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Stock Options and Total Payout

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Abstract

In this paper, we examine how stock option usage affects total corporate payout. Using fixed-effects panel data estimators on various samples of ExecuComp firms from 1993 to 2005, we find the higher the executive stock options, the lower the total payout, ceteris paribus. We also find some evidence that firms increase payouts through repurchases in order to offset earnings per share dilution that occurs due to usage of executive and non-executive stock options. However, incentives from not having dividend protection for options appear to dominate those from antidilution, resulting in lower total payout for firms with higher options usage.

I. Introduction

Executive compensation contracts are often designed using stock options to better align the interests of managers with those of shareholders. While option-based compensation has been shown to increase pay-for-performance sensitivity (see Murphy (1999) and Core, Guay, and Larcker (2003) for comprehensive surveys), stock option awards are often criticized for providing managers a tool to extract rents from shareholders (e.g., Yermack (1995), (1997), Bebchuk and Fried (2004), Bertrand and Mullainathan (2001), and Dittmann and Maug (2007)). Fenn and Liang (2001) report that firms with more executive stock options have lower dividend payouts that are only partly offset by repurchases. While not the focus of their paper, their findings suggest that executive stock option usage can lower total payout and thereby potentially exacerbate the free cash flow problem. A thorough examination of this issue and other potentially adverse consequences related to the use of stock option incentives is timely given the large increase in the use of stock option incentives in U.S. firms (e.g., Hall and Liebman (1998), Ofek and Yermack (2000)).

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We provide the first comprehensive examination of how stock option incentives affect total payout. The use of options can influence corporate payout in multiple ways; for example, lack of dividend protection for options provides a disincentive to pay dividends, while stock repurchases could increase the value of unexercised options or alternatively be used to offset potential earnings per share (EPS) dilution (Weisbenner (2000), Fenn and Liang (2001), and Kahle (2002)). Kahle (2002) examined how options affect the dividend/repurchase choice, but not how options affect total payout. Meanwhile, Fenn and Liang (2001) examined how managerial stock-based compensation affects corporate payout but ignored payout potentially designed to offset EPS dilution. Weisbenner (2000) examined corporate payout and used total outstanding options as a proxy for the dilutive effect of options usage on EPS, even though only in-the-money stock options are dilutive according to Statement of Financial Accounting Standards (SFAS) No. 128 accounting rules. We examine the influence of stock option usage on total payout using a better proxy for the EPS dilution effect. Our proxy is the annual percentage change in diluted shares outstanding adjusted for repurchases during the year. This proxy allows us to separate the effects of the lack of dividend protection for options and antidilution incentives on total payout and thus shed light on the net effect of stock option usage on total payout.

We also examine a measure of payout that nets out cash inflows received by the firm from shareholders and option holders (e.g., funds from seasoned equity offerings and exercise proceeds), since this is a potentially better measure of net payout to shareholders in aggregate (Allen and Michaely (2003), Boudoukh, Michaely, Richardson, and Roberts (2007)). Earlier papers examining the influence of stock options on payout do not conduct tests that net out such inflows from total payout.

Our use of fixed-effects panel data estimators provides more robust empirical evidence and represents a methodological improvement over the cross-sectional analyses of Fenn and Liang (2001) and Weisbenner (2000). Standard cross-sectional analysis cannot rule out the possibility of an omitted firm-specific effect driving the results. For example, management quality or corporate governance could influence both payout policy and stock option usage, explaining their observed correlation. Using fixed-effects panel data estimators alleviates this omitted variables problem, among other benefits (see Section IV.A for details). Finally, we examine the effects of lack of dividend protection for options and antidilution incentives on total payout for different subsamples of ExecuComp firms to determine the types of firms in which these effects are most pronounced.

Our empirical findings are as follows. Using fixed-effects panel data estimators for the complete sample and the subsample of consistent dividend-paying ExecuComp firms over the 1993–2005 time period, we find that firms with higher executive stock options have lower total payouts. For the consistent dividend-paying subsample, we also find evidence of an antidilution effect where firms increase repurchases to offset EPS dilution resulting from the usage of stock options. However, the use of stock options with a fixed exercise price and no dividend protection results in overall lower total payout because repurchases (antidilutive or not) do not fully offset the lower dividends. The economic significance

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of this result becomes larger when we use an alternative measure of payout that nets out cash inflows received by the firm from seasoned equity offerings and option exercise proceeds. Specifically, we show that a one-standard-deviation increase in option ownership results in a 29-basis-point (bp) reduction in net payout for the median firm in the full sample, and a 37-bp decrease in net payout for the median firm in the consistent dividend-paying sample. Overall, our findings highlight a potentially unintended consequence of stock option usage due to certain characteristics of stock option awards (no dividend protection and fixed exercise price), namely, that it appears to create incentives to lower payout to shareholders that may worsen the free cash flow problem.

The remainder of the paper is organized as follows. Motivation and discussion of how managerial stock-based incentives can interact with capital structure to impact payout policy are presented in Section II. Section III provides details of our data sources, variable definition, and construction. The methodology, sample selection, and empirical results are presented in Section IV, followed by conclusions in Section V.

II. Motivation

If stock options are not dividend-protected, dividend payments will reduce the value of the options due to their effect on the stock price. Firms that rely heavily on the use of stock options without dividend protection create a disincentive to pay dividends, since a manager with fixed exercise price (i.e., the exercise price is fixed at the time of the option award and is not adjusted over time) options derives no wealth benefit from their payment (Lambert, Lanen, and Larcker (1989)). Unlike the adverse effect of dividend payments on option value, option holders will not suffer adverse consequences from stock repurchases and may even derive some benefit. Since a repurchase payout is accompanied by a reduction in shares outstanding, there is an increase in the fraction of the firm underlying each share, so repurchases do not have an adverse effect on stock price. Since Murphy (1999) finds that most option incentive programs are not dividend-protected, their widespread use potentially alters the payout policies of firms, especially those that use significant stock option incentives. While it is unlikely that managers will cut dividends due to potential adverse signaling and the resulting stock price decrease (e.g., Guay and Harford (2000)), they may substitute repurchases for future dividend increases, since this could potentially increase the value of their stock options. In addition, some papers have argued that firms use repurchases as a way to offset EPS dilution that results from stock option usage (Weisbenner (2000), Kahle (2002), Bens, Nagar, Skinner, and Wong (2003), and Hribar, Jenkins, and Johnson (2006)). Even though managers' motives may be to avoid EPS dilution and not to disgorge free cash flow, managers at firms with stock options may choose to repurchase shares, thus offsetting the decreasing (or non-increasing) dividend payout.[1]

[1]Fama and French (2001) suggest that repurchases are often complements to dividends for dividend-paying firms, while Grullon and Michaely (2002) suggest that firms have been substituting repurchases for dividends.

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Option holders may prefer greater retention of earnings due to the fixed exercise price of options. Greater earnings retention increases the capital employed in the firm and thereby supports higher future earnings growth and higher future stock prices, potentially making options more in the money. Jensen and Murphy (2004) highlight a similar point that typical executive stock options with fixed exercise prices effectively communicate to managers that the cost of equity capital to the company net of the dividend yield is zero and therefore encourages the waste of capital. For firms that use options, it is thus not clear whether decreasing (or nonincreasing) dividends will result in higher stock repurchases or greater earnings retention. Using cross-sectional analysis, Fenn and Liang (2001) find that firms with more managerial stock options have lower dividend payout, which is only partly offset by repurchases, while Weisbenner (2000) finds that the larger the executives' holding of stock options, the more likely the firm is to retain more earnings and curtail cash distributions. The empirical evidence so far suggests that greater usage of executive stock options results in lower total payout, which may worsen the free cash flow problem (Jensen (1986)). This potentially adverse consequence of using fixed exercise price stock options with no dividend protection has received relatively less attention in the finance literature.[2]

We next provide insights on how stock-based incentives can impact payout policy and the free cash problem, specifically with respect to capital structure choices. First we consider payout policy in a levered firm with available free cash, using a manager who maximizes his wealth and is compensated with stock and options. We ignore managerial risk aversion, tax effects, signaling, EPS antidilution, and empire building incentives to focus on the relationship between payout policy, stock-based incentives of managers, and capital structure. The first-best payout policy occurs when the marginal return on internal reinvestment is equal to that of outside opportunities (whether payout takes the form of cash dividends or share repurchases is irrelevant). If the manager's wealth composition differs from that of the firm (across the three asset classes of debt, equity, and employee stock options), he has an incentive to deviate from the first-best payout policy.

This may be illustrated through the choice of using the marginal dollar to either pay cash dividends or reinvest in the firm. A cash dividend is fully captured by stockholders, to the exclusion of debt and option holders. Reinvestment generates expected cash flow in the future, which is partially captured by each of these three ownership classes. A manager owning only stock will lean toward higher dividends (underinvestment) relative to the first-best payout policy,[3] while a manager owning only options will prefer no dividends (overinvestment).[4]

[2]Warren Buffett noted this potential problem as far back as 1985. See 1985 Berkshire Hathaway Inc. Chairman's letter to shareholders (http://www.berkshirehathaway.com/letters/1985.html). It is interesting to note that Berkshire Hathaway does not use stock options and neither does it pay dividends or repurchase shares. It appears that Berkshire's payout policy is not being driven by option considerations but rather by growth opportunities.

[3]Managerial risk aversion and empire building considerations can generate incentives for a manager owning only stock to retain free cash flow. In the former case, he prefers investing in low-risk real assets.

[4]Similarly, signaling benefits may generate incentives for a manager owning only options to pay dividends.

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Next consider the use of the marginal dollar to either repurchase shares or reinvest in the firm. A share repurchase is captured by both stockholders and option holders (as explained below) to the exclusion of debt holders. A manager owning only stock will prefer dividends to repurchases.

In contrast to cash dividends, repurchases offers something for option holders: shares outstanding decrease, giving options a claim on a larger fraction of the firm. For a manager whose wealth is tied closely to options, share repurchases are more attractive than cash dividends. However, depending on the amount of leverage employed by the firm, the manager could find reinvesting in the firm the best choice of all.

Since options are an upside claim on corporate wealth, option holders receive value from reinvestment only when the real assets (that is, the underlying operations) perform relatively well, ex post; thus, the manager holding only options is concerned only about the upside outcomes of firm wealth. If the upside potential is more attractive for the stock than for real assets, then a manager holding options leans toward higher repurchases (underinvestment); if the upside potential of real assets is more attractive, then he leans toward lower repurchases (overinvestment). The reason that stock and real assets can offer different upside potential is the capital structure mix. The presence of debt increases the upside potential of stock due to the magnification effect of leverage. However, the presence of employee stock options decreases the upside potential of stock since their exercise, in the upside outcomes of firm wealth, leads to equity dilution. Stated alternatively, options effectively "cream-skim" the equity claim in the upside outcomes of firm wealth. The preferred payout policy for an option-owning manager thus depends upon the firm's relative mix of debt and options. At one extreme, no leverage leads to lower share repurchases and corporate overinvestment. At the other extreme, a heavily levered firm leads to higher share purchases and corporate underinvestment.

In summary, the manager owning mostly stock prefers dividends to repurchases, encouraging underinvestment. The manager owning mostly options prefers repurchases to dividends, also encouraging underinvestment, but only if the firm's leverage is high; otherwise, when leverage is low, the manager will prefer overinvestment. The choice between dividends, repurchases, and reinvestment is influenced by the level of leverage and the relative portions of the managers' wealth in stock and options.

III. Data Sources, Sample Selection, and Variable Construction

A. Data Sources and Sample Selection

The sample is constructed by aggregating individual executive-level data from ExecuComp to form firm-level annual data from 1993 to 2005 and merging with Compustat.[5] Firms in financial services and regulated industries such

[5]ExecuComp covers firms currently included in the S&P 500, S&P Midcap 400, and S&P Smallcap 600 indices and some firms that are currently not in the indices but were in one of the indices in the past.

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as banks and insurance companies (SIC 6000–6999) and utilities (SIC 4813 and 4900–4999) are excluded since their payout policies may be influenced by regulatory factors (e.g., Smith and Watts (1992), Fenn and Liang (2001)). The sample period begins in 1993 because ExecuComp's coverage starts in 1992, and we use one-year lagged stock-based incentive measures.

We examined the circumstances surrounding all firm-year payouts exceeding 25% of market value to ensure they are valid observations reflecting normal payouts and not events such as leveraged recapitalizations, targeted repurchases, or liquidations. This eliminated 151 firm-year observations, resulting in a full sample consisting of 2,067 firms and 15,551 firm-years.

B. Variable Construction

1. Payout Variables

Payout to shareholders consists of either dividends or stock repurchases. In our empirical analyses, we define payout as the sum of dividends plus stock repurchases to examine whether changes in dividend payout due to stock option incentives are accompanied by increased repurchases or increased earnings retention. We scale all payout variables using market value of equity [Compustat Item 199 $\times$ Compustat Item 25] as in Fenn and Liang (2001) and Kahle (2002). Dividend payout is measured as total dividends divided by market value of equity [Compustat Item 21/(Compustat Item 199 $\times$ Compustat Item 25)]. Stock repurchases are calculated as common and preferred stock repurchases adjusted for any decreases in preferred stock divided by market value of equity $[(\text{Compustat Item 115} + \text{MIN}(0, \text{Compustat Item 56}_t - \text{Compustat Item 56}_{t-1}))/(\text{Compustat Item 199} \times \text{Compustat Item 25})]$. We follow Stephens and Weisbach (1998), Fenn and Liang (2001), and Grullon and Michaely (2002) in using this measure of repurchase, since we are interested in the repurchases of common equity only.[6]

2. Managerial Stock-Based Incentive Variables

Managerial stock-based incentives consist mainly of stock and options. Option incentives are computed as the sum of unexercised exercisable options and unexercised unexercisable options divided by total shares outstanding from ExecuComp. Stock incentives are calculated as shares owned (excluding options) divided by total shares outstanding. To measure the managerial stock-based incentive variables for each firm, we follow Fenn and Liang (2001) and Kahle (2002) in summing the stock-based incentives of all executives reported for a firm by ExecuComp, since they are all likely to influence payout policy. The above variables capture managerial option and stock ownership at the end of the fiscal year. Since dividends and repurchases are flow variables that occur during the fiscal year, we use one-year lagged values of managerial option and stock incentives

[6]Banyi, Dyl, and Kahle (2007) also find that this measure is the most accurate measure of actual repurchases.

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to measure the influence of managerial stock-based incentives on payouts in any given year.[7]

3. Antidilution Incentive Variable

The antidilution hypothesis predicts that managers repurchase shares to avoid dilution caused by the usage of stock options. We create a variable to capture payouts potentially driven by antidilution incentives by calculating the annual percentage change in total diluted shares outstanding assuming there were no repurchases during the year. This is done by adding back the number of repurchased shares to the total diluted shares outstanding to calculate the annual percentage increase in total diluted shares outstanding if no repurchases occurred.[8] This proxy should capture the potential dilution of EPS that the manager faces in the absence of repurchases. If antidilution incentives are present, we expect a positive relation between this proxy for dilution and repurchases, and therefore payout. The diluted shares outstanding (Compustat Item 171) is calculated based on SFAS No. 128 and is mandatory for all firms after December 15, 1997.[9] The SFAS No. 128 rule for calculating diluted shares outstanding uses the Financial Accounting Standards Board (FASB) treasury stock method. Stock options become dilutive only when they are in-the-money. Each in-the-money unexercised option counts for $1 - (X/P)$ shares, where X is the exercise price and P is the stock price. Our proxy is designed to capture the increase in the diluted number of shares outstanding only when options become dilutive.

4. Other Firm Characteristics

Prior research has examined the effects of firm size, free cash flow, volatility, asset characteristics, investment opportunities, debt levels, and industry on payout policies. We use similar controls in our study to isolate the effect of stock-based incentives on corporate payout. Firm size, measured as the natural logarithm of total assets [Compustat Item 6] is used as a proxy for external financing costs (Fenn and Liang (2001), Smith and Watts (1992), and Opler and Titman (1993)). If external financing costs are lower for larger firms, we expect absolute payouts to be positively related to size. It is not clear, however, whether payout variables scaled by market value will be positively related to firm size. The levels and predictability of free cash flow are likely to be important determinants of payout to shareholders (Jagannathan, Stephens, and Weisbach (2000)). To proxy for the level of free cash flow, we use earnings before interest, taxes, depreciation, and amortization (EBITDA) less capital expenditures divided by total assets, [(Compustat Item 13−Compustat Item 30)/Compustat Item 6].[10] We expect

[7]Efendi, Srivastava, and Swanson (2007) use a similar measure of executive stock-based incentives.

[8]We make necessary adjustments for stock splits using Compustat's adjustment factor.

[9]To avoid significant reduction in sample size in specifications using our dilution proxy, when Compustat Item 171 is missing, we use Compustat Item 54 (common shares used to calculate basic EPS) and when that is also missing, we use Compustat Item 25 (common shares outstanding). We note that the results obtained are similar to those obtained using only Compustat Item 171.

[10]Alternative proxies such as EBITDA divided by total assets and EBITDA less capital expenditures and interest divided by total assets yield similar results.

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a positive relationship between free cash flow and payout, ceteris paribus. Firms that have more predictable cash flows and that are less risky enable managers to make higher commitments on payout. We compute the annualized volatility of returns using CRSP monthly returns over the 60 months prior to the current fiscal year start date, requiring a minimum of 12 monthly returns, as a proxy for firm risk. We expect a negative relationship between volatility measure and payout. To proxy for the variability of funds, we calculate the ratio of tangible assets to total assets by subtracting intangibles from total assets and dividing by total assets [(Compustat Item 6 − Compustat Item 33)/Compustat Item 6]. Firms with greater amounts of tangible assets also have better access to debt financing. We expect a nonnegative relationship between the ratio of tangible assets to total assets and payouts.

We use two proxies for investment opportunities. The market-to-book ratio is calculated by adding total assets and market value of equity, subtracting book value of equity, then dividing by total assets [(Compustat Item 6 + (Compustat Item 199 × Compustat Item 25) − Compustat Item 60)/Compustat Item 6]. Sales growth is the five-year least squares annual growth in sales from ExecuComp (SALE5LS). We expect firms with greater investment opportunities to have less free cash flow and lower payouts (Fenn and Liang (2001), Smith and Watts (1992), and Opler and Titman (1993)).

To measure the effects of leverage on corporate payout, we calculate the debt ratio as the sum of long-term debt and debt in current liabilities scaled by total assets [(Compustat Item 9 + Compustat Item 34)/Compustat Item 6]. If debt usage is an alternate method of paying out free cash flow, we expect a negative relationship between payout and debt usage. However, firms that can bear significant levels of debt are also likely to be those that are profitable and have stable cash flows, which may result in them having high payouts as well. Finally, we control for time trends using year dummy variables. Controls for industry and differential income tax treatment of dividends and capital gains (repurchases) are not included, since the fixed-effects estimator with year dummies effectively controls for these effects.

IV. Methodology and Empirical Results

A. Methodology

We use fixed-effects panel data estimators to examine the relationship between stock option incentives and payout. The panel data estimator is used because a criticism of pooled cross-sectional analysis is that it cannot rule out that an omitted firm-specific effect is driving the results. For example, omitted factors such as management skill or corporate governance could influence both payout policy and the use of stock options, explaining any correlation between the two. A fixed-effects panel data model is therefore a better estimation technique for the empirical question being examined (Chi (2005), Himmelberg, Hubbard, and Palia (1999), and Zhou (2001)). It controls for unobservable firm heterogeneity that does not vary (or varies little) over time and significantly alleviates the endogeneity problem associated with omitted variables. A fixed-effects model also exploits

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within-firm variation (time-series variation), with the coefficient estimates of the explanatory variables measuring a time-series relationship with corporate payout (dependent variable) rather than a cross-sectional one.

Using payout as the dependent variable, we run a fixed-effects Tobit panel data model censored at zero, since there are a number of observations where firm payout is zero (Fenn and Liang (2001), Weisbenner (2000)). Until recently, the fixed-effects Tobit panel data estimator was considered problematic. The "incidental parameters problem" was a concern, since the maximum likelihood estimator (MLE) in nonlinear panel data models with fixed-effects is thought to be biased and inconsistent when T, the length of the panel, is small and fixed. Greene (2004) used Monte Carlo simulation to examine the behavior of the MLE of the fixed-effects Tobit model to test the extent of this bias and found the estimators' slope coefficient is unaffected by the "incidental parameters problem," although there may be some bias in the estimated standard errors. This bias, however, appears mild for $T = 5$ and greater. We expect little bias using the fixed-effects Tobit model, since our sample period runs from 1993 to 2005 ($T = 13$).

We examine the effect of stock option incentives on payout in three different samples of firms: i) the full sample; ii) a subsample of consistent dividend-paying firms (firms that always pay dividends when on ExecuComp); and iii) a subsample of non-dividend-paying firms (firms that never paid dividends during the study period), to explore the types of firms in which the relationship is more pronounced. The sample of consistent dividend-paying firms is the primary focus of our analysis, since these are the firms most likely to be affected by the disincentive of option-owning managers to pay dividends, potentially altering firms' payout policies and exacerbating the free cash flow problem.

B. Descriptive Statistics

The frequency of payout by year for the three samples is reported in Table 1. Consistent with prior literature (Fama and French (2001), Grullon and Michaely (2002), and Hu and Kumar (2004)), the number and percentage of firms paying dividends decreased over the 1993–2005 time period, while the number and percentage of firms using repurchases increased.

Executive stock option grants comprise only a fraction of the total employee option grants. Using ExecuComp, we estimate the ratio of total executive stock option grants to total employee option grants using grant-level data. We perform this analysis to gauge the extent of executive stock option usage relative to total employee stock options. Using the median estimated values, total executive option grants comprise approximately 25%–30% of total employee option grants from 1993 to 2005. This relatively small proportion of executive to total employee option grants emphasizes the importance of taking into account non-executive stock options when evaluating the dilutive effect of option usage. Our proxy for antidilution incentives takes into account the dilutive effect of total employee stock options.

Figure 1 plots the median values of total payout (repurchases plus dividends) and dividends for both the full sample and the consistent dividend-paying sample from 1993 to 2005. There is a declining trend in dividend payout, while the total

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TABLE 1
Frequency of Payouts

Frequency of payouts by type and year for all firms in the sample (Full Sample), firms that always paid dividends when on ExecuComp (Consistent Dividend Payers) and firms that never paid dividends when on ExecuComp (Nondividend Payers) from 1993 to 2005.

	Full Sample				Consistent Dividend Payers				Nondividend Firms			
Year	*N*	Payout	Dividends	Repurchases	*N*	Payout	Dividends	Repurchases	*N*	Payout	Dividends	Repurchases
1993	877	635	561	323	447	447	447	203	248	56	—	56
1994	1,151	796	697	440	548	548	548	277	353	73	—	73
1995	1,188	824	704	490	545	545	545	294	374	89	—	89
1996	1,220	864	699	571	544	544	544	330	395	121	—	121
1997	1,265	890	688	628	528	528	528	337	431	147	—	147
1998	1,191	861	590	681	455	455	455	334	447	191	—	191
1999	1,234	868	563	693	446	446	446	313	491	209	—	209
2000	1,135	799	510	662	404	404	404	314	454	187	—	187
2001	1,132	741	479	552	388	388	388	244	467	170	—	170
2002	1,302	866	531	627	454	454	454	252	530	222	—	222
2003	1,322	870	559	624	452	452	452	251	547	215	—	215
2004	1,342	895	622	639	462	462	462	262	560	214	—	214
2005	1,192	848	570	671	415	415	415	278	495	224	—	224
Total	15,551	10,757	7,773	7,601	6,088	6,088	6,088	3,689	5,792	2,118	—	2,118

payout displays considerable fluctuation, reflecting the volatility of repurchase activity.

In Table 2, we report descriptive statistics for different payout variables, managerial stock-based incentive variables, antidilution incentive variables, and control variables used in the subsequent regression analysis. Panels A, B, and C report summary statistics for the full sample, consistent dividend-paying firms, and non-dividend-paying firms, respectively. For the full sample, the median payout is 1.22% of market value. The median option and stock holdings of executives are 2.26% and 1.11% of the total shares outstanding. The median payout for the consistent dividend-paying firms is 2.70% of market value, and the median option and stock holdings of their executives are 1.33% and 0.73%, respectively, of the total shares outstanding. This contrasts with the non-dividend-paying firms with median total payout of 0% and median option and stock holdings of their executives of 3.45% and 1.57%, respectively, of total shares outstanding.

C. Panel Data Regression Analysis Using Payout

We use a fixed-effects Tobit panel data model for estimating the determinants of payout scaled by market value. The model specification estimated is given below:

$$\text{PAYOUT}_{it} = \alpha_i + \beta' O_{it-1} + \delta' P_{it} + \gamma' S_{it-1} + \lambda' L_{it} + \phi' Y_t + \upsilon_i + \varepsilon_{it},$$

where O is the total number of options owned by executives scaled by total shares outstanding; P is the percentage change in diluted shares outstanding adjusted for shares repurchased; S is the total number of shares owned by executives scaled by total shares outstanding; L is a vector of control variables previously shown to affect payout that includes market-to-book asset ratio, free cash flow scaled by total assets, the natural logarithm of total assets, total debt ratio, the ratio of tangible assets to total assets, the prior 60-month annualized volatility of monthly

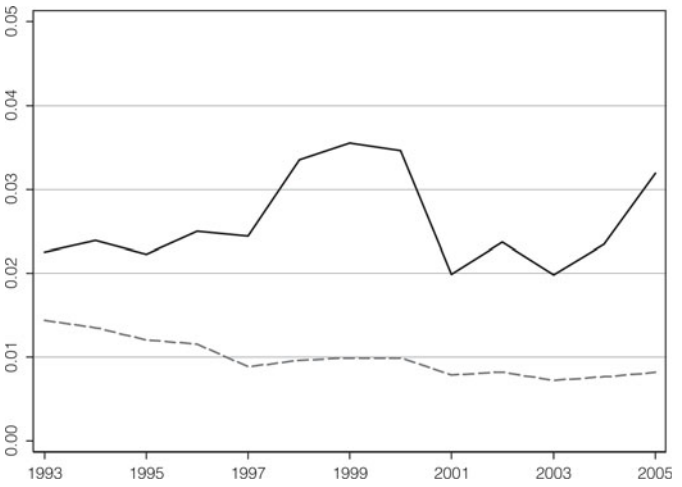
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FIGURE 1

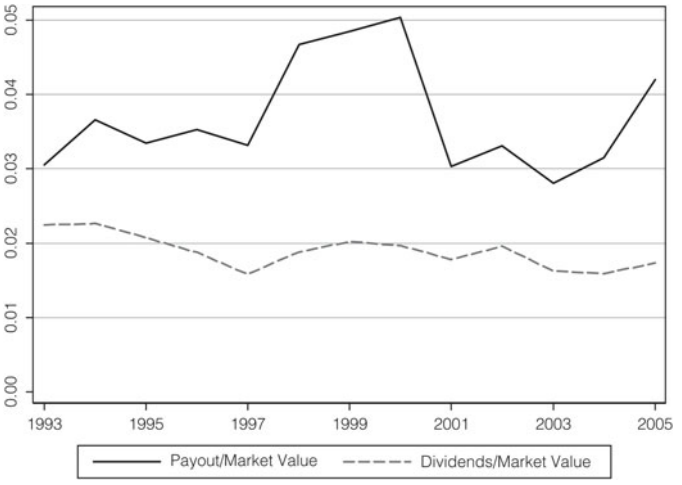
Median Total Payout and Dividend Payout from 1993 to 2005

Plots of median total payout (dividends plus common stock repurchases) and median dividends scaled by market value of equity from 1993 to 2005. Graph A of Figure 1 uses data for the full sample, representing 15,551 firm-years, and Graph B uses data for consistent dividend-paying firms, representing 6,088 firm-years.

Graph A. All Firms



Graph B. Consistent Dividend-Paying Firms



stock returns, and the five-year least squares annual growth rate of sales; Y is a vector of year dummies; υ is the unobservable firm specific effect; and ε denotes the remainder error term. Controls for industry and tax effects are not included, since the fixed-effects estimator with year dummies effectively accounts for their effects by sweeping them out.

In Table 3, we report the marginal effects computed at the means of the explanatory variables, obtained using the fixed-effect Tobit panel data estimator. As reported in the second column of Table 3, for the full sample, the marginal effect of -0.0527 for the ratio of options owned to shares outstanding is significant

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TABLE 2

Descriptive Statistics

The sample statistics computed over the 1993–2005 period for the full sample, consistent dividend payers (firms that always paid dividends when on ExecuComp) and nondividend payers (firms that never paid dividends when on ExecuComp) are presented below. Sample statistics for the full sample, consistent dividend payers and zero dividend payers are presented in Panels A, B, and C, respectively. PAYOUT is dividends plus repurchases divided by market value of equity. NET_PAYOUT is calculated as dividends plus repurchases less issuances, scaled by market value of equity. ADJUSTED_NET_PAYOUT is also calculated as dividends plus repurchases less issuances, scaled by market value of equity, after first adjusting repurchases and then issuances for option exercise requirements. DIVIDENDS/MARKET_VALUE is dividends divided by market value. REPURCHASES/MARKET_VALUE is repurchases divided by market value. ISSUANCES/MARKET_VALUE is issuances divided by market value. $\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$ and $\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$ are one-year lagged values of the managerial option and stock holdings divided by total shares outstanding. $\%\text{CHANGE_IN_DILUTED_SHARES}_{t-1,t}$ is the annual percentage change in total diluted shares outstanding in the absence of repurchases. OPTIONS_EXERCISED/SHARES is an estimate of total options exercised divided by total shares outstanding. MARKET-TO-BOOK_ASSETS_RATIO is total assets minus book value of equity plus market value of equity divided by total assets. FREE_CASH_FLOW/TOTAL_ASSETS measures free cash flow as operating income before depreciation minus capital expenditures divided by total assets. LOG_TOTAL_ASSETS is the natural logarithm of total assets. TANGIBLE_ASSETS/TOTAL_ASSETS is total assets minus intangible assets divided by total assets. TOTAL_DEBT/TOTAL_ASSETS is the sum of long-term debt and debt due in one year divided by total assets. 5-YEAR_SALES_GROWTH is the five-year least square annual growth rate of sales. 60-MONTH_RETURN_VOLATILITY is the annualized volatility of prior 60-month returns. P5, P25, P75, and P95 are the 5th, 25th, 75th, and 95th percentiles, respectively.

Variable	*N*	Mean	P5	P25	Median	P75	P95	Std Dev
Panel A. Full Sample								
PAYOUT	15,551	0.0245	0.0000	0.0000	0.0122	0.0345	0.0895	0.0376
NET_PAYOUT	15,551	0.0087	−0.0658	−0.0048	0.0058	0.0290	0.0814	0.0625
ADJUSTED_NET_PAYOUT	15,551	0.0089	−0.0613	−0.0030	0.0051	0.0279	0.0791	0.0612
ISSUANCES/MARKET_VALUE	15,551	0.0158	0.0000	0.0013	0.0048	0.0109	0.0734	0.0479
DIVIDENDS/MARKET_VALUE	15,551	0.0093	0.0000	0.0000	0.0000	0.0153	0.0358	0.0175
REPURCHASES/MARKET_VALUE	15,551	0.0152	0.0000	0.0000	0.0000	0.0171	0.0767	0.0325
$\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$	15,551	0.0300	0.0021	0.0105	0.0226	0.0403	0.0815	0.0374
$\%\text{CHANGE_DILUTED_SHARES}_{t-1,t}$	15,551	0.0490	−0.0250	0.0032	0.0174	0.0521	0.2369	0.1075
OPTIONS_EXERCISED/SHARES	15,551	0.0061	0.0000	0.0000	0.0007	0.0039	0.0213	0.1797
$\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$	15,551	0.0516	0.0005	0.0032	0.0111	0.0477	0.2605	0.1089
MARKET-TO-BOOK_ASSETS_RATIO	15,551	2.1784	0.9382	1.2485	1.6538	2.4122	5.1254	1.9661
FREE_CASH_FLOW/TOTAL_ASSETS	15,551	0.0735	−0.1104	0.0351	0.0837	0.1318	0.2300	0.1527
LOG_TOTAL_ASSETS	15,551	20.7748	18.5303	19.6852	20.6079	21.7203	23.5255	1.5301
TANGIBLE_ASSETS/TOTAL_ASSETS	15,551	0.8793	0.5444	0.8118	0.9442	1.0000	1.0000	0.1561
TOTAL_DEBT/TOTAL_ASSETS	15,551	0.2186	0.0000	0.0546	0.2034	0.3300	0.5282	0.1932
5-YEAR_SALES_GROWTH	15,551	0.1654	−0.0731	0.0324	0.1015	0.2140	0.5706	0.3248
60-MONTH_RETURN_VOLATILITY	15,551	0.4506	0.2106	0.3031	0.4005	0.5499	0.8550	0.2048
Panel B. Consistent Dividend Payers								
PAYOUT	6,088	0.0360	0.0044	0.0142	0.0270	0.0457	0.0968	0.0356
NET_PAYOUT	6,088	0.0280	−0.0052	0.0089	0.0228	0.0410	0.0904	0.0422
ADJUSTED_NET_PAYOUT	6,088	0.0276	−0.0035	0.0088	0.0224	0.0403	0.0889	0.0417
ISSUANCES/MARKET_VALUE	6,088	0.0081	0.0000	0.0005	0.0031	0.0074	0.0235	0.0232
DIVIDENDS/MARKET_VALUE	6,088	0.0190	0.0027	0.0090	0.0163	0.0254	0.0440	0.0157
REPURCHASES/MARKET_VALUE	6,088	0.0171	0.0000	0.0000	0.0030	0.0219	0.0751	0.0315
$\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$	6,088	0.0185	0.0011	0.0058	0.0133	0.0249	0.0529	0.0205
$\%\text{CHANGE_DILUTED_SHARES}_{t-1,t}$	6,088	0.0272	−0.0232	0.0015	0.0100	0.0275	0.1314	0.0784
OPTIONS_EXERCISED/SHARES	6,088	0.0064	0.0000	0.0000	0.0005	0.0023	0.0122	0.2865
$\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$	6,088	0.0410	0.0006	0.0024	0.0073	0.0293	0.2296	0.0875
MARKET-TO-BOOK_ASSETS_RATIO	6,088	1.9648	1.0093	1.2800	1.6141	2.1898	4.1336	1.1995
FREE_CASH_FLOW/TOTAL_ASSETS	6,088	0.1016	−0.0172	0.0596	0.0978	0.1411	0.2278	0.0848
LOG_TOTAL_ASSETS	6,088	21.4479	19.1675	20.3282	21.3183	22.4657	24.0681	1.5320
TANGIBLE_ASSETS/TOTAL_ASSETS	6,088	0.8745	0.5549	0.7993	0.9336	1.0000	1.0000	0.1517
TOTAL_DEBT/TOTAL_ASSETS	6,088	0.2320	0.0000	0.1286	0.2323	0.3295	0.4716	0.1445
5-YEAR_SALES_GROWTH	6,088	0.0862	−0.0459	0.0250	0.0698	0.1306	0.2695	0.1082
60-MONTH_RETURN_VOLATILITY	6,088	0.3198	0.1902	0.2432	0.3035	0.3721	0.5124	0.1036

(continued on next page)

at the 1% level. This result is also economically significant. Consistent with Fenn and Liang's (2001) cross-sectional result, we find that a one-standard-deviation increase in option ownership is associated with a 20-bp decrease in total payout. We note that a 20-bp reduction in payout ratio translates into about a 16% reduction in payout for the median firm (median total payout for the full sample is 1.22%). The marginal effect of −0.0299 for the stock ownership variable is also statistically significant at the 1% level with a one-standard-deviation increase

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TABLE 2 (continued)
Descriptive Statistics

Variable	*N*	Mean	P5	P25	Median	P75	P95	Std Dev
Panel C. Nondividend Payers								
PAYOUT	5,792	0.0128	0.0000	0.0000	0.0000	0.0075	0.0740	0.0329
NET_PAYOUT	5,792	−0.0120	−0.1204	−0.0127	−0.0042	0.0000	0.0610	0.0732
ADJUSTED_NET_PAYOUT	5,792	−0.0110	−0.1163	−0.0101	−0.0024	0.0000	0.0576	0.0716
ISSUANCES/MARKET_VALUE	5,792	0.0247	0.0000	0.0031	0.0076	0.0168	0.1221	0.0648
DIVIDENDS/MARKET_VALUE	5,792	—	—	—	—	—	—	—
REPURCHASES/MARKET_VALUE	5,792	0.0128	0.0000	0.0000	0.0000	0.0075	0.0740	0.0329
$OPTIONS_OWNED_{t-1}/SHARES_{t-1}$	5,792	0.0418	0.0068	0.0206	0.0345	0.0543	0.0970	0.0391
$\%CHANGE_DILUTED_SHARES_{t-1,t}$	5,792	0.0707	−0.0270	0.0076	0.0314	0.0911	0.3113	0.1249
OPTIONS_EXERCISED/SHARES	5,792	0.0066	0.0000	0.0000	0.0013	0.0063	0.0293	0.0182
$SHARES_OWNED_{t-1}/SHARES_{t-1}$	5,792	0.0557	0.0005	0.0044	0.0157	0.0573	0.2605	0.1238
MARKET-TO-BOOK_ASSETS_RATIO	5,792	2.5102	0.9079	1.2703	1.7812	2.7956	6.3629	2.7149
FREE_CASH_FLOW/TOTAL_ASSETS	5,792	0.0378	−0.2201	−0.0034	0.0641	0.1193	0.2299	0.2140
LOG_TOTAL_ASSETS	5,792	20.0741	18.1399	19.2252	20.0114	20.8316	22.3290	1.2802
TANGIBLE_ASSETS/TOTAL_ASSETS	5,792	0.8823	0.5218	0.8207	0.9631	1.0000	1.0000	0.1643
TOTAL_DEBT/TOTAL_ASSETS	5,792	0.1978	0.0000	0.0071	0.1425	0.3210	0.5783	0.2309
5-YEAR_SALES_GROWTH	5,792	0.2562	−0.0960	0.0605	0.1744	0.3318	0.8352	0.4454
60-MONTH_RETURN_VOLATILITY	5,792	0.5876	0.3057	0.4307	0.5490	0.7048	1.0001	0.2174

resulting in a decrease in total payout of 33 bps. The marginal effect on the proxy for antidilution incentives (%CHANGE_IN_DILUTED_SHARES) is 0.0022 but is statistically insignificant. In the full sample, payout appears to be driven by the lack of dividend protection for options and not by the desire to avoid EPS dilution caused by stock option usage, resulting in lower payout for firms with higher option usage.

Most of the control variables in the model specifications have expected signs. The coefficient on the market-to-book ratio, a measure of investment opportunities, is negative and significant at the 1% level, suggesting that firms with greater investment opportunities have lower payouts. Similarly, the coefficients for the five-year growth in sales and 60-month volatility of returns are negative and significant at the 1% level, suggesting that faster growing and riskier firms pay out less. The coefficients on the proxies for size (LOG_TOTAL_ASSETS), ability to pay (FREE_CASH_FLOW), and asset tangibility are positive and significant, indicating that larger firms, firms with higher free cash flows, and firms with greater fixed assets pay out more.

Firms with greater growth opportunities, such as technology firms, use larger amounts of stock options, have lower free cash flows, and make little or no payouts. To isolate the possible influence of these firms on the results, we repeat our analysis on two distinct subsamples of firms. We report in column three of Table 3, for the consistent dividend-paying sample, the marginal effects computed at the means of the explanatory variables obtained using the fixed-effect Tobit panel data estimator. Consistent with the results for the full sample, the marginal effects of the option and stock incentive variables are negative and significant at the 1% level. In terms of economic significance, a one-standard-deviation increase in the option and stock incentive variables is associated with a 19- and 21-bp decrease in payout, respectively. The marginal effect of 0.0240 on the proxy for the antidilution incentives for stock repurchases (%CHANGE_IN_DILUTED_SHARES) is now significant at the 1% level and represents a 19-bp increase in payout for a one-standard-deviation increase in percentage change in diluted shares. Most

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TABLE 3

Determinants of Payout

Table 3 reports marginal effects computed at the means for a fixed-effects Tobit panel data regression with PAYOUT as dependent variable, estimated for the full sample, consistent dividend payers (firms that always paid dividends when on ExecuComp) and nondividend payers (firms that never paid dividends when on ExecuComp) over the 1993–2005 period. PAYOUT is defined as dividends plus repurchases divided by market value of equity. $\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$ and $\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$ are values of the managerial option and stock holdings divided by total shares outstanding as of the end of the previous year. $\%\text{CHANGE_IN_DILUTED_SHARES}_{t-1,t}$ is the annual percentage change in total diluted shares outstanding in the absence of repurchases. MARKET-TO-BOOK_RATIO is total assets minus book value of equity plus market value of equity divided by total assets. FREE_CASH_FLOW/TOTAL_ASSETS measures free cash flow as operating income before depreciation minus capital expenditures divided by total assets. LOG_TOTAL_ASSETS is the natural logarithm of total assets. TOTAL_DEBT/TOTAL_ASSETS is the sum of long-term debt and debt due in one year divided by total assets. TANGIBLE_ASSETS/TOTAL_ASSETS is total assets minus intangible assets divided by total assets. 60-MONTH_RETURN_VOLATILITY is the annualized volatility of prior 60-month returns. 5-YEAR_SALES_GROWTH is the five-year least square annual growth rate of sales. Year dummies are included but not reported. *p*-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Variable	Full Sample	Consistent Dividend Payers	Nondividend Payers
$\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$	−0.0527***	−0.0913***	−0.0331
	(0.008)	(0.010)	(0.372)
$\%\text{CHANGE_DILUTED_SHARES}_{t-1,t}$	0.0022	0.0240***	−0.0046
	(0.432)	(0.001)	(0.476)
$\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$	−0.0299***	−0.0234**	−0.0267
	(0.006)	(0.026)	(0.367)
MARKET-TO-BOOK_RATIO	−0.0060***	−0.0082***	−0.0041
	(0.002)	(0.000)	(0.362)
FREE_CASH_FLOW/TOTAL_ASSETS	0.0341***	0.0591***	0.0171
	(0.004)	(0.000)	(0.366)
LOG_TOTAL_ASSETS	0.0029*	−0.0055***	0.0033
	(0.092)	(0.000)	(0.490)
TOTAL_DEBT/TOTAL_ASSETS	−0.0050	0.0160**	−0.0114
	(0.120)	(0.011)	(0.395)
TANGIBLE_ASSETS/TOTAL_ASSETS	0.0108*	0.0158**	0.0106
	(0.070)	(0.034)	(0.462)
60-MONTH_RETURN_VOLATILITY	−0.0468***	−0.0437***	−0.0243
	(0.002)	(0.000)	(0.350)
5-YEAR_SALES_GROWTH	−0.0129***	−0.0363***	−0.0057
	(0.007)	(0.001)	(0.423)
Year dummies	Included	Included	Included
No. of obs.	15,551	6,088	5,792
Log likelihood	18,867.77	13,378.88	2,374.28

of the marginal effects of the control variables for the consistent dividend-paying sample are similar in sign, magnitude, and significance to the results for the full sample.

To examine whether the effect from lack of dividend protection for options dominates the antidilution incentive effect, we need to estimate how much a one-standard-deviation change in option ownership translates into a corresponding increase in percentage change in diluted shares. We estimate conservatively that a one-standard-deviation increase in option ownership will translate into an equal increase in percentage change in diluted shares. This is a conservative measure, since not all options are typically in-the-money and only in-the-money options are reflected in diluted shares outstanding. Increases in the use of options will therefore translate into less than a one-for-one increase in percentage change in diluted shares. A one-standard-deviation (2.05%) increase in managerial stock option ownership is associated with a 19-bp decrease in payout, while an increase in percent change in diluted shares of the same amount is associated with a 5-bp increase in payout. The effect from lack of dividend protection for options appears to dominate the antidilution incentive effect. The net decrease in total

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payout of 14 bps translates into a 5.11% reduction in payout for the median firm, suggesting that the net effect, while not large, appears to be economically significant. For firms that consistently pay dividends and thus are likely to have higher free cash flow, the higher the stock option incentives, the lower the total payout, ceteris paribus, confirming our earlier results. The negative effect of stock option incentives on total payout highlights a potentially unintended consequence of non-dividend-protected, fixed exercise price stock option incentives; namely, that it creates incentives to lower total payout and may exacerbate the free cash flow problem.

In the last column of Table 3, we examine the subsample of non-dividend-paying firms over the sample period. As shown in the univariate statistics in Table 2, these firms have lower free cash flows, have higher investment opportunities (MARKET-TO-BOOK_RATIO), and use higher levels of incentive stock options. While the signs of the marginal effects obtained for the non-dividend-paying sample are similar to those using the full sample and consistent dividend-paying subsample, they are no longer significant at the 10% level. It appears the model specification does not adequately explain variation in payout for non-dividend-paying firms; however, it must be noted that this may be due to lack of variation in payout, since more than half of all firm-years for this sample have no payout.

D. Panel Data Regression Analysis Using Net Payout

To this point we have examined only payout to shareholders in the form of dividends and share repurchases and ignored any inflows from equity offerings or potential proceeds from the exercise of stock options. Allen and Michaely (2003), Boudoukh et al. (2007), and Dittmar and Dittmar (2007) suggest that payout adjusted for inflows is a better measure of payout to shareholders in the aggregate. Firms in any given year may pay dividends, engage in repurchases, and issue equity. Under such a scenario, payout adjusted for inflows would better represent cash returned to shareholders. We now repeat our analysis using a measure of net payout that accounts for these inflows.

We must slightly alter our model specification when considering net payouts. Using net payout, the percentage change in diluted shares outstanding loses the ability to proxy for antidilution incentives due to a mechanical relationship between diluted shares and net payout. For example, when a firm engages in new equity issuance, the number of shares outstanding and the diluted shares outstanding simultaneously increase, causing a corresponding increase in the antidilution proxy. However, since new equity issuances are subtracted from payout to form the new dependent variable, it creates a mechanical inverse relationship between net payout and the antidilution proxy. Recall in the previous regressions that when payout is constrained to be nonnegative, the predicted sign for the antidilution proxy is positive if firms pursue a strategy of repurchasing shares to offset EPS dilution. Any large issuances could therefore "swamp" the intended predicted effect of the previously used antidilution proxy.[11]

[11] In unreported regressions using this antidilution proxy, its coefficient becomes negative and significant and in sensitivity analysis appears to be driven by firm-year observations when large issuances

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To mitigate this mechanical effect we construct a new proxy of the dilution effect that uses the number of executive options exercised during the year to estimate the total number of employee options exercised. The new antidilution proxy is calculated by dividing the total number of executive options exercised in the year (ExecuComp SOPTEXSH) by the ratio of executive stock options to total employee stock options granted during the year (ExecuComp PCTOTOPT). The calculation of this proxy assumes that employees mimic the exercising patterns of executives and the ratio of executive-to-employee options exercised is similar to the executive-to-employee option grant ratio. We scale this by the number of shares outstanding to create our new antidilution proxy.

Descriptive statistics of net payout (dividends plus repurchases minus issuances, scaled by market value of equity), issuances (Compustat Item 108) scaled by market value of equity, and the alternate antidilution proxy, options exercised scaled by shares outstanding, are reported for the three samples in Table 2. The results of fixed-effects panel data regressions are reported in Table 4 in lieu of Tobit regressions, since the dependent variable is no longer censored. These results are similar to regressions in Table 3, which use payout as the dependent variable. The coefficients on the managerial stock incentives are negative, significant, and larger in magnitude across all three samples, suggesting that any type of stock incentives creates a disincentive to payout cash flow. Option ownership provides a stronger disincentive than share ownership. The coefficient estimates of the proxy for antidilution incentives (options exercised/shares outstanding) are close to zero and not significant except for the non-dividend-paying sample, where it has a sign that is opposite to the predicted sign. Using net payout as dependent variable, we find no evidence of payout driven by antidilution incentives. The significant coefficient for the antidilution proxy in the non-dividend-paying sample is likely driven by greater use of issuances in these firms, since more than half of all firm-years for this sample have no payout. Most control variables have their predicted signs and are similar to those obtained using total payout as the dependent variable.

For the full sample, a one-standard-deviation increase in option ownership results in a 29-bp reduction in net payout. This 29-bp reduction in net payout translates into a 49% reduction for the median firm. For the consistent dividend-paying firms, a one-standard-deviation increase in managerial stock option ownership is associated with a 37-bp decrease in net payout, which translates into a 16% reduction for the median firm. The economic impact of stock option usage with net payout as dependent variable is greater across all samples than when using payout as dependent variable, indicating that after netting payouts by inflows from shareholders and option holders, the disincentive created by option usage to make payouts becomes more pronounced. The negative effect of stock option incentives on net payout highlights a potentially unintended consequence of non-dividend-protected, fixed exercise price stock option incentives; namely, that it creates incentives to lower net payout and may exacerbate the free cash flow problem.

occurred. The coefficients of most other variables are similar to the previous results, with the option ownership variable now having a larger negative and significant coefficient (−0.07 for the full sample and −0.18 for the consistent dividend payers sample).

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TABLE 4

Determinants of Net Payout

Table 4 reports coefficients of a fixed-effects panel data regression with NET_PAYOUT as dependent variable, estimated for the full sample, consistent dividend payers (firms that always paid dividends when on ExecuComp) and nondividend payers (firms that never paid dividends when on ExecuComp) over the 1993–2005 period. NET_PAYOUT is calculated as dividends plus repurchases less issuances, scaled by market value of equity. $\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$ and $\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$ are values of the managerial option and stock holdings divided by total shares outstanding as of the end of the previous year. OPTIONS_EXERCISED/SHARES is the estimated number of options exercised divided by total shares outstanding. MARKET-TO-BOOK_RATIO is total assets minus book value of equity plus market value of equity divided by total assets. FREE_CASH_FLOW/TOTAL_ASSETS measures free cash flow as operating income before depreciation minus capital expenditures divided by total assets. LOG_TOTAL_ASSETS is the natural logarithm of total assets. TOTAL_DEBT/TOTAL_ASSETS is the sum of long-term debt and debt due in one year divided by total assets. TANGIBLE_ASSETS/TOTAL_ASSETS is total assets minus intangible assets divided by total assets. 60-MONTH_RETURN_VOLATILITY is the annualized volatility of prior 60-month returns. 5-YEAR_SALES_GROWTH is the five-year least square annual growth rate of sales. Year dummies are included but not reported. *p*-values are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Variable	Full Sample	Consistent Dividend Payers	Nondividend Payers
$\text{OPTIONS_OWNED}_{t-1}/\text{SHARES}_{t-1}$	−0.0765***	−0.1802***	−0.1000***
	(0.000)	(0.000)	(0.002)
OPTIONS_EXERCISED/SHARES	−0.0009	0.0003	−0.1316**
	(0.717)	(0.843)	(0.019)
$\text{SHARES_OWNED}_{t-1}/\text{SHARES}_{t-1}$	−0.0401***	−0.0448***	−0.0342**
	(0.000)	(0.001)	(0.011)
MARKET-TO-BOOK_RATIO	−0.0014***	−0.0092***	−0.0003
	(0.000)	(0.000)	(0.478)
FREE_CASH_FLOW/TOTAL_ASSETS	0.0377***	0.0776***	0.0385***
	(0.000)	(0.000)	(0.000)
LOG_TOTAL_ASSETS	0.0018	−0.0074***	0.0036
	(0.170)	(0.000)	(0.135)
TOTAL_DEBT/TOTAL_ASSETS	0.0261***	0.0233***	0.0330***
	(0.000)	(0.001)	(0.000)
TANGIBLE_ASSETS/TOTAL_ASSETS	0.0114*	0.0240***	−0.0001
	(0.071)	(0.001)	(0.997)
60-MONTH_RETURN_VOLATILITY	−0.0248***	−0.0375***	−0.0177*
	(0.000)	(0.001)	(0.085)
5-YEAR_SALES_GROWTH	−0.0060***	−0.0339***	0.0016
	(0.006)	(0.000)	(0.618)
Year dummies	Included	Included	Included
No. of obs.	15,551	6,088	5,792
Model *F*-statistic	17.02	22.38	6.74
Prob > *F*	0.0000	0.0000	0.0000

As a final robustness test, we adjust net payout for repurchase and issuance activity motivated by antidilution incentives *assuming* they are present. Using a method consistent with SFAS No. 128, we reduce the value of common stock repurchases by the net value realized from all employee options exercised. The ADJUSTED_NET_PAYOUT is calculated by subtracting an estimate of the total net value realized from the exercise of all employee stock options, computed as the net value realized from the exercise of executive stock options (ExecuComp SOPTEXER) divided by the ratio of executive stock options to total employee stock options granted (ExecuComp PCTOTOPT), from the value of common stock repurchased. If total net value realized from the exercise of all employee stock options exceeds the value of common stock repurchased, we reduce the value of common stock issuances by the residual amount. As with our payout and net payout variables, we scale ADJUSTED_NET_PAYOUT by the market value of equity. The ADJUSTED_NET_PAYOUT effectively eliminates the effect of the antidilution motive on net payout to better explore alternative motives. The descriptive statistics for this variable are reported in Table 2. In unreported

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results, the coefficients are similar in sign and magnitude to those reported using NET_PAYOUT as the dependent variable in Table 4. This suggests that the dominant effect of option usage on payout is due to the lack of dividend protection and not antidilution incentives.

E. Dividend-Protected Options

The disincentives created by executive stock options could be mitigated by allowing the strike price to adjust with payments of dividends. Payment of dividends would then not have an adverse effect on the wealth of option-owning managers, so firms that use dividend-protected options may pay higher dividends. In a sample of dividend-paying firms in Finland, for the 41% of firms in their sample that have dividend protected options, Liljeblom and Pasternack (2006) find a significantly positive relationship between dividend distributions and usage of options.

Very few U.S. firms use dividend-protected options. Murphy (1999) found only 7 of 618 large companies that use dividend-protected options in 1992. Likewise, Weisbenner (2000) found only 2 out of 799 large firms using dividend-protected options in 1994. To examine whether the usage of dividend-protected options has changed over time, we searched all 10-K statements over the period 1992–2005 for the term "dividend protected" and variations thereof. We found only one firm that explicitly mentions the use of a dividend-protected option plan. The use of dividend-protected option plans remains extremely rare. This phenomenon may be explained by the fact that dividend-protected options are considered variable-plan options, the cost of which is required to be recognized on the income statement as compensation expense. On the other hand, fixed-plan options granted at-the-money or out-of-the money do not result in a compensation expense. With the recent introduction of FAS 123(R) requiring mandatory option expensing for financial statements with financial year beginning after June 15, 2005, this disadvantage of using dividend-protected options has been eliminated and may promote the use of such options in the future. Greater use of such options could dramatically affect payout policies of firms and eliminate the disincentive to pay dividends for option-owning managers.

V. Conclusion

This paper examines whether increasing stock option usage results in decreasing total payout and potential worsening of the free cash flow problem. The incentive of managers who own non-dividend-protected options is to lower (or not increase) dividend payout. Whether increased repurchases or increased earnings retention (reinvestment) occurs in the face of declining dividend payout is an empirical question which this paper attempts to answer. From the managers' perspective, either repurchases or retention may be attractive.

We provide insights on how managerial stock-based incentives can impact payout policy and the free cash problem, specifically in its interaction with capital structure. Using fixed-effects panel data estimators on various samples of ExecuComp firms over the 1993–2005 period, we find that firms with higher executive

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stock options have lower total payouts. For consistent dividend payers, we also find evidence that suggests that firms increase payouts through repurchases to offset EPS dilution that occurs due to usage of executive and non-executive stock options. However, the managerial incentive appears to dominate the antidilution incentive, resulting in lower total payout for firms with higher usage of options. This result is robust to the use of a measure of payout that nets out cash inflows received by the firm from shareholders and option holders (e.g., funds from seasoned equity offerings and exercise proceeds). Specifically, we show that a one-standard-deviation increase in option ownership results in a 29-bp reduction in net payout for the median firm in the full sample, and a 37-bp decrease in net payout for the median firm in the consistent dividend-paying sample.

Overall, the use of fixed exercise price stock options with no dividend protection appears to result in lower payout, since repurchases (antidilutive or not) do not offset the decreased dividends. This finding highlights a potentially unintended consequence of stock option usage, namely, that it appears to create incentives to lower payout, which may worsen the free cash flow problem.

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