets [(Compustat item AT- Compustat item 33)/ Compustat item AT], and we expect a positive relationship between this ratio and payouts. Furthermore, to proxy for investment opportunities, we include a market-to-book ratio variable, calculated as total assets plus market value of equity less book value of equity divided by total assets [(Compustat item AT + Compustat item CSHO × Compustat item PRCC - Compustat item CEQ)/ Compustat item AT]. Here, it is expected that firms with higher market-to-book ratios will have greater investment opportunities and lower free cash flow and payout.

The relationship between debt usage and payout can be viewed from two perspectives. If firms direct free cash flows to debtholders, we expect leveraged firms to have lower payout. However, it could also be argued that firms that undertake higher levels of debt have more stable free cash flows and are more likely to be profitable. If so, we would expect debt to have a positive relationship with payout. Debt ratio is calculated as long-term debt plus debt in current liabilities divided by total assets [(Compustat item DLTT + Compustat item DLC)/ Compustat item AT]

V. Methodology and Empirical Results

A. Methodology

We use three separate MLE Tobit models censored at zero regressions for our three dependent variables: the dollar value of “Total Payout”, “Dividend Payout” and “Repurchases Payout” all divided by the market value of equity. Executive stock options, executive share holdings, and change in diluted shares, are the explanatory variables along with a series of control variables. The equations for the tobit model are constructed as follows:

$$Total\ Payout_i = \beta_0 + \beta_1 Options_i + \beta_2 Shares_i + \beta_3 ChangeDiluted_i + \beta_4 Controls_i + FE_n + \epsilon_i$$

$$Dividends_i = \beta_0 + \beta_1 Options_i + \beta_2 Shares_i + \beta_3 ChangeDiluted_i + \beta_4 Controls_i + FE_n + \epsilon_i$$

$$Repurchases_i = \beta_0 + \beta_1 Options_i + \beta_2 Shares_i + \beta_3 ChangeDiluted_i + \beta_4 Controls_i + FE_n + \epsilon_i$$

Options and Shares are executive options and executive shares both scaled by market value of equity; ChangeDiluted is our proxy for antidilution incentives; Controls is a constructed vector of control variables which have been identified to have an effect on payout policy in previous literature. This includes market-to-book ratio, free cash flow, the natural logarithm of total assets, variability of funds and debt ratio. FE_n is a set of dummy variables for each industry defined by the GICS codes. We use a Tobit model censored at zero, as there numerous observations where payouts are zero, and as payouts cannot take on negative values.

B. Descriptive Statistics

In Figure 1, the mean values of total payout and dividends, scaled by market value of equity, and executive options owned, scaled by common shares outstanding, are presented for the period 2000–2019. It can be observed that executive option ownership has decreased on average during the sample period. Total payout exhibits considerable fluctuations, driven by the volatility of share repurchases. Meanwhile, average dividend payout (scaled by market value of equity) displays considerably less fluctuation.

Figure 1.**Mean Total Payout, Dividend Payout, and Executive Options 2000-2019**

The mean values of total payout (dividends plus repurchases) and dividends, both scaled by the market value of equity from 2000-2019. Also, total executive stock options scaled by common shares outstanding from 2000-2019. Graph A of Figure 1 uses data for the full sample, consisting of 21,741 firm-years.

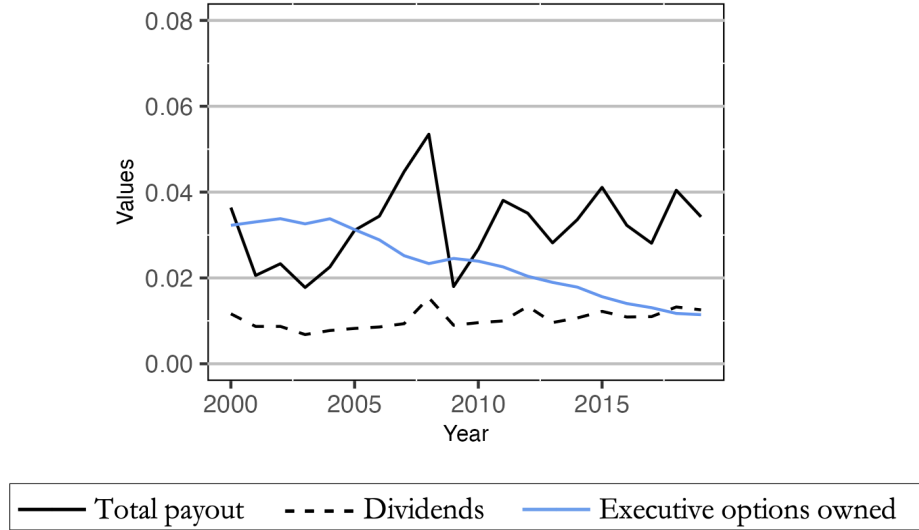


Table 1 presents the descriptive statistics of the different payout variables, executive stock-based incentives variables, antidilution incentive variable, and control variables used in the regression analysis. Panel A. reports descriptive statistics for the full sample, while Panel B. presents descriptive statistics for the shortened 2003-2010 sample used in subsequent difference-in-differences analysis. For the full sample, the median total payout is 1.93% of market value of equity. The median executive options and executive shares are 1.58% and 0.87% of total shares outstanding, respectively.

Table 1.
Descriptive Statistics

Presented in Panel A. is the full sample for the period 2000-2019. Panel B. presents descriptive statistics for the difference-in-differences sample (used in section D.), which is shortened from the full sample to contain years 2003-2010. “Total Payout” is repurchases plus dividends, both scaled by market value of equity. “Dividends/Market Value” is dividends scaled by market value of equity. “Repurchases / Market Value” is repurchases adjusted for any changes in preferred stock, divided by market value of equity. “Options Owned_{*t-1*}/Shares_{*t-1*}” and “Shares Owned/Shares_{*t-1*}” is executive options and stock divided by total shares outstanding lagged by one year. “%Change Diluted Shares_{*t-1,t*}” is the YoY change in total shares fully diluted adjusted for any repurchases divided by price. “Market-To-Book Ratio” is total assets plus market value of equity minus book value of equity all divided by total assets. “Free Cash Flow/Total Assets” is operating income before depreciation minus capital expenditures (CapEx), all divided by total assets. “log Total Assets” is the natural logarithm of total assets. “Tangible Assets/Total Assets” is total assets minus intangible assets all divided by total assets. “N” denotes the number of firm-years. P5, P25, P75, P95 are the 5th, 25th, 75th and 95th percentiles. “Std Dev” is the standard deviation.

Variable	N	Mean	P5	P25	Median	P75	P95	Std Dev
<i>Panel A. Full Sample</i>								
Total Payout	21,729	0.0320	0.0000	0.0014	0.0193	0.0467	0.1114	0.0394
Dividends/Market Value	21,729	0.0104	0.0000	0.0000	0.0000	0.0160	0.0395	0.0175
Repurchases/Market Value	21,729	0.0216	0.0000	0.0000	0.0048	0.0300	0.0946	0.0348
Options Owned _{<i>t-1</i>} /Shares _{<i>t-1</i>}	21,729	0.0228	0.0000	0.0060	0.0158	0.0315	0.0685	0.0254

Shares Owned/Shares _{t-1}	21,729	0.0374	0.0006	0.0031	0.0087	0.0274	0.1941	0.0848
%Change Diluted Shares _{t-1,t}	21,729	0.0314	-0.0272	0.0015	0.0128	0.0353	0.1552	0.0710
Market-To-Book Ratio	21,729	2.0568	0.9091	1.2332	1.6348	2.3424	4.5729	1.7505
Free Cash Flow/Total Assets	21,729	0.0811	-0.0777	0.0456	0.0876	0.1327	0.2335	0.1544
Log Total Assets	21,729	21.2427	18.8254	20.1707	21.1887	22.2771	23.9077	1.5626
Tangible Assets/Total Assets	21,729	0.7831	0.3766	0.6566	0.8324	0.9600	1.0000	0.2016
Debt Ratio	21,729	0.2403	0.0000	0.0558	0.2112	0.3428	0.5801	0.8564

*Panel B. DiD Sample
2003–2010*

Total Payout	7,853	0.0317	0.0000	0.0001	0.0182	0.0456	0.1142	0.0406
Dividends/Market Value	7,853	0.0096	0.0000	0.0000	0.0000	0.015	0.0371	0.0163
Repurchases/Market Value	7,853	0.0220	0.0000	0.0000	0.0027	0.0297	0.0998	0.0368
Options Owned _{t-1} /Shares _{t-1}	7,853	0.0275	0.0015	0.0103	0.0212	0.0367	0.0751	0.0264
Shares Owned/Shares _{t-1}	7,853	0.0352	0.0004	0.0026	0.0077	0.0229	0.1794	0.0905
%Change Diluted Shares _{t-1,t}	7,853	0.0333	-0.0283	0.0013	0.0145	0.0392	0.1626	0.0727
Market-To-Book Ratio	7,853	1.9716	0.9314	1.2444	1.6032	2.2288	4.0460	2.0942
Free Cash Flow/Total Assets	7,853	0.0843	-0.0598	0.0478	0.0883	0.1352	0.2326	0.1844
Log Total Assets	7,853	21.1976	18.8053	20.1807	21.1422	22.1980	23.8487	1.5229
Tangible Assets/Total Assets	7,853	0.7957	0.4169	0.6786	0.8421	0.9587	1.0000	0.1881
Debt Ratio	7,853	0.2238	0.0000	0.0359	0.1870	0.3061	0.5225	1.3855

For the 2003-2010 subsample presented in Panel B., the median total payout is 1.82% of the market value of equity. The median executive options held and shares owned are 2.12% and 0.77% of total shares outstanding. As such, we observe a slightly lower median total payout, greater executive options holdings, and slightly lower executive shares owned for firms in the 2003-2010 subsample, than for the full sample period from 2000-2019. Such time trends are in line with what is displayed in Figure 1.

C. Tobit Estimations on Determinants of Payout

Displayed in Table 2 are the marginal effects of the explanatory variables multiplied by 10^2 (first entry), the marginal effect multiplied by 10^2 multiplied by the standard deviation of the corresponding variable (second entry), and finally p-values in parentheses. We find that executive options scaled by total shares outstanding have a negative marginal effect of -4.38 on total payout and is statistically at the 0.1 % level. Furthermore, this relationship is also economically significant. A one standard deviation increase in executive options is associated with a decrease in total payout by 11-bp. Thus, a one standard deviation increase in executive-held options for the median firm (with a total payout ratio of 1.93%) results on average in a decrease in total payout by 5.70%.

A similar negative relationship was found by Fenn and Liang (2001) for the 1993-1997 period. They employed a similar model to ours and found that a one standard deviation increase in executive options was associated with a 13-bp decrease in total payout ratio. Meanwhile, we find that this relationship is a decrease in 11-bp for the more recent 2000-2019 sample period. These

findings support our hypothesis that this negative relationship has weakened, but still exists, for our more recent 21st century sample period.

Table 2.
Determinants of Payout

Table 2 contains three separate regressions using Tobit models censored at zero for the dependent variables “Total Payout”, “Dividend Payout” and “Repurchase Payout”, for the sample period 2000-2019 for firms with data for at least 3 years. All regressions are run with the industry dummy variable. The full sample contains 21,749 samples. The regression “Total Payout” features 17,265 uncensored observations and 4,464 censored observations. The regression “Dividend Payout” features 10,863 uncensored observations and 10,866 censored observations. The regression “Repurchases Payout” features 14,577 uncensored observations and 7,152 censored observations. The first entry reports the marginal effect of the variables multiplied by 10². The second entry reports the marginal effect of the variables multiplied by 10² multiplied by the standard deviation for the respective explanatory variable. The final entry reports p-values for the marginal effect with *, **, and ***, denoting the significance levels at 5%, 1% and 0.1%, respectively.

Variable	Total Payout	Dividend payout	Repurchase payout
	-4.38***	-8.64***	1.53
Options Owned _{t-1} /Shares _{t-1}	-0.11 (0.000)	-0.22 (0.000)	0.04 (0.062)
	-1.61***	0.35**	-1.88***
Shares Owned/Shares _{t-1}	-0.14 (0.000)	0.03 (0.000)	-0.16 (0.000)
	0.77**	-2.11**	1.88***
%Change Diluted Shares _{t-1,t}	0.05 (0.002)	-0.15 (0.000)	0.13 (0.000)
	-0.31***	-0.13***	-0.16***
Market-To-Book Ratio	-0.54 (0.000)	-0.23 (0.000)	-0.28 (0.000)
	8.25***	3.23***	5.91***
Free Cash Flow/Total Assets	1.27 (0.000)	0.50 (0.000)	0.91 (0.000)
	0.45***	0.20***	0.31***
log Total Assets	0.70 (0.000)	0.31 (0.000)	0.48 (0.000)
	-0.33***	-1.00**	-0.44***
Debt Ratio	-0.28 (0.000)	-0.86 (0.001)	-0.38 (0.000)
	0.93***	0.39*	0.33**
Tangible Assets/Total Assets	-0.28 (0.000)	0.08 (0.031)	0.07 (0.003)
Industry dummies	Included	Included	Included
No. of obs	21,729	21,729	21,729
Log likelihood	26,000.44	18,509.82	19,700.31

This effect is even more prominent for, and seemingly driven by the relationship with, dividend payout. A one standard deviation increase in executive options reduces dividend yields by an economically significant 22-bp. This translates to a 21.15% decrease in dividend payout ratio for the mean firm (while the median dividend payout is zero). This negative relationship displays substantial magnitude, and economical significance, but is also in line with our hypothesis regarding the dividend disincentive caused by non-dividend protected options.

A similar strong negative relationship was found by Fenn and Liang (2001), who found that a one standard deviation increase in executive stock options reduced dividend yields by 38-

bp, which translated to 29.23% for the mean firm. As such, our results show a similar negative relationship between executive options and dividend payout, but which is weaker than found in previous literature, supporting our hypothesis that this relationship has weakened for our more recent 21st century sample period. Furthermore, executive options display a positive but statistically insignificant association with share repurchases, with a p-value of 0.062.

Interestingly, we see a negative relationship between executive-held shares and total payout, with a marginal effect of -1.61, statistically significant at the 0.1% level. A one standard deviation increase in executive-held shares is associated with a decrease of total payout by 14 basis points (bp), which translates to a decrease of total payout ratio by 7.25% for the median firm. We also find that executive shares have a significant positive marginal effect on dividends and a significant negative marginal effect on repurchases, along with what we hypothesised. This potentially indicates that the negative effect of executive shares on repurchases dominates the positive effect of executive shares on dividends. This differs from Fenn and Liang (2001) who found no significant relationship between executive shares and total payout, for an earlier 1993-1997 period. Thus, our more recent and longer sample period exhibits a distinct relationship, in contrast to Fenn and Liang (2001)), between executive stock ownership and total payout.

The reasons for this relationship are not clear. It could potentially be explained by endogeneity in our model, as our analysis assumes that executive stock-based incentives and ownership structure are exogenous. Contrastingly, Rozeff (1982) argued that ownership structure and payout policy are alternative methods of mitigating potential agency problems, and Smith and Watts (1992) argued that investment opportunities precede, and are the deciding factor for, both dividends and repurchases. Meanwhile, Brav et al. (2005) found that, in practice, dividends are not the residual from free cash flow, and that the dividend and investment decisions are made together.

Yet, we obtain this negative relationship between shares and payout in contrast to Fenn and Liang (2001) despite using a model similar to theirs. One could propose that issues of unobserved heterogeneity between companies distort the results from our MLE Tobit model. While this could be the case, Cuny et al. (2009) used a Fixed-Effects Tobit model and found a similar negative and significant relationship between executive shares and total payout. Furthermore, in general our Tobit model produces results similar to Cuny et al (2009), for the variables of interests and controls, albeit for a longer and more recent sample period. This indicates that, despite failing to account for firm specific effects, our model still produces plausible results.

The negative association between executive options and total payout could potentially be substituted, or at least offset, by the antidilution incentives caused by option usage, which has a positive relationship with total payout and share repurchases. To examine which effect dominates, we estimate how much a one standard deviation increase in executive stock options affects an equal percent increase for change in diluted shares.

Conservatively, we assume a one-to-one ratio between an increase in executive stock options and the associated increase in diluted shares. This is a conservative measure, as only options that are in-the-money are dilutive, and all options are generally not in-the-money. An increase in options usage would therefore translate into a less than one-for-one increase in diluted shares. With this conservative assumption, a one standard deviation increase in executive stock options (2.64%) translates into an 11-bp decrease in total payout. Meanwhile, an equivalent percentage change in diluted shares results in a 2-bp increase in total payout. As such, the net association of executive options is a decrease in total payout by 9 basis points. This implies that

the negative effect of non-dividend protected options dominates the antidilution effect generated by option usage.

Consistent with previous literature, the control variables have expected signs and are statistically significant for total payout. The control variables differ little in magnitude and significance with regards to the dividends and repurchases regressions. Among the control variables, our proxy for free cash flow displays the largest positive marginal effect on total payout at 8.25. Consequently, a one standard deviation increase in free cash flow is associated with a 127-bp increase in total payout; representing a 65.80% increase in payout ratio for the median firm. Although of substantial magnitude, this effect aligns with intuition, as firms with higher free cash-flows are able to commit to larger payouts.

A potential distorting effect on our regressions is the possibility of unobserved heterogeneity. Cuny et al. (2009) argued that, as an example, firms wither substantial growth opportunities, such as technology firms, generally have larger amounts of stock options, lower cash flows, and make little or no payouts. We attempt to account for this by controlling for free cash flow and using industry dummy variables, to account for unobserved industry specific effects.

Furthermore, the proxy for antidilution incentives has a negative marginal effect on dividends and a positive marginal effect on total payout and repurchases. Thus, our findings point to that the antidilution incentive affects the composition of payouts for a firm, incentivizing firms to choose repurchases at the disfavour of dividends, consistent with previous literature (Cuny et al. (2009)).

D. The Implementation of SEC 2006 Regulation: Difference-in-Differences

We employ a difference-in-differences method to identify the effect of the 2006 SEC regulation regarding executive compensation disclosure, on the previously identified relationships between executive options, shares, and payout policy. To use difference-in-difference testing, the data need to satisfy a ‘parallel trend’ assumption. Lemmon and Roberts (2010) note that this assumption relies on a similar trend in the outcome variable (in our case, total payout, dividends, and repurchases; all scaled by market value of equity) in the pre-SEC 2006 period.

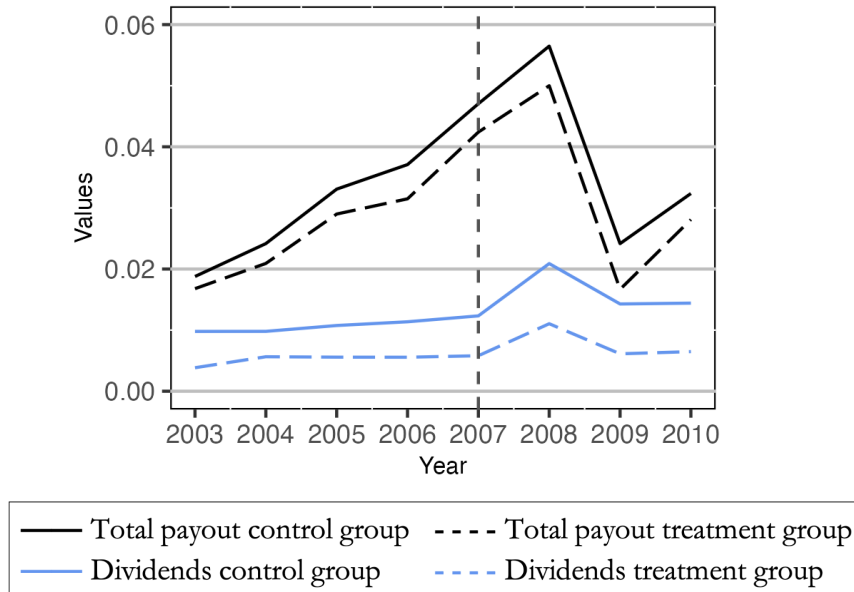
In figure 2., we plot mean dividends and total payout for firms with above-median executive options (hereafter referred to as AMO firms), which serves as our treatment group, and firms with below-median options (hereafter referred to as BMO firms), which serves as our control group. Figure 2. shows that total payout and dividends, and therefore also repurchases (the residual), trend in a similar manner under the pre-treatment period for both the treatment and control group. Although Figure 2. displays an increase in dividends and total payout for both AMO and BMO firms post-SEC 2006 regulation, it could be attributed to an omitted factor that we have not controlled for. We attempt to isolate the effect of the 2006 SEC regulation through the interaction term “Above Median Options $\times$ Post-SEC 2006” in a DiD estimation.

Table 3 presents the results for the difference-in-differences estimations. As we use a Tobit model, i.e., a nonlinear model, only the interaction term is relevant (Puhani, 2012). For dividend payout (columns (3) and (4)), the coefficient estimate on the interaction term “Above Median Options $\times$ Post-SEC 2006” is negative and significant, which indicates that dividend payouts increased more for BMO firms than AMO firms, pre- versus post-SEC 2006 regulation. This result is obtained regardless of whether controls for firm characteristics are included or not.

Figure 2.

Parallel Trend Chart: Mean Total Payout and Dividend Payout 2003-2010

The mean values of total payout (dividends plus repurchases) and dividends, both scaled by the market value of equity from 2003-2010. The sample consists of 7,853 firm-year observations. and the graphs plot the annual means, of the two variables, for our control group (BMO firms) and our treatment group (AMO firms). The pre-SEC 2006 period is from 2003-2006, and the post-SEC 2006 period is from 2007-2010; as the 2006 SEC regulation was implemented effective in November 2006. The vertical line represents the time of treatment.



This result stands in contrast to our hypothesis, as we hypothesized that information asymmetry, regarding options-related incentives misalignment, would be reduced by the 2006 SEC regulation. By extension, we hypothesized that the negative relationship between executive options and dividends would be mitigated by the regulation implementation. If this was the case, such an effect would be demonstrated by a positive change in dividend payout that is greater for heavily optioned firms than for less optioned firms, given a parallel trend.

However, we observe the opposite in our difference-in-differences estimation (and visually, in Figure 2.). The interaction term is negative, implying that firms with above median executive options increased their dividends less than firms with below median executive options, following the regulation implementation. Thus, we can conclude that the increase in dividends around the regulation implementation cannot be attributed to the 2006 SEC regulation having a mitigating effect on dividend disincentives associated with executive options ownership.

Meanwhile, the interaction term is never significant for total payout or repurchases, implying that the increase (as displayed in Figure 3.) in total payout and repurchases post-SEC 2006 regulation is not significantly different between firms with above, versus below, median executive option ownership. While dividends increased less for the AMO firms than BMO firms post-SEC 2006 regulation, the net treatment effect on total payout is ambiguous and not statistically significant. These DiD estimates point towards a rejection of our hypothesis that the 2006 SEC regulation mitigated the negative relationship between executive options and total payout.

Table 3.
Difference-in-Differences Regressions: Effects on Total Payout, Dividends, and Repurchases Around the Implementation of 2006 SEC Regulation

Table 3 contains six Tobit estimations examining payout policy for above median optioned (AMO) firms and below median optioned firms (BMO), pre- and post-2006 SEC regulation. Above Median Options is a dummy variable equal to one and includes firms with above median options prior to the regulation implementation. Post-SEC 2006 is a dummy variable equal to one for the post-SEC 2006 regulation period, which is the years 2007-2010. The outcome variables, “Total Payout”, “Dividends”, and “Repurchases”, are all scaled by the market value of equity. The first entry reports the estimated coefficient. The second entry, in parentheses, reports p-values for the estimates with *, **, and ***, denoting the significance levels at 5%, 1% and 0.1%, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Total Payout		Dividends		Repurchases	
Above Median Options (=1)	−0.0098*** (0.000)	−0.0024 (0.176)	−0.0111*** (0.000)	−0.0038*** (0.000)	−0.0048** (0.008)	0.0008 (0.685)
Post-SEC 2006 (=1)	0.0140*** (0.000)	0.0129*** (0.000)	0.0064*** (0.000)	0.0049*** (0.000)	0.0112*** (0.000)	0.0111*** (0.000)
Above Median Options × Post-SEC 2006	−0.0002 (0.926)	−0.0007 (0.741)	−0.003* (0.015)	−0.0046*** (0.000)	0.0014 (0.573)	0.0014 (0.567)
Options Owned _{t-1} /Shares _{t-1}		0.0583* (0.030)		−0.072*** (0.000)		0.1110*** (0.000)
Shares Owned/Shares _{t-1}		−0.0164** (0.010)		−0.0055 (0.110)		−0.0287*** (0.000)
%Change Diluted Shares _{t-1, t}		0.0228** (0.004)		−0.0411*** (0.000)		0.0474*** (0.000)
Market-To-Book Ratio		−0.0055*** (0.000)		−0.0032*** (0.000)		−0.0036*** (0.000)
Free Cash Flow/Total Assets		0.1440*** (0.000)		0.0583*** (0.000)		0.1463*** (0.000)
log Total Assets		0.0073*** (0.000)		0.0039*** (0.000)		0.0070*** (0.000)
Debt Ratio		−0.0261*** (0.000)		−0.0054** (0.007)		−0.0328*** (0.000)
Tangible Assets/Total Assets		0.0173*** (0.000)		0.0112*** (0.000)		0.01196** (0.002)
Industry dummies	Included	Included	Included	Included	Included	Included
Num. obs.	7,853	7,853	7,853	7,853	7,853	7,853
Log Likelihood	7880.067	8289.25	6754.487	7045.761	5003.809	5365.481

It can be reasonably assumed that the 2006 regulation (on executive compensation disclosure) mitigated information asymmetry between executives and external stakeholders. However, we cannot through our difference-in-differences analysis disseminate why the regulation did not have the consequent hypothesized effects. It should be noted that there could be unobserved heterogeneity between AMO and BMO firms, enabling a negative interaction term, as we do not have a clean treatment and control group distinction. AMO and BMO firms differ in their degree of executive options, and as such treatment, but it is possible that that these differences are correlated with other characteristics affecting payout policy, which are not effectively accounted for by our controls or industry fixed effects.

With regards to theoretical implications, it could be that, in contrast to an informationally efficient market (Fama, 1970), investors are not attentive to this improved information or do not alter their valuations, or expectations, based on it. If so, mitigation of information asymmetry could have been insufficient in deterring executives from potentially self-interested behaviour. This raises a question on the role of improved information, and the effectiveness of regulatory disclosure, in mitigating agency problems.

These questions were examined by Weil, Fung, Graham and Fagotto (2006), who consequently argued that information transparency policies are only effective if the information they produce becomes embedded in the everyday decision-making routines of information users – external investors in our case. We cannot draw prescriptive conclusions from our difference-in-differences analysis, but it highlights the relevance of examining the role, and effectiveness, of improved information in mitigating the agency problem, and incentives misalignment, associated with executive options-incentives and payout policy.

VI. Conclusion

This paper examines the relationships between executive equity-incentives, particularly stock options, and corporate payout policy in the 21st century. Previous literature has found evidence of incentives misalignments, associated with executive options usage, which may exacerbate the free cash flow problem. We revisit these issues, and a question that this paper attempts to answer is whether or not they remain, or have been mitigated, in a more recent sample period. Furthermore, this paper evaluates the effects of executive compensation regulation implemented in 2006, through a difference-in-differences method, to examine if attempts to reduce information asymmetry have mitigated the aforementioned issues.

Using data for a sample of S&P 1500 companies over the 2000–2019 period, we find that firms with higher executive option ownership have lower total payouts, but that this relationship is weaker than found in earlier literature. This finding aligns with theory, as non-dividend protected options generate disincentives to pay dividends. Specifically, we show that a one standard-deviation increase in option ownership is associated with an 11-bp decrease in total payout for the median firm in the full sample, and a 22-bp decrease in dividend payout.

Furthermore, we find a negative relationship between executive stock ownership and total payout. This finding stands in contrast to theory, as executive share ownership should generate incentives pay out free-cash flows to shareholders. This negative relationship casts doubt on the role of executive share ownership in mitigating the free cash flow problem.

In the light of a 2021 SEC regulation proposal on share repurchases and executive compensation, this paper also examines the effects of a previous 2006 SEC regulation concerning executive compensation. Through a difference-in-differences analysis, we find that the regulation had no discernible effect on the relationship between executive options and total payout. In contrast to our hypothesis, we find a negative treatment effect on dividends for firms with above median executive option holdings. This raises a question on the effectiveness of improved information, and regulatory disclosure, in mitigating the agency problem associated with executive options-incentives and payout policy.

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