

Non-dividend protected executive options and dividend policy: Evidence from SFAS 123R

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September, 2016

Abstract

In this paper, we examine how granting non-dividend protected executive options affects payout policy during the period 2001-2008. Using a difference-in-difference estimation along with the introduction of SFAS 123R, we find that firms with non-optioned executives increase dividends more than firms with optioned executives, post-versus pre-SFAS 123R. Our result questions whether non-dividend protected executive options are an impediment to paying dividends, given that payout policies of firms with non-optioned executives are unaffected by SFAS 123R. Our result is robust to numerous checks such as pre-SFAS 123R dividends, consistent and inconsistent dividend payers and firms dropping options completely post-SFAS 123R, as well as controlling for endogeneity. Our evidence suggests that expensing of options has no effect on dividend policy.

JEL classification: G30; G32, G38

Keywords: Executive options; Dividends; Share repurchases; SFAS 123R; Expensing

I. Introduction

Prior research suggests that non-dividend protected executive stock options reduce the incentive to pay dividends while potentially increasing the incentive to repurchase stock (Lambert, Lanen and Larcker, 1989; Jolls, 1998; Fenn and Liang, 2001; Kahle, 2002; Hu and Kumar, 2004 and Cuny, Martin and Puthenpurackal, 2009). Nearly all executive stock options (options) granted in the U.S. are not dividend protected.¹ Thus, a policy of granting options may create an incentive to reduce dividends given that the value of options, like all call options, is negatively related to future dividend payments.² At the same time such options if granted at-the-money or out-of the-money were not required to be expensed (Cuny, Martin and Puthenpurackal, 2009),³ thus firms enjoyed the benefits from granting options without the requirement to record any corresponding financial statement expense. The introduction of SFAS 123R (effective from December 15, 2005) requires all firms to record the fair market value of options granted to employees as an expense when options are granted thereby reducing income. As a consequence and as shown by Hayes, Lemmon and Qiu (2012) and Brown and Lee (2011), mandatory option expensing has led firms to either reduce or eliminate the use of options as part of their compensation schemes. Consistent with the literature we observe option value as a proportion of total compensation declined on average by 13.4 percentage points, pre-versus post-SFAS 123R. The reduction in options granted post-SFAS 123R not only

¹ Murphy (1999) reports that approximately one per cent of executives are granted dividend-protected options.

² Lambert, Lanen and Larcker (1989) document a reduction in dividends relative to expected levels following the adoption of executive option plans. It is also assumed that the decrease in the value of options caused by the dividend payment is not compensated for by some other form of compensation. They argue that for the compensation adjustment to be effective, it has to be made ex post. If executives receive ex ante increases in compensation to compensate for expected declines in option values, the incentive to reduce dividends still exists ex post.

³ This may explain why Murphy (1999) finds that over 98 per cent of all executive stock options are granted at-the-money.

avoids recording an expense but should also lead to an increase in dividend payments if non-dividend protected options were the impediment pre-SFAS 123R.

The aim of this paper is to examine whether mandatory expensing of executive options has affected payouts especially dividends for firms with optioned executives. We employ the introduction of SFAS 123R as a quasi-natural experiment to determine if mandated option expensing which is shown to have no effect on firms' cash flows (Hayes, Lemmon and Qiu, 2012) has affected dividend behavior. If granting non-dividend protected options influenced dividend policy decisions pre-SFAS 123R, then the reduction in firms' willingness to compensate managers with options post-SFAS 123R should create an environment conducive to the payment of dividends. By observing dividend policy for firms with optioned executives (OP firms) relative to firms with non-optioned executives (NOP firms) for which option expensing has no impact, we provide direct evidence on whether the disincentive to pay dividends has disappeared thus resulting in higher payments, post-SFAS 123R.

We find that post-SFAS 123R payouts and dividends in particular have increased significantly for both OP and NOP firms. Given NOP firms should not have been impacted by mandatory expensing, an increase in dividends post-SFAS 123R cannot be due to option expensing. More surprisingly, using a difference-in-difference approach along with a propensity score matching procedure, we find that increases in dividend payouts for NOP firms increase more than for OP firms post- versus pre-SFAS 123R. Our finding therefore questions whether the granting of non-dividend protected options was in fact responsible for lower dividend payments pre-SFAS 123R. Our result is robust to numerous factors shown to be associated with dividends as well as options, such as growth opportunities, firm size, free cash flow, volatility, managerial incentives and managerial option and stock holdings, as well as pre-SFAS

123R dividends. The main finding is robust to alternative variable definitions and sample selection criteria.

Establishing causality between option pay and dividend policy is problematical due to endogeneity in that option pay and dividend policy are jointly-determined through optimal contracting mechanisms. For example, OP firms tend to be characterized by higher volatility which in turn leads to lower cash flow and hence dividends. Thus, any relationship found between dividend policy and option pay could be spurious. The introduction of SFAS 123R provides a quasi-natural experiment in that it represents an exogenous change in the accounting benefits of options. Other equity-based compensation was virtually unaffected by this change.⁴ The significant reduction in option grants coupled with no change in investment and financing policies post-SFAS 123R as reported by Hayes, Lemmon and Qiu (2012) implies that the personal disincentive of executives to pay dividends is decreased due to the reduction of option pay leaving other factors affecting dividend policy unchanged. Although the decrease in options is not in itself exogenous because it is a response to an exogenous accounting policy change and has been shown to be uncorrelated to factors driving optimal dividend policy, such as cash flows (Hayes, Lemmon and Qiu, 2012), it enables identification. If the relationship between dividend and option pay policies observed in the data is due to compensation normally being driven by optimal dividend policy, then the relationship should be altered when option compensation changes and factors affecting dividend policy do not. Thus, if the relationship between dividend and option pay policies continues to hold during the introduction of SFAS

⁴ See Hayes, Lemmon, and Qiu (2012) for a comprehensive assessment of how other equity-based compensation such as restricted stock and equity awards with performance-based vesting conditions were affected by SFAS 123R.

123R then we can conclude that personal executive incentives drive this relationship and not optimally designed compensation contracts.

To determine if non-dividend protected options impede dividend payments we follow Bakke, Mahmudi, Fernando and Salas (2016) by identifying two different sets of firms that should not be affected by the introduction of SFAS 123R, constituting our control group (NOP firms). First, we include firms not granting options, at a minimum, in the two years prior to the introduction of SFAS 123R, that is, fiscal years 2003 and 2004, and second, firms identified as having voluntarily decided to adopt fair-value method for expensing options in any year prior to 2003. Similar to Carter, Lynch and Tuna (2007) and Brown and Lee (2011) we identify voluntary expensers based on Bear Stearns Equity Research dated December 16, 2004 (McConnell, Pegg, Senyek and Mott, 2004). Given Carter, Lynch and Tuna (2007) find that voluntary expensers decreased use of options and increased use of restricted stock, we avoid including cases where NOP firms are in the process of transitioning their payout policy in response to changes in option compensation by only selecting firms prior to fiscal year 2003. In both instances, neither group of firms should be affected by the regulatory change. Combining the two sets of firms enables a clean benchmark for our treated group, OP firms, in that all firms in the treated group are affected by the regulatory change.

Our article contributes to the literature that links executive compensation, specifically options, and payout policy which finds that the existence of option plans generally lead to lower dividend payments. Absent agency costs of equity and the existence of perfect capital markets enables the Miller-Modigliani (1961) dividend irrelevance theorem to hold. Thus, dividend policy would not matter and granting non-dividend protected executive options would be irrelevant. However, in practice,

agency costs exist (Jensen, 1986) and dividends are relevant even in the existence of perfect capital markets (DeAngelo and DeAngelo, 2006). According to the standard principle-agent theory (Holmstrom, 1979; Shavell, 1979), options form a major part in executive compensation in addressing these costs by aligning managers' interest with those of shareholders' by increasing pay-performance sensitivity (Core, Guay and Larcker, 2003). Thus, lower dividends paid by OP firms may be optimal when shareholders prefer capital gains to dividends.

But options have also been shown to provide managers with opportunities to extract rents (Yermack, 1995; Bertrand and Mullainathan, 2001; Bebchuk and Fried, 2004; Dittmann and Maug, 2007, Kuhnen and Zwiebel, 2008 and Bebchuk, Cohen and Ferrell, 2009), especially prior to SFAS 123R when granting non-dividend protected options were free of accounting costs (Brown and Lee, 2011 and Zhang and Cahan, 2010). As a result, if option convexity is not valued (Hayes, Lemmon and Qiu, 2012) and instead options are used to inflate executive pay packages who have captured the pay setting process (Bebchuk and Fried, 2004 and Kuhnen and Zwiebel, 2008) then lower dividend payments by OP firms may be detrimental to shareholders.

Lambert, Lanen and Larcker (1989) find a significant decline in dividend levels after the adoption of executive stock option plans. A lower than optimal dividend may, for example, exacerbate the free cash flow problem (Fenn and Liang, 2001). Although recent evidence has shown that dividends have been replaced by stock repurchases as the dominant source of payout (Skinner, 2008)⁵, both Fenn and Liang (2001) and Cuny, Martin and Puthenpurackal (2009) find that such option-induced dividend reductions are only partly offset by stock repurchases, resulting in

⁵ Explanations for this trend include taxation (Grullon and Michaely, 2002), increased flexibility (Guay and Hartford, 2000), employee stock option exercises (Kahle, 2002), CEO bonuses tied to earnings per share (Cheng, Harford and Zhan, 2015) and non-dividend protected options (Fenn and Liang, 2001).

lower total payouts for firms with higher option usage. Thus, by examining the behavior of NOP firms for whom expensing had no impact relative to OP firms around the introduction of SFAS 123R, we can determine whether options have a direct impact on payout policy, and in particular, dividends. Specifically, we expect OP firms to increase dividends more than NOP firms, post- versus pre-SFAS 123R, if unprotected options were an impediment.

The remainder of article is organized as follows. The next section describes the data, measures and methodology. Section III investigates the relation between option expensing and payout policy. Section IV provides robustness tests and Section V concludes.

II. Data, measures and methodology

We use Execucomp database as our main source of executive compensation data for the period 2001-2008. Following previous literature we define fiscal year 2005 as the beginning of the post-SFAS 123R period and we require all firms to have at least one year of data in the pre-SFAS 123R period (2001-2004) and post-SFAS 123R period (2005-2008). Further, following existing literature we remove all firms with standard industrial classification (SIC) code between 6000-6999 (representing financial firms) and SIC code between 4900-4999 (representing utility firms). To accommodate the change in reporting requirements for executive compensation by the Securities and Exchange Commission for fiscal years ending December 15, 2006, we follow the procedures of Hayes, Lemmon and Qiu (2012, Appendix A) and Coles, Daniel and Naveen (2013, 2014) to ensure compensation variables are measured consistently over our sample period.

To measure managerial incentives we follow existing literature (e.g., Hayes, Lemmon and Qiu, 2012; Coles, Daniel and Naveen, 2006 and Guay, 1999) and

compute the sensitivities of annual compensation to changes in stock price (Delta) and stock price volatility (Vega) following the methodology found in Core and Guay (2002). Delta is measured as the change in value of the executive's total portfolio of current and outstanding prior grants of shares and options for a 1 per cent change in the stock price, while Vega is the change in the value of the executive's total current and outstanding prior option grants for a 1 per cent change in stock price volatility. Both Delta and Vega are stated in thousands of dollars and are winsorized at the 99th percentile. We supplement our compensation data with firm financial data from Compustat and stock price data from The Centre for Research in Security Prices (CRSP). This data is used to calculate measures of dividend payout, repurchase payout, executive option holdings, executive shareholdings, growth opportunities, free cash flow, firm size, leverage, R&D and capital expenditure and volatility of operating income and market. Detailed discussion of all variable definitions is contained in the Appendix. This procedure yields 9690 firm-year observations by 1288 firms from 2001-2008 (fiscal years).

To determine if SFAS 123R has affected payout policy of firms we employ a control group for which SFAS 123R did not impact, namely firms not granting options in the pre-SFAS 123R period (NOP firms). NOP firms comprise firms that voluntarily expensed options in any year prior to 2003 or as a minimum did not grant options in years 2003 and 2004. There are 77 firms (or 594 firm-year observations) that voluntarily expensed options prior to 2003 and 196 firms (or 801 firm-year observations) that did not grant options in 2003 and 2004. Thus, in total our NOP control group contains 273 firms (or 1395 firm-year observations). Firms granting options (OP firms) are firms that granted options prior to SFAS 123R. In our sample,

1092 firms (or 8295 firm-year observations) are classified as OP firms. OP firms are coded one while NOP firms are coded zero.

Payout Variables

Following Fenn and Liang (2001) and Cuny, Martin and Puthenpurackal (2009) we measure dividend payout as regular cash dividends on common stock outstanding over market value of equity (Div/MVE). We also check that any dividend payout greater than 5 per cent of the market value of equity is not a special dividend. Only 5 observations are found and deleted to arrive at 9690 firm-year observations. The small number is consistent with Fenn and Liang (2001) and DeAngelo, DeAngelo and Skinner (2000) who find that special dividends are used infrequently. We measure repurchase payout following Fenn and Liang (2001), Grullon and Michaely (2002), Boudoukh, Michaely, Richardson and Roberts (2007) and Grullon, Paye, Underwood and Weston (2011) which is purchases of common and preferred stock scaled by market value of equity (Rep/MVE). One advantage of this measure is that share repurchases are expressed in total dollar amounts alleviating the need to make assumptions about the price at which the firm buys back its stock.

Compensation Variables

Most studies measure managerial equity incentives using compensation variables for only the chief executive officer (CEO) (see for example, Yermack, 1995; Berger, Ofek and Yermack, 1997; Coles, Daniel and Naveen, 2006 and Hayes, Lemmon and Qiu, 2012) or for all corporate insiders including outside board members (Denis, Denis and Sarin, 1997). Following Fenn and Liang (2001), Kahle (2002) and Cuny, Martin and Puthenpurackal (2009) we include all executives listed in

Execucomp assuming that dividend policy is determined by all executives and not just the CEO.⁶

As noted by Hayes, Lemmon and Qiu (2012) and Coles, Daniel and Naveen (2013, 2014), the SEC changed the reporting requirements for executive compensation for fiscal years ending after December 15th 2006. Firms are now required to present details of option and equity grants in two additional tables, the plan-based award and outstanding equity award tables. The new disclosure rules also redefine certain compensation variables with some bonuses being reclassified as non-equity incentive compensation. As stated earlier, to ensure consistency in measurement of our compensation variables over the sample period we follow the procedure outlined by Hayes, Lemmon and Qiu (2012) and Coles, Daniel and Naveen (2013, 2014).

Control Variables

The control variables are mainly those used by Fenn and Liang (2001) who rely on agency theory as the determinant. They include free cash flow (Net operating cash flow/TA), firm size (Log TA), growth opportunities (Market-to-book), leverage (TD/TA), earnings volatility (Volatility of operating income/TA) and management stock and stock options held by executives as a percentage of total shares outstanding (Shares owned and Options owned, respectively). We also include R&D expenditure (RD/TA) and capital expenditure (CX/TA) following Coles, Daniel and Naveen (2006) who show that option convexity is positively associated with RD/TA and negatively related to firm CX/TA. Market volatility is included following Grullon,

⁶ Firms are required to report compensation for anyone holding the office of CEO during the year plus the four highest paid executive officers not including the CEO. Some firms voluntarily report compensation data for more executives than required. To be consistent we follow Bebchuk, Cremers and Peyer (2011) and use only the five executives with the highest compensation.

Paye, Underwood and Weston (2011) and Hoberg and Prabhala (2009) who show that dividends are related to market risk.

Methodology

Studies attempting to infer causality between executive compensation and payout policies suffer from numerous endogeneity issues due to both policies, along with other corporate decisions, being made simultaneously. Further, important determinants that may influence both policies, such as the strength of corporate governance or investment opportunities, are unobservable. Omission or at best relying on poor proxies for these variables in payout regressions can bias the coefficient estimates leading to unreliable inferences. In addition, executives themselves may select to work for firms with characteristics similar to their attributes. For example, risk-averse executives may self-select into dividend paying firms given such firms are found to be less risky (Caliskan and Doukas, 2015).

The introduction of SFAS 123R in 2005 requiring all firms to recognize compensation expense for all stock options provides us with a quasi-natural experiment in that it represents an exogenous variation in compensation contracts or more specifically option pay. Hayes, Lemmon and Qiu (2012) and Anderson and Core (2013) find that the introduction of SFAS 123R led firms to significantly reduce the number of options granted to their executives, but find no evidence that the change led to changes in investment and financing policies. Even though the decrease in options is not in itself exogenous because it is a response to an exogenous accounting policy change and has been shown to be uncorrelated to factors driving optimal dividend policy (Hayes, Lemmon and Qui, 2012), it allows us to identify the causal effect of option grants on dividend policy.

Following Bakke, Mahmudi, Fernando and Salas (2016) we identify two sets of firms unlikely to be affected by mandatory option expensing (control group or NOP firms). First, firms not granting options, at a minimum, in the two years prior to the introduction of SFAS 123R, that is, fiscal years 2003 and 2004. Second, firms identified as having voluntarily decided to adopt fair-value method for expensing options in any year prior to 2003. In both instances, neither group of firms should be affected by the regulatory change and hence should not alter payout policy in response to option expensing. Combining the two sets of firms enables a clean benchmark for our treated group, OP firms, in that all firms in the treated group are affected by the regulatory change. Although combining the two sets of firms provides a clean treatment group, following Bakke, Mahmudi, Fernando and Salas (2016) we check that our results are robust to any differences that may exist within the two groups that make up our control group or NOP firms.

We employ a difference-in-difference estimation to identify the effect of changes in compensation policy on payout policy. Following Hayes, Lemmon and Qiu (2012) we identify 2005-2008 as the post-SFAS 123R period, with 2001-2004 as the pre-SFAS 123R period. We estimate the following difference-in-difference specification:

Payout/(Market value of equity)

$$= \alpha + \beta_1(\text{Post} - \text{SFAS 123R}) + \beta_2(\text{OP firms}) + \beta_3(\text{Post} - \text{SFAS 123R} \times \text{OP firms}) + \beta_4(\text{Firm characteristics}) + \varepsilon,$$

where Payout is either dividend or repurchase payments scaled by the market value of equity, Post-SFAS 123R is a dummy variable equal to one if the firm belongs in the post-SFAS 123R period and zero in the pre-SFAS 123R period, OP firms equals one if the firm belongs to the treatment group or zero if the firm belongs to the control

group or NOP firms. The main variable of interest is the interaction term Post-SFAS 123R x OP firms (that is, β_3). A positive (negative) β_3 indicates that relative to NOP firms, OP firms increase payout more so (less so) over the two time periods. To account for potential heteroskedasticity and serial correlation within firms over time, robust standard errors clustered at the firm level are calculated. We also control for industry-fixed effects in the estimation.

To employ difference-in-difference testing the data need satisfy the ‘parallel trend’ assumption. As Lemmon and Roberts (2010) note, this assumption requires similar trends in the outcome variable during the pre-SFAS 123R period for both treatment and control groups. Figure 1 plots mean dividend and repurchases both scaled by market value of equity for OP firms (treatment group) and NOP firms (control firms) around SFAS 123R and shows that both payouts are trending in a similar manner for both groups at similar rates during the pre-treatment period. The parallel trend assumption does not require that payout variables be identical across both groups or the two periods as these distinctions are differenced out in the estimation (Lemmon and Roberts, 2010). For both OP and NOP firms, dividends and repurchases are increasing steadily over the sample period until 2007 when both decline (due to the credit squeeze from the Global Financial Crisis). Importantly, relative to NOP firms (for which expensing had no impact), OP firms exhibit a similar dividend payment behavior. In other words, it does not appear at this early stage that SFAS 123R or option expensing had any impact on payout policy.

III. Empirical analysis

Summary Statistics

Table 1 presents summary statistics for the whole sample period 2001-2008, as well as OP and NOP firms. For the whole sample total payouts average 3.4 per cent of market value of equity which is higher than 2.5 percent reported by Fenn and Liang

(2001) for the decade prior to our sample period. Unlike Fenn and Liang (2001), repurchases (2.4 per cent) dominate regular cash dividends (1.0 per cent) as preferred choice of payout. Although our repurchases are higher than Fenn and Liang (2001) and Cuny, Martin and Puthenpurackal (2009) who report 1.2 per cent and 1.52 per cent, respectively, when we control for the sample period our figure is consistent. All our compensation variables are consistent with those of Hayes, Lemmon and Qui (2012), as are our values of Delta and Vega. For example, our Delta (Vega) averages 879.08 (166.23) over the sample period consistent with 739.903 (149.453) reported by Hayes, Lemmon and Qui (2012). Firm characteristics are also consistent with Hayes, Lemmon and Qui (2012) and Fenn and Liang (2001). Turning to summary statistics for OP and NOP firms. As expected, there is considerable variation between OP and NOP firm characteristics. Consistent with previous literature, firms granting options payout less, have higher proportions of equity-based pay, have higher market-to-books, are smaller with less debt, engage in more R&D and have higher market volatility than firms not granting options (Smith and Watts, 1992).

Table 2 shows that both OP and NOP firms have increased their dividends and repurchases (as functions of market value of equity) post-SFAS relative to pre-SFAS 123R. OP firms increased dividends by 0.5 per cent while NOP firms increased dividends by 0.9 per cent, pre- versus post-SFAS 123R. Repurchases have also increased with OP firms repurchasing 1.6 per cent and NOP firms 1.3 per cent more post-SFAS 123R than pre-SFAS 123R. But the difference-in-difference column in Table 2 shows that only the increase in dividend payout for NOP firms is significantly greater than for the corresponding increase for OP firms, pre- versus post-SFAS 123R. Thus again, although dividends have increased post-SFAS 123R, it does not

appear to be due to expensing as NOP firms (for which expensing had not impact) increased dividend payouts more so than OP firms.

Apart from proportion of options to total compensation (Option/TC), all our compensation variables pre- versus post-SFAS 123R for both OP and NOP firms exhibit similar trends to those of Hayes, Lemmon and Qui (2012). For example, both OP and NOP firms exhibit a decrease in salary proportions (Salary/TC) and an increase in restricted stock proportions (RSG/TC) and long-term incentive award proportions (LTIA/TC) pre- versus post-SFAS 123R consistent with firms in Hayes, Lemmon and Qui's (2012) sample. OP firms exhibit a decline in Option/TC of 14.7, per cent pre- versus post-SFAS 123R, consistent with 17.1 per cent in Hayes, Lemmon and Qui (2012). The decline for NOP firms in Option/TC is smaller (4.7 per cent) but this is due to our identification of NOP firms not granting options in years 2003 and 2004 and voluntarily expensing options prior to 2003. Both our incentive measures (Delta and Vega) show no change for either type of firm pre- versus post-SFAS 123R which is consistent with Anderson and Core (2013) and Hayes, Lemmon and Qui (2012) who show that expensing has no direct impact on executive incentive.

Of the firm characteristics and for both type of firms, Market-to-book has declined while Log TA has increased over the two time periods, consistent with the trends reported by Hayes, Lemmon and Qui (2012). TD/TA increases from 19.8 per cent pre-SFAS 123R to 21.1 per cent post-SFAS 123R for OP firms. NOP firms do not exhibit a similar increase in TD/TA. We find that Volatility of operating income/TA increases by 0.4 per cent and 0.7 per cent for OP and NOP firms, respectively, over the two time periods. Similarly, Market volatility increases by 2.6 per cent and 1.3 per cent for OP and NOP firms, respectively. However, the increase in both volatility measures is not statistically significant between the two types of

firms. Overall, given that NOP firms exhibit similar firm characteristic changes to OP firms over the two time periods suggests that option expensing did not impact directly on firm policies consistent with Anderson and Core (2013) and Hayes, Lemmon and Qui (2012).

Main Analysis

We begin our main analysis by examining payout behavior for OP and NOP firms over the whole sample period. Following Cuny, Martin and Puthenpurackal (2009) we also examine consistent and inconsistent dividend payers given these firms are likely to be affected by the disincentive of optioned-executives to pay dividends differently. Consistent dividend payers are those paying a dividend each fiscal year during the sample period, while inconsistent dividend payers pay a dividend at least once during the sample period, but excludes those that pay a dividend consecutively each year. Table 3 presents the results where we regress Div/MVE and Rep/MVE on the dummy variable OP firms (=1) and Options/TC controlling for incentives (Delta, Vega), executive options and shares owned, growth opportunities, free cash flow, firm size, leverage, R&D and capital expenditure, earnings and market volatility. We also control for industry-fixed effects in all estimations. We employ Options/TC to capture firms that do not fall within our classification of NOP firms. These firms include those that granted options in years 2001 or 2002 and were not voluntary expensers.⁷ In regressions with Options/TC we remove Options owned due to observed correlation between these variables.⁸ Except for columns (5) and (6), we employ a fixed-effects Tobit model panel data censored at zero since there are a number of observations where firm dividends and/or repurchase shares are zero (Fenn and Liang, 2001 and

⁷ There are a total of 38 firms that fall into this category. We analyse these firms separately and find that the results, although with less significance, still hold.

⁸ The correlation coefficient between Options/TDC and Options owned is 0.402 ($p=0.000$).

Weisbenner, 2000).⁹ For consistent dividend payers (columns (5) and (6)) we employ fixed-effects OLS estimations given the data are no longer censored. All columns report the estimated coefficients and standard errors from the regressions. We compute standard errors, which are robust to heteroskedasticity, by clustering at firm level. Div/MVE is the dependant variable for all columns except for columns (3) and (4) for which Rep/DIV is the dependent variable.

The positive coefficient on Post-SFAS 123R in all estimations indicates that both dividends and repurchases increased post-SFAS 123R confirming the results reported in Table 2. This result is obtained irrespective of whether we include OP firm (=1) or Options/TC in the estimations. The control variables for columns (1) and (2) are consistent with extant work. As expected firms paying dividends have lower growth opportunities, more free cash flow, are larger with less debt, R&D expenditure and lower earnings and market volatility. Consistent with Fenn and Liang (2001) and Cuny, Martin and Puthenpurackal (2009) we also find a negative association between executive options owned and dividends. Columns (3) and (4) show that larger firms with more free cash flow but less debt repurchase less shares consistent with Fenn and Liang (2001). We further show that firms with less volatile earnings and exhibiting lower deltas repurchase more shares.

Turning to consistent dividend payers (columns (5) and (6)) and inconsistent dividend payers (columns (7) and (8)), respectively, the results are similar in sign to the full sample in columns (1) and (2) with only leverage, R&D expenditure and volatility exhibiting a difference between the dividend paying sub-samples. Relative

⁹ Pre-SFAS 123R, 41.9 per cent and 61.3 per cent of OP firms and NOP firms, respectively, paid zero dividends, while post-SFAS 123R, 45.9 per cent and 66.4 per cent of OP firms and NOP firms, respectively paid zero dividends. Pre-SFAS 123R, 49.0 per cent and 51.1 per cent of OP firms and NOP firms, respectively, repurchased zero stock, while post-SFAS 123R, 37.6 per cent and 37.8 per cent of OP firms and NOP firms, respectively repurchased zero stock.

to the full sample, leverage loses significance for consistent dividend payers and R&D expenditure is no longer significant when examining inconsistent dividend payers. Further, both volatility measures change sign for inconsistent dividend payers relative to the full sample. However, irrespective of dividend payers being identified as consistent or inconsistent, granting non-dividend protected options appears to have no impact on dividend policy, pre- versus post-SFAS 123 with both OP firms (=1) and OP/TDC never gaining significance. Taken together, our results show that both OP and NOP firms increased dividend and repurchase payouts post-SFAS 123R. If expensing of options was a deterrent to the payment of dividends pre-SFAS 123R only OP firms should have been affected by the introduction of SFAS 123R, not NOP firms. Thus, the increase in dividend payouts for both type of firms questions whether granting non-dividend protected options had an impact on dividend policy.

Although we find that dividend payments increase for both type of firm post-SFAS 123R, it could be due to an omitted factor that we have not controlled for. To attribute the dividend increase to option expensing it is necessary to observe payout behavior for firms affected by the policy change (OP firms) relative to those that were not (NOP firms), pre- versus post-SFAS 123R. We do so by employing the interaction term OP firms x Post-SFAS 123R in a difference-in-difference estimation as discussed in Section II. Table 4 presents the results for Div/MVE (columns (1) and (2)) and Rep/MVE (columns (3) and (4)). As we employ a nonlinear Tobit model, only the interaction term is relevant.¹⁰ Columns (1) and (2) show that the coefficient on the interaction term OP firms x Post-SFAS 123R is significantly negative indicating that dividend payments increased proportionately more for NOP firms than

¹⁰ See Puhani (2008) who discusses difference-in-differences methods with nonlinear models such as Probit and Tobit.

OP firms, pre- versus post-SFAS 123R. We obtain this result irrespective of whether we include other firm characteristics or not. Thus, we conclude that the observed increase in dividend payments post-SFAS 123R could not have been attributable to mandatory option expensing. On the other hand, the interaction term in columns (4) to (6) is never significant implying that the increase in repurchases post-SFAS 123R is the same between OP and NOP firms.

Propensity Score Matched Samples

As there is a large disparity of OP firms relative to NOP firms, we conduct the analysis by identifying a matched sample using propensity score matching procedure (Rosenbaum and Rubin, 1983). This procedure allows us to identify a control sample of NOP firms that exhibit no observable differences in characteristics relative to OP firms in the pre-SFAS 123R period. Thus, each pair of matched firms is indistinguishable from one another except for the granting of options. Matching on observable firm characteristics ameliorates but does not eliminate issues related to non-random selection.

We implement the matching procedure as follows. First, the probability of being a NOP firm is modelled using a Probit regression with the same control variables employed in Table 3. As we are concerned with identifying NOP firms having similar firm characteristics to OP firms in the pre-SFAS 123R period, our dependent variable in this analysis is a dummy variable equal to one if classified as a NOP firm and zero if classified as an OP firm. Using the results from this Probit model we match within industry and year each NOP firm to an OP firm using the lowest difference in propensity scores.¹¹ As noted in Table 2, there are 1395 firm-year

¹¹ The match uses a caliber match with no replacement where the OP and NOP firms' propensity score is allowed to differ by up to 0.10.

observations identified as NOP firms in the whole sample period, with 713 firm-year observations in the pre-SFAS 123R period. For 13 pre-SFAS23R firm-years it was not possible to identify a reasonable propensity score match resulting in the sample being reduced to 1376 firm-years for both NOP and OP firms, with 700 and 676 firm-year observations in the pre-SFAS 123R and post-SFAS 123R periods, respectively. To assess the effectiveness of the matching between NOP firms and their counterpart OP firms, we test the differences between two groups (not tabulated). None of the 12 *t*-tests and rank tests are statistically significant indicating the matching procedure was successful.

The results of the difference-in-difference estimation based on the matched samples are reported in Table 5. Panel A presents the results for Div/MVE and Panel B the results for Rep/MVE. A comparison of Div/MVE and Rep/MVE between the matched samples reveals that although both type of firms increase payouts post-SFAS 123R, NOP firms increase dividend payments proportionately more than OP firms confirming our previous finding. As the results in Panel A of Table 5 show, the mean Div/MVE for NOP firms increases by 1.0 percentage point while for OP firms the increase is 0.8 percentage point over the two time periods. The increase in Div/MVE of NOP firms relative to that of OP firms is statistically significant with a *p*-value of 0.034. In contrast, the difference between the increases in Rep/MVE of both firms is not statistically significant. Thus, our results are not due to a disparity of OP firms relative to NOP firms.

A limitation of the propensity score matching results is that the documented correlation between OP and NOP firms and payout policies may simply reflect unobservable characteristics that influence both option granting and payout behavior. Despite including characteristics suggested by the literature, we recognize that we

cannot control for other potentially relevant characteristics that might change around the introduction of SFAS 123R. The omission of these controls might lead us to incorrectly attribute the differences in payout policy to differences in firm type. To better address this concern, in this Section, we conduct two further tests employing propensity score matching. We first control for dividends in the pre-SFAS 123R period, and second we analyse firms that granted options pre- but not post-SFAS 123R.

Controlling for Pre-SFAS 123R dividends

Given that NOP firms (our control group) increase dividends more so than OP firms (our treatment group) and not the other way around, it is not possible to attribute the change in dividend policy totally to option expensing. It could be that the dividend policy of OP firms is affected by option expensing as well as other factors, but that these other factors affect OP firms less than NOP firms. One way to address this concern is to control for dividends pre-SFAS 123R. So if, for example, high dividend firms, on average, increase dividends more in the post-SFAS 123R, we have controlled for that possible influence. We employ the same propensity score matching procedure as in the previous section but we now include pre-SFAS 123R dividends, as well as the control variables of Table 3, in the Probit model. We control for pre-SFAS 123R dividends in two ways. First, we match OP and NOP firms in each pre-SFAS 123R year, that is 2001 to 2004, and then analyse dividends post-SFAS 123R. Second, given the disparity of OP and NOP firms post-SFAS 123R, we match only in fiscal year 2004, being the last year prior to option expensing.

The results are reported in Table 6. Panel A presents the results for matched samples in each pre-SFAS 123R year, while Panel B presents the results for fiscal year 2004. In each Panel, differences in means and medians are presented for the

matched OP and NOP firms in the pre-SFAS 123R period. Panel A shows that there is still a small difference in dividends (albeit at the 10% level) between OP and NOP firms, whereas in Panel B the difference has disappeared. In either case, the difference-in-difference result continues to show that NOP firms increase dividends more than OP firms pre- versus post-SFAS 123R. In Panel A the increase in Div/MVE of NOP firms relative to that of OP firms is statistically significant with a p-value of 0.026, while in Panel B the increase is statistically significant with a p-value of 0.036. Thus, our results are robust with respect to pre-SFAS 123R dividends.

Firms No Longer Granting Options Post-SFAS 123R

In this Section we analyse firms that granted options pre- but not post-SFAS 123R with those that continued to grant options pre- and post-SFAS 123R. If option expensing influences payout policies then the expectation is that firms no longer granting options, on average, should exhibit an increase in dividend payments. Once again we employ propensity score matching to identify firms continuing to grant options over the two time periods (control group) having similar characteristics to firms no longer granting options post-SFAS 123R (treatment group). We begin with a Probit regression where the dependent variable is a dummy variable equal to one if in the treatment group and zero if in the control group. We include the same control variables as in Table 3. As in Table 5, using the results from this Probit model we match within industry and year each treatment firm to a control firm using the lowest difference in propensity scores.¹² We again assess the effectiveness of the matching between NOP firms and their counterpart OP firms, by testing the differences between

¹² The match uses a caliber match with no replacement where the control and treatment firms' propensity score is allowed to differ by up to 0.10.

two groups (not tabulated). Again none of the 12 *t*-tests and rank tests are statistically significant indicating the matching procedure was successful.

The results of the difference-in-difference estimation based on the matched samples are reported in Table 7. Panel A presents the results for Div/MVE and Panel B the results for Rep/MVE. Consistent with our previous findings, Div/MVE and Rep/MVE pre- versus post-SFAS 123R have increased irrespective of firm type. For example, firms continuing to grant options (control group) increase dividend payments by 0.5 per cent and repurchases by 1.5 per cent over the two time periods. Similarly, firms no longer granting options post-SFAS 123R (treatment group) increase dividend payments by 0.4 per cent and repurchases by 1.4 percent over the two time periods. However, the difference-in-difference statistic is insignificant for both types of payout implying that option expensing did not impact on payout policies. Firms no longer granting options post-SFAS 123R did not increase payouts proportionately more than firms that continued to grant options over both time periods. Thus, our results continue to question whether granting non-dividend protected options influences payout policy.

IV. Robustness test

Heckman Selection Model

Although employing SFAS 123R as a quasi-natural experiment in a difference-in-difference approach with propensity score matching addresses endogeneity concerns to a significant extent, the possibility exists that not all firms complied with SFAS 123R in 2005 to the same degree. If the effect of the SFAS 123R was not the same for all OP firms due, for example, to partial compliance by OP firms, our results will be biased. Also Tucker (2010) raises the concern that propensity-score matching only controls for observed differences across OP firms and

NOP firms. To the extent that this procedure does not fully account for the differences between OP firms and NOP firms our results may potentially still suffer self-selection problems. Tucker (2010) suggests performing a Heckman test as well as a propensity score matching. To perform a Heckman test we require a variable that is correlated with option compensation but does not affect dividend policy. We rely on Chu, Faasse and Rau (2016) who find that firms with higher proportions of incentive pay are more likely to appoint compensation consultants. We therefore employ the presence of a compensation consultant (Comp consultant (=1)) with significant market share as our instrument variable.¹³ We expect compensation consultants to have a say on compensation policy but not dividend policy. Our Heckman two-step procedure is as follows. In the first stage, we estimate a Probit selection model with OP firms (=1) as the dependent variable and Comp consultant (=1) along with the control variables used in the propensity score matching procedure found in Table 3 as the independent variables. In the second stage, the treatment effect model employs an inverse Mills' ratio produced from the first stage.

We present the results of this procedure in Table 8. We first present the results of the Probit selection model. We find that the likelihood of being an OP firm is positively related to delta, vega, options owned, R&D and capital expenditure and both types of volatility but negatively related to shares owned and size. Importantly, we find that OP firms are positively associated with the presence of a significant compensation consultant, implying that firms granting options to their executives are more likely to employ compensation consultants than firms not granting options to their executives. Next we present results for the second stage treatment effect model for both Div/MVE and Rep/MVE. We only report the results for the two variables of

¹³ We are grateful to John Bizjak for providing the data on compensation consultants.

interest, namely OP firms x Post-SFAS 123R and the inverse Mills' ratio. The results are consistent with those of Table 4, with OP firms x Post-SFAS 123R negatively signed for Div/MVE but not Rep/MVE. Given the difficulty in estimating the power of instruments when the dependent variable in the first stage selection model is binary (OP firms (=1)) we follow Lennox, Francis and Wang's (2012) suggestion and calculate Variance-Inflation-Factors for our two variables of interest, namely OP firms x Post-SFAS 123R and the inverse Mills' ratio. We find that the Variance-Inflation-Factors for OP firms x Post-SFAS 123R and the inverse Mills' ratio are 2.26 and 2.11, respectively, well below 5 implying multicollinearity is not an issue. Thus, overall our results are robust after using the Heckman model to correct to unobservable differences across OP and NOP firms.

Equity Recycling or Net Payout

Grullon, Paye, Underwood and Weston (2011) show that using net payouts instead of dividends has a significant impact on the conclusions drawn with respect to the changing nature of payout policies. Specifically, they find that a significant number of firms issue equity while simultaneously paying a dividend and/or repurchasing shares. A proportion of their sampled firms are issuing more equity than paying out in dividends and repurchases combined (Equity recyclers). The implication being that an observed increase in dividend or repurchase payment is nullified if firms are simultaneously issuing equity to the same dollar value. As a consequence, examining dividend and repurchase payments in isolation may lead us to incorrectly conclude that granting non-dividend protected options has no impact on dividend policy. Our finding that both OP and NOP firms increase payouts over the two time periods may be attributable to mandatory option expensing if NOP firms (for which option expensing has no impact) are issuing proportionately more equity than OP

firms. In other words, net payout (measured as total dividends plus total repurchases minus sales of equity following Grullon, Paye, Underwood and Weston, 2011)¹⁴ for OP firms may have increased proportionately less than NOP firms implying that granting non-dividend protected options may in fact have an impact on payout policy.

To test this possibility we employ the same matched sample as in Table 5 and perform difference-in-difference tests with Net payout/MVE as the dependent variable. We also divide the matched sample into firms with Net payout/MVE ≤ 0 (where dividend and repurchase payments deceed equity issues, or equity recyclers) and Net payout/MVE > 0 (where dividend and repurchase payments exceed equity issues). Panel A of Table 9 reports the results for the matched sample, Panel B the matched sample where Net payout/MVE ≤ 0 and Panel C where Net payout/MVE > 0 . Panel A shows that Net payout/MVE increases significantly by 2.6 per cent and 1.6 per cent for NOP and OP firms, respectively. The difference between Net payout/MVE of NOP firms and OP firms is statistically significant with a p-value of 0.035, consistent with previous results. Panel B reports the results for firms classified as equity recyclers. Approximately one-third of firms are equity recyclers across both time periods. This applies to both NOP firms (417/1376 or 30.3 per cent) and OP firms (503/1376 or 36.6 per cent). OP firms increase equity issues proportionately more than dividend and repurchase payments combined, pre- versus post-SFAS 123R, whereas NOP firms do not. The difference-in-difference statistic reported in Panel B where Net payout/MVE ≤ 0 for OP firms is significantly (albeit at the 10 per cent level) greater than the corresponding no change for NOP firms. Thus, our results are

¹⁴ Grullon, Paye, Underwood and Weston (2011) measure Net payout/MVE three different ways. The three measures are defined in the Appendix. For brevity, we report the results for only one of these measures; namely total dividends plus purchases of common and preferred stock minus sales of common and preferred stock, all sourced from Compustat. Results for the other two measures of net payout are very similar.

not driven by NOP firms issuing more equity than OP firms. On the other hand, Panel C shows that for firms with Net payout/MVE >0 , both NOP and OP firms exhibit an increase pre- versus post-SFAS 123R with the increase of 2.5 per cent for NOP firms being significantly (again albeit at the 10 per cent level) greater than the 2.0 per cent increase for OP firms. Again confirming our previous results. Overall, the results of Table 8 show that our results are robust with respect to equity recycling.

Changes in Dividend Policy and Changes in Firm Policies around SFAS 123R

Our analysis thus far has not allowed for the possibility that some firms may have enacted changes in dividend policy in response to changes in firm policies that might have also changed over this period. For example, an increase in dividend payments may be a result of cash flow realized due to a decision to reduce R&D expenditure two years prior to the introduction of SFAS 123R. Our identification strategy allows us to examine the cross-sectional relation between changes in dividend policy and option granting behavior while at the same time controlling for changes in other firm variables. Following Hayes, Lemmon and Qiu (2012) we calculate the average for all variables pre- and post-SFAS 123R for all years for which we have data. For each firm, we compute average levels of the firm policy variables including the payout variables in the pre- and post-SFAS 123R periods. We then take the within-firm difference of each variable and regress changes in payout variables on OP firm (=1) controlling for firm policy changes. The results are presented in Table 10. OP firms (=1) is found negatively associated with change in dividend payments (column (1)) but not with change in repurchases (column (2)). This result implies that firms granting options (i.e., those effected by mandatory expensing) are less likely to increase dividends relative to firms not affected by expensing. Once again, if non-dividend protected options were a deterrent to dividends we find no evidence of it.

Alternative Measures of Payout Policies

Until now, we have scaled all payout measures with market value of equity. A concern exists that the variation noted in payout policies is due to changes in market value rather than payout policy. To address this concern, we scale payout measures using total assets and EBITDA. We repeat the difference-in-difference estimation for the same matched sample reported in Table 5. The results are reported in Table 11. In all cases, irrespective of scaling factor or payout, both NOP and OP firms exhibit increases in payouts, pre- versus post-SFAS 123R. Further, the difference-in-difference statistic is significant for dividend and not repurchase payments, whether scaled by EBITDA (Panel A) or total assets (Panel C). Taken together, the results of Table 10 confirm our previous results that NOP firms increase dividend payments more than OP firms over the two time periods. Again, confirming that granting non-dividend protected options does not appear to impact on dividend policy. Hence, our main result is robust to alternative measures of payout policies.

Voluntary Adopters and Non-granters

To this point we have identified NOP firms as firms that voluntarily adopted expensing prior to 2003 (Vol adopters) and firms not granting options, at a minimum, in years 2003 and 2004 (Non-granters). The possibility exists our results are due to unobservable characteristics that may affect voluntary adopters and not firms not granting options, or vice-versa, in the pre-SFAS 123R period. The omission of these controls might lead us to incorrectly attribute the differences in payout policy to option expensing. In this Section we separate Vol adopters and Non-granters in a difference-in-difference estimation do determine if their payout policy differs pre-versus post-SFAS 123R. As previously, we include control variables found in Table 3.

The results are presented in Table 12. Panel A presents the results for Div/MVE and Panel B the results for Rep/MVE. Both Vol adopters and Non-granters exhibit increases in dividend payments and repurchases over the two time periods. Pre- versus post-SFAS 123R, Vol adopters increased dividend payments by 1.3 per cent and repurchases by 1.7 percent, while Non-granters increased dividends by 0.8 per cent and repurchases by 1.1 percent. However, the difference-in-difference statistic for both dividend payments and repurchases is not statistically significant implying that Vol adopters and Non-granters increased payouts by a similar amount. Hence, our results are not driven by differences between voluntary adopters and firms not granting options in the pre-SFAS 123R period.

Small versus large option granters

Despite numerous robustness checks, it is still possible that by comparing NOP firms with OP firms, which are characteristically different, we have omitted a variable that distinguishes firms granting options with those that do not. To address this concern we select all OP firms and subdivide the subsample into quintiles based on Option/TC. If option expensing influences payout policies then the expectation is that firms granting a larger proportion of options, on average, should exhibit an increase in dividend payments, pre- versus post-SFAS 123R. We employ propensity score matching to identify firms in the top four quintiles having higher proportions of Option/TC (Large granters or our control group) having similar characteristics to firms in the bottom quintile (Small granters or our treatment group). We begin with a Probit regression where the dependent variable is a dummy variable equal to one if in the treatment group and zero if in the control group. We include the same control variables as in Table 3. As in Table 5, using the results from this Probit model we match within industry and year each treatment firm to a control firm using the lowest

difference in propensity scores.¹⁵ We then compare the dividend payment of Small granters (treatment group) with Large granters (control group). In so doing, we minimize the possibility of an omitted variable given all firms are granting options in various degrees. The results reported in Table 13 show that both large and small option granters increase dividends pre- versus post-SFAS 123R. Pre- versus post-SFAS 123R, Small granters increased dividend payments by 0.9 per cent, while Large granters increased dividends by 0.5 per cent. But, the difference-in-difference statistic for dividend payments is statistically significant (albeit at the 10 percent) implying that Small granters increased dividend payments more so than Large granters. Thus, consistent with our result that NOP firms increase dividends more than OP firms, our result is not due to an omitted variable that distinguishes optioned and non-optioned firms.

V. Conclusion

This paper studies the relationship between executive stock options and dividend policy, pre- versus post-SFAS 123R. We find that contrary to previous work granting non-dividend protected options to executives has little impact on dividend policy. Although we find both dividends and repurchases increase over the two time periods, dividend payments by NOP firm increase more than for OP firms. Given NOP firms are unaffected by mandatory option expensing the dividend increase cannot be attributable to executive options being unprotected from dividends. We arrive at our results by employing the passage of SFAS 123R as a quasi-natural experiment in tandem with a difference-in-difference methodology. Our result is robust with respect to numerous checks including conducting propensity score

¹⁵ The match uses a caliber match with no replacement where the control and treatment firms' propensity score is allowed to differ by up to 0.10.

matching to ensure our NOP firms are qualitatively similar to OP firms, examining consistent and inconsistent dividend payers and controlling for equity recyclers.

Overall, in contrast to Cuny, Martin and Puthenpurackal (2009) and Fenn and Liang (2001) we show that the use of non-dividend protected options appears to have little or no impact on dividend payouts. But consistent with Hayes, Lemmon and Qiu (2012) and Anderson and Cole (2013), we show that not only does option expensing have no impact on investment and financing policies but it appears dividend policy as well.

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Figure 1 Mean dividend and repurchase for OP and NOP firms around SFAS 123R

Figure 1 plots mean dividend and repurchases both scaled by MVE from 2001-2008 for the treated (OP) and control (NOP) firms. NOP firms includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. OP firms includes firms granting options prior to SFAS 123R. The pre-SFAS 123R period includes years 2001-2004 while the post-SFAS 123R is 2005-2008.

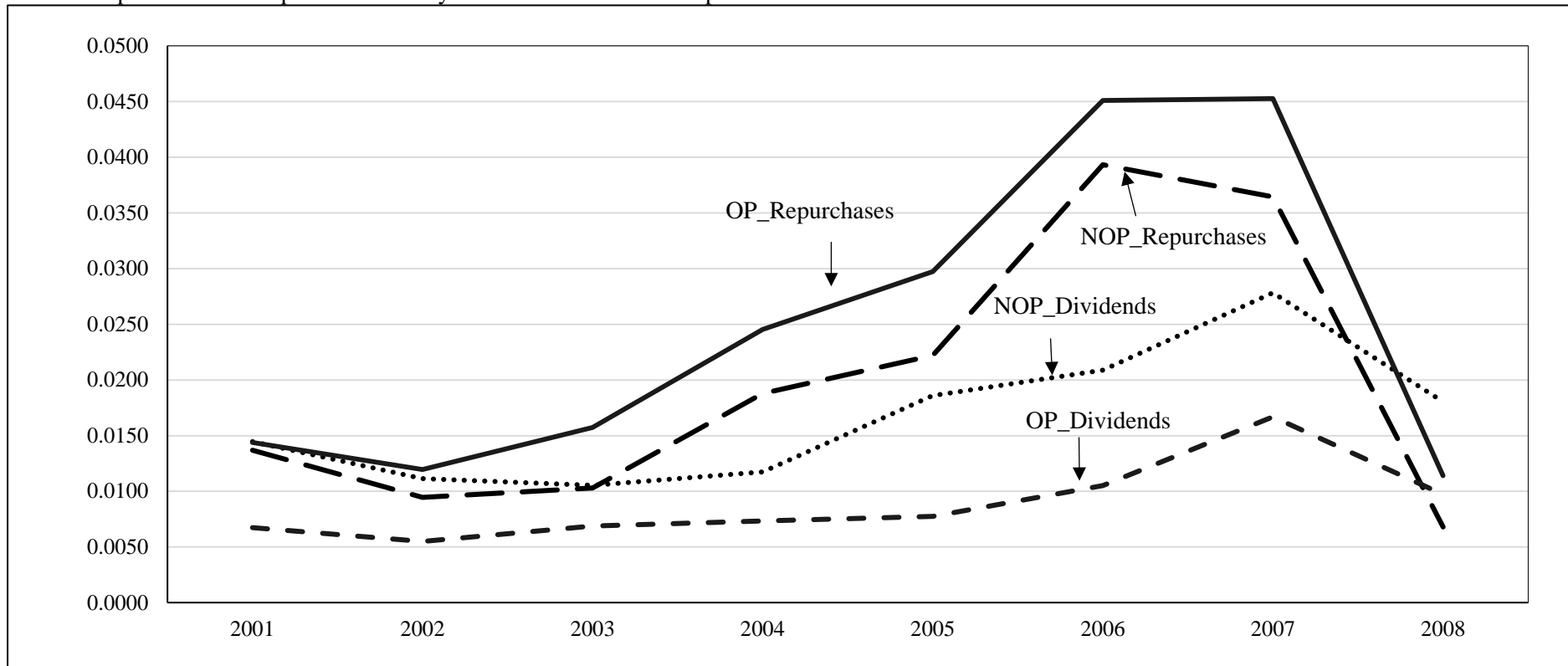


Table 1 Summary statistics

This Table contains summary statistics for the variables used in the analysis over the entire sample period, as well as for OP firms and NOP firms. OP firms include firms granting options prior to SFAS 123R. NOP firms include firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. All variables are defined in the Appendix. * indicates that mean and median of the variable for OP and NOP firms is significantly different at least at 5%.

	Whole sample (N = 9690)		OP firms (N = 8595)		NOP firms (N = 1395)	
	Mean	Median	Mean	Median	Mean	Median
<i>Payout variables</i>						
Div/MVE	0.010	0.000	0.009	0.000	0.017*	0.009*
Rep/MVE	0.024	0.001	0.025	0.001	0.020*	0.001*
Total payout/MVE	0.034	0.016	0.033	0.015	0.036**	0.021*
<i>Compensation variables</i>						
Log TDC	9.121	9.088	9.119	9.092	9.129	9.061
Salary/TDC	0.302	0.255	0.297	0.252	0.333*	0.273*
Bonus/TDC	0.187	0.167	0.181	0.162	0.216*	0.190*
Option/TDC	0.261	0.225	0.282	0.250	0.134*	0.000*
RSG/TDC	0.146	0.079	0.141	0.072	0.181*	0.126*
LTIA/TDC	0.070	0.000	0.066	0.000	0.094*	0.000*
Delta \$000	879.08	216.26	832.63	208.75	1155.30*	268.71*
Vega \$000	166.23	56.47	172.62	65.82	128.28*	0.00*
Options owned	0.005	0.003	0.005	0.003	0.003*	0.000*
Shares owned	0.034	0.008	0.029	0.007	0.059*	0.009*
<i>Firm characteristics</i>						
Market-to-book	1.664	1.299	1.696	1.324	1.470*	1.153*
Net operating cash flow/TA	0.080	0.085	0.080	0.086	0.086*	0.085
Log TA	7.369	7.248	7.301	7.213	7.772*	7.496*
TD/TA	0.207	0.187	0.204	0.182	0.226*	0.213*
RD/TA	0.035	0.004	0.037	0.006	0.016*	0.000*
CX/TA	0.049	0.033	0.050	0.033	0.050	0.035*
Volatility of operating income/TA	0.035	0.022	0.035	0.022	0.035	0.022
Market volatility	0.021	0.018	0.022	0.023	0.014*	0.001*

Table 2 Descriptive statistics for OP and NOP firms, pre- and post-SFAS 123R

OP firms include firms granting options prior to SFAS 123R. NOP firms include firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. The pre-SFAS 123R period includes years 2001-2004 while the post-SFAS 123R is 2005-2008. All variables are defined in the Appendix. *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

	OP Firms					NOP firms					Difference in differences
	Pre-SFAS 123R		Post-SFAS 123R		Post less pre change	Pre-SFAS 123R		Post-SFAS 123R		Post less pre change	
	N	Mean	N	Mean		N	Mean	N	Mean		
<i>Payout variables</i>											
Div/MVE	4313	0.006	3982	0.011	0.005***	713	0.012	682	0.021	0.009***	0.005***
Rep/MVE	4313	0.017	3982	0.033	0.016***	713	0.013	682	0.026	0.013***	-0.003
Total payout/MVE	4313	0.023	3982	0.044	0.020***	713	0.025	682	0.048	0.023***	0.002
<i>Compensation variables</i>											
Log TDC	4313	9.012	3982	9.236	0.223***	713	8.952	682	9.314	0.365***	0.139**
Salary/TDC	4313	0.306	3982	0.288	-0.018***	713	0.362	682	0.305	-0.057***	-0.038***
Bonus/TDC	4313	0.180	3982	0.183	0.003	713	0.228	682	0.216	-0.023***	-0.027***
Option/TDC	4313	0.352	3982	0.205	-0.147***	713	0.157	682	0.110	-0.047***	0.100***
RSG/TDC	4313	0.082	3982	0.204	0.122***	713	0.132	682	0.232	0.100***	-0.022**
LTIA/TDC	4313	0.028	3982	0.107	0.078***	713	0.060	682	0.130	0.071***	-0.007
Delta \$000	4313	794.81	3982	873.60	78.79	713	1045.10	682	1270.50	225.41	143.61
Vega \$000	4313	172.26	3982	173.00	0.74	713	121.21	682	135.66	14.45	13.71
Options owned	4313	0.007	3982	0.004	-0.003***	713	0.004	682	0.003	-0.002**	0.001***
Shares owned	4313	0.032	3982	0.027	-0.005***	713	0.064	682	0.054	-0.010	-0.006
<i>Firm characteristics</i>											
Market-to-book	4313	1.836	3982	1.546	-0.289***	713	1.561	682	1.375	-0.186***	0.103
Net operating cash flow/TA	4313	0.081	3982	0.079	-0.002	713	0.087	682	0.085	0.002	0.001
Log TA	4313	7.141	3982	7.474	0.332***	713	7.619	682	7.928	0.309***	-0.027
TD/TA	4313	0.198	3982	0.211	0.013***	713	0.230	682	0.221	-0.008	-0.022
RD/TA	4313	0.037	3982	0.038	0.001	713	0.018	682	0.016	-0.002	-0.003
CX/TA	4313	0.049	3982	0.049	0.000	713	0.050	682	0.051	0.001	0.001

Volatility of operating income/TA	4313	0.034	3982	0.037	0.004**	713	0.032	682	0.038	0.007***	0.003
Market volatility	4313	0.010	3982	0.036	0.026***	713	0.008	682	0.020	0.013***	-0.013

Table 3 Effect on dividends and repurchases for OP and NOP firms around SFAS 13R

This Table consists of fixed-effects estimations examining payout behavior for OP and NOP firms for the whole sample, consistent and non-consistent payers. Consistent dividend payers pay a dividend in each fiscal year during our sample period. Inconsistent dividend payers pay a dividend at least once during our sample period. OP firms is a dummy variable equal to one and includes firms granting options prior to SFAS 123R. NOP firms is a dummy variable equal to zero and includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. Post-SFAS 123R is a dummy variable equal to one for the post-SFAS 123R period, which is fiscal year 2005 to 2008 and zero otherwise. Except for Columns (5) and (6) which are fixed-effects panel regression, all other estimations are fixed-effects Tobit regressions. All variables are defined in the Appendix. Except for OP firms and Post-SFAS 123R, all variables are lagged one period. We report estimated coefficients and standard errors in parentheses where the latter are clustered at firm level and are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample				Consistent dividend payers		Inconsistent dividend payers	
	Div/MVE		Rep/MVE		Div/MVE			
OP firms (=1)	-0.002 (0.002)		0.005* (0.003)		-0.005 (0.002)		0.010 (0.007)	
Option/TC		-0.023 (0.009)		-0.004 (0.005)		-0.004 (0.003)		-0.003 (0.008)
Delta	-0.00003 (0.00004)	-0.00005 (0.00004)	-0.00113* (0.00046)	-0.00114** (0.00047)	-0.00016 (0.00002)	-0.00001 (0.00002)	0.00042 (0.00008)	0.00044 (0.00007)
Vega	0.00035 (0.00026)	0.00059 (0.00030)	-0.00006 (0.00038)	-0.00098 (0.00036)	-0.00013 (0.00001)	-0.00001 (0.00002)	0.00031 (0.00005)	0.00042 (0.00006)
Options owned	-0.217** (0.095)		-0.167 (0.118)		-0.014** (0.007)		-0.089 (0.181)	
Shares owned	0.018** (0.009)	0.017* (0.009)	-0.008 (0.015)	-0.023 (0.014)	0.049 (0.095)	-0.009 (0.006)	0.038 (0.025)	0.031 (0.024)
Market-to-book	-0.004*** (0.001)	-0.003*** (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002* (0.002)	-0.002* (0.002)
Net operating cash flow/TA	0.103*** (0.009)	0.100*** (0.009)	0.150*** (0.012)	0.150*** (0.013)	0.017** (0.008)	0.016** (0.008)	0.134*** (0.021)	0.134*** (0.021)
Log TA	0.011*** (0.001)	0.010*** (0.001)	0.009*** (0.001)	0.010*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.005** (0.002)	0.005** (0.002)

TD/TA	-0.031*** (0.004)	-0.031*** (0.004)	-0.087*** (0.006)	-0.087*** (0.006)	-0.007 (0.007)	-0.007 (0.008)	-0.032*** (0.021)	-0.031*** (0.012)
RD/TA	-0.074*** (0.021)	-0.073*** (0.021)	-0.018 (0.026)	-0.017 (0.026)	-0.050* (0.030)	-0.050* (0.030)	-0.060 (0.062)	-0.059 (0.063)
CX/TA	0.028* (0.016)	0.032* (0.016)	-0.036 (0.026)	-0.029 (0.026)	-0.001 (0.013)	-0.003 (0.013)	-0.007 (0.043)	0.003 (0.043)
Volatility of operating income/TA	-0.001*** (0.017)	-0.003*** (0.001)	-0.095*** (0.029)	-0.085*** (0.029)	-0.053** (0.020)	-0.058*** (0.021)	0.291* (0.154)	0.284* (0.154)
Market volatility	-0.047* (0.028)	-0.076* (0.029)	-0.260*** (0.041)	-0.253*** (0.041)	-0.091*** (0.029)	-0.078*** (0.027)	0.149** (0.064)	0.125** (0.060)
Post-SFAS 123R (=1)	0.005*** (0.001)	0.003*** (0.001)	0.022*** (0.002)	0.023*** (0.002)	0.006*** (0.001)	0.005*** (0.001)	0.014*** (0.003)	0.014*** (0.003)
N	8305	8305	8305	8305	2448	2448	3327	3327
χ^2	3207.94	3236.24	2042.06	2038.35			1131.79	1126.33
Prob > χ^2	0.000	0.000	0.000	0.000			0.000	0.000
Adjusted R ²					0.193	0.190		
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Difference-in-difference regressions: Effect on dividends and repurchases for OP and NOP firms around SFAS 123R

This Table consists of fixed-effect Tobit estimations examining payout behavior for OP and NOP firms, pre- and post-SFAS 123R. OP firms is a dummy variable equal to one and includes firms granting options prior to SFAS 123R. NOP firms is a dummy variable equal to zero and includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. Post-SFAS 123R is a dummy variable equal to one for the post-SFAS 123R period, which is fiscal year 2005 to 2008 and zero otherwise. All variables are defined in the Appendix. Except for OP firms, Post-SFAS 123R and OP firms x Post-SFAS 123R, all variables are lagged one period. We report estimated coefficients and standard errors in parentheses where the latter are clustered at firm level and are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Div/MVE		Rep/MVE	
OP firms (=1)	-0.004 (0.003)	-0.001 (0.002)	0.005 (0.004)	0.004 (0.004)
Post-SFAS 123R (=1)	0.013*** (0.003)	0.009*** (0.003)	0.026*** (0.004)	0.021*** (0.005)
OP firms x Post-SFAS 123R	-0.005** (0.003)	-0.006*** (0.003)	0.002 (0.004)	0.002 (0.005)
Delta		-0.00003 (0.00004)		-0.00003*** (0.00004)
Vega		0.00038 (0.00026)		-0.00006 (0.00004)
Options owned		-0.316** (0.129)		-0.374*** (0.125)
Shares owned		0.022 (0.015)		-0.008 (0.015)
Market-to-book		-0.004*** (0.001)		0.198** (0.084)
Net operating cash flow/TA		0.100*** (0.020)		0.144*** (0.012)
Log TA		0.010*** (0.002)		0.004*** (0.001)
TD/TA		-0.030*** (0.009)		-0.087*** (0.006)
RD/TA		-0.076** (0.034)		-0.025 (0.026)
CX/TA		0.024 (0.024)		-0.045* (0.026)
Volatility of operating income/TA		0.126 (0.105)		-0.094*** (0.029)
Market volatility		-0.225*** (0.042)		-0.008 (0.060)
N	9690	8305	9690	8305
χ^2	2852.73	3198.75	1435.29	2088.78
Prob > χ^2	0.000	0.000	0.000	0.000
Industry fixed effects	Yes	Yes	Yes	Yes

Table 5 Propensity score matching for OP and NOP firms.

In this Table we identify a sample of OP firms by employing a propensity score matching procedure. The propensity score is estimated using all control variables included in Table 3. We require that the difference between the propensity score of NOP firms and its matching peer does not exceed 0.1 per cent in absolute value. OP firms includes firms granting options prior to SFAS 123R. NOP firms includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options at a minimum in years 2003 and 2004. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to fiscal years 2001 to 2004. We then compare Div/MVE and Rep/MVE pre-versus post-SFAS 123R for the two groups. Panel A reports results for Div/MVE, while Panel B reports results for Rep/DIV. All variables are defined in the Appendix.

	N	Mean	Difference (Post-pre change)	P-value of difference
Panel A: Div/MVE				
Pre-SFAS 123R (NOP firms)	700	0.012		
			0.010	0.000
Post-SFAS 123R (NOP firms)	676	0.021		
Pre-SFAS 123R (OP firms)	700	0.008		
			0.006	0.000
Post-SFAS 123R (OP firms)	676	0.014		
			-0.005	0.024
Panel B: Rep/MVE				
Pre-SFAS 123R (NOP firms)	700	0.013		
			0.013	0.000
Post-SFAS 123R (NOP firms)	676	0.026		
Pre-SFAS 123R (OP firms)	700	0.018		
			0.011	0.000
Post-SFAS 123R (OP firms)	676	0.029		
			-0.002	0.617

Table 6 Propensity score matching controlling for pre-SFAS 123R dividends

In this Table we identify a sample of OP firms in the pre-SFAS 123R period by employing a propensity score matching procedure. The propensity score is estimated using all control variables included in Table 3 as well as Div/MVE for the pre-SFAS 123R period. We require that the difference between the propensity score of NOP firms and its matching peer does not exceed 0.1 per cent in absolute value. OP firms includes firms granting options prior to SFAS 123R. NOP firms includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options at a minimum in years 2003 and 2004. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to either fiscal years 2001 to 2004 or fiscal year 2004. Panel A reports descriptive statistics for the propensity matched OP and NOP firms for fiscal years 2001 to 2004 and then compares Div/MVE pre- versus post-SFAS 123R for the two groups. Panel B reports descriptive statistics for the propensity matched OP and NOP firms for fiscal year 2004 and then compares Div/MVE for fiscal year 2004 versus post-SFAS 123R for the two groups. All variables are defined in the Appendix. * indicates statistical significance at the 10% level.

Panel A: Fiscal years 2001 to 2004		OP firms (N = 680)		NOP firms (N = 680)	
		Mean	Median	Mean	Median
Div/MVE		0.010	0.002	0.012*	0.007*
Delta \$000		1074.90	270.59	944.37	227.86
Vega \$000		133.60	52.58	126.89	0.00
Options owned		0.005	0.003	0.004*	0.000*
Shares owned		0.058	0.009	0.049	0.007
Market-to-book		1.529	1.196	1.547	1.176
Net operating cash flow/TA		0.080	0.080	0.088	0.085
Log TA		7.574	7.454	7.689	7.361
TD/TA		0.233	0.229	0.230	0.217
RD/TA		0.016	0.000	0.017	0.000
CX/TA		0.048	0.035	0.049	0.035
Volatility of operating income/TA		0.032	0.019	0.031	0.019
Market volatility		0.007	0.000	0.008	0.000
	N	Mean	Difference (Post-pre change)		P-value of difference
Pre-SFAS 123R (NOP firms)	680	0.012	0.009		0.000
Post-SFAS 123R (NOP firms)	701	0.021			
Pre-SFAS 123R (OP firms)	680	0.010	0.004		0.013
Post-SFAS 123R (OP firms)	1747	0.013			
Difference-in-difference			-0.005		0.026
Panel B: Fiscal year 2004		OP firms (N = 178)		NOP firms (N = 178)	
		Mean	Median	Mean	Median
Div/MVE		0.012	0.008	0.012	0.008
Delta \$000		1467.10	312.58	1240.42	312.64
Vega \$000		107.97	0.000	95.36	56.41
Options owned		0.003	0.000	0.003	0.002
Shares owned		0.071	0.008	0.057	0.009
Market-to-book		1.675	1.279	1.631	1.275
Net operating cash flow/TA		0.101	0.097	0.100	0.086
Log TA		7.775	7.486	7.606	7.584
TD/TA		0.203	0.187	0.213	0.214

RD/TA	0.016	0.000	0.018	0.000
CX/TA	0.054	0.038	0.051	0.039
Volatility of operating income/TA	0.031	0.021	0.033	0.019
Market volatility	0.028	0.030	0.026	0.031
	N	Mean	Difference (Post-pre change)	P-value of difference
Pre-SFAS 123R (NOP firms)	178	0.012		
Post-SFAS 123R (NOP firms)	686	0.021	0.008	0.001
Pre-SFAS 123R (OP firms)	178	0.012		
Post-SFAS 123R (OP firms)	631	0.016	0.004	0.130
Difference-in-difference			-0.004	0.036

Table 7 Propensity score matching for firms no longer granting options post-SFAS 123R

In this Table we identify control samples of firms that continue to grant options pre- and post-SFAS 123R by employing a propensity score matching procedure. The treatment group consists of firms that granted options pre-SFAS 123R but not post-SFAS 123R. The propensity score is estimated employing a Probit regression with the dependent variable equal to one for the treatment group and zero for the control group. We require that the difference between the propensity score of the treatment group and its matching peer does not exceed 0.1 per cent in absolute value. The propensity score for the control group is estimated employing the control variables included in Table 3. We then compare Div/MVE and Rep/MVE pre- versus post-SFAS 123R for the two groups. Panel A reports results for Div/MVE, while Panel B reports results for Rep/DIV. All variables are defined in the Appendix.

	N	Mean	Difference (Post-SFAS 123R – Pre-SFAS 123R)	P-value of difference
Panel A: Div/MVE				
Pre-SFAS 123R (Control)	651	0.007		
Post-SFAS 123R (Control)	589	0.013	0.005	0.000
Pre-SFAS 123R (Treatment)	651	0.006		
Post-SFAS 123R (Treatment)	589	0.010	0.004	0.000
Difference-in-difference			-0.001	0.469
Panel B: Rep/MVE				
Pre-SFAS 123R (Control)	651	0.015		
Post-SFAS 123R (Control)	589	0.030	0.015	0.000
Pre-SFAS 123R (Treatment)	651	0.016		
Post-SFAS 123R (Treatment)	589	0.030	0.014	0.000
Difference-in-difference			-0.001	0.995

Table 8 Heckman selection model

This Table reports the results using the Heckman selection model to address the endogeneity associated with option and dividend policy. The first stage Probit selection model with industry and year fixed effects reports the determinants of OP firms for the entire sample. The second stage treatment effect model includes the inverse Mills' ratio estimated from the first stage based on the entire sample. OP firms is a dummy variable equal to one and includes firms granting options prior to SFAS 123R. NOP firms is a dummy variable equal to zero and includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options in years 2003 and 2004. Post-SFAS 123R is a dummy variable equal to one for the post-SFAS 123R period, which is fiscal year 2005 to 2008 and zero otherwise. All variables are defined in the Appendix. Except OP firms x Post-SFAS 123R and Inverse Mills' ratio, all variables are lagged one period. We report estimated coefficients and standard errors in parentheses where the latter are clustered at firm level and are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

First stage – Probit selection model		Second stage – Treatment effect model		
Dependent variable:	OP firms (=1)		Div/MVE	Rep/MVE
Delta	0.001*** (0.000)	OP firms x Post-SFAS 123R	-0.005*** (0.001)	-0.015 (0.196)
Vega	0.001*** (0.000)	Inverse Mills' ratio	0.013* (0.005)	-0.002 (0.010)
Options owned	33.061*** (3.801)	Control variables	Yes	Yes
Shares owned	-2.791*** (0.154)			
Market-to-book	0.021 (0.018)			
Net operating cash flow/TA	0.067 (0.196)			
Log TA	-0.142*** (0.017)			
TD/TA	-0.008 (0.099)			
RD/TA	3.130*** (0.503)			
CX/TA	1.240*** (0.389)			
Volatility of operating income/TA	2.700*** (0.436)			
Market volatility	13.987*** (1.194)			
Comp consultant (=1)	0.081** (0.062)			
N	8305		8305	8305
Pseudo R ²	0.107			
Wald χ^2			229.53	417.21
Prob > χ^2			0.000	0.000
Year fixed effects	Yes		Yes	Yes
Industry fixed effects	Yes		No	No

Table 9 Net payout for OP and NOP firms.

This Table presents the difference-in-difference results for the matched sample identified in Table 5 for Net payout/MVE. Net payout is dividends plus repurchases less equity issues. NOP firms includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options at a minimum in years 2003 and 2004. OP firms includes firms granting options prior to SFAS 123R. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to fiscal years 2001 to 2004. We then compare Net payout/MVE pre- versus post-SFAS 123R for the two groups, as well as subgroups where Net payout/MVE ≤ 0 (equity recyclers) and Net payout/MVE > 0 . All variables are defined in the Appendix.

	N	Mean	Difference (Post-SFAS 123R – Pre-SFAS 123R)	P-value of difference
Panel A: Matched sample				
Pre-SFAS 123R (NOP firms)	700	0.012		
			0.026	0.000
Post-SFAS 123R (NOP firms)	676	0.038		
Pre-SFAS 123R (OP firms)	700	0.012		
			0.016	0.084
Post-SFAS 123R (OP firms)	676	0.028		
			Difference-in-difference	-0.010
				0.035
Panel B: Matched sample where Net payout/MVE ≤ 0 (Equity recyclers)				
Pre-SFAS 123R (NOP firms)	256	-0.023		
			0.000	0.892
Post-SFAS 123R (NOP firms)	161	-0.023		
Pre-SFAS 123R (OP firms)	295	-0.018		
			0.012	0.000
Post-SFAS 123R (OP firms)	208	-0.030		
			Difference-in-difference	0.012
				0.079
Panel C: Matched sample where Net payout/MVE > 0				
Pre-SFAS 123R (NOP firms)	444	0.033		
			0.025	0.000
Post-SFAS 123R (NOP firms)	515	0.057		
Pre-SFAS 123R (OP firms)	405	0.034		
			0.020	0.000
Post-SFAS 123R (OP firms)	468	0.054		
			Difference-in-difference	-0.005
				0.081

Table 10 Cross-sectional Tobit regressions describing changes in payout policies around the introduction of SFAS 123R

This Table contains results from cross-sectional Tobit estimations describing changes in payout policies around SFAS 123R. We take the average for each firm pre- and post-SFAS 123R and use the difference in the regression. OP firms is a dummy variable equal to one and includes firms granting options prior to SFAS 123R. NOP firms is a dummy variable equal to zero and includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options at a minimum in years 2003 and 2004. All variables are defined in the Appendix.

We report estimated coefficients and standard errors in parentheses where the latter are clustered at firm level and are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
	Change in Div/MVE	Change in Rep/MVE
OP firms (=1)	-0.006*** (0.002)	0.001 (0.004)
Change in Delta	-0.00013 (0.00001)	-0.00003 (0.00002)
Change in Vega	-0.00102 (0.00002)	-0.00004 (0.00001)
Change in Options owned	0.214 (0.147)	-0.059 (0.175)
Change in Shares owned	0.006 (0.022)	0.027 (0.029)
Change in Market-to-book	-0.003** (0.001)	-0.002 (0.002)
Change in Net operating cash flow/TA	0.027** (0.013)	0.028* (0.017)
Change in Log TA	-0.014*** (0.002)	-0.013*** (0.004)
Change in TD/TA	0.009 (0.008)	0.008 (0.010)
Change in RD/TA	-0.039 (0.035)	0.042 (0.049)
Change in CX/TA	0.004 (0.019)	0.072 (0.056)
Change in Volatility of operating income/TA	-0.220*** (0.032)	0.027 (0.040)
Change in Market volatility	-0.001 (0.001)	-0.034*** (0.002)
N	1264	1264
χ^2	560.04	423.08
Prob > χ^2	0.000	0.000
Industry fixed effects	Yes	Yes

Table 11 Alternative measures for payout policies.

This Table presents the difference-in-difference results for the matched sample identified in Table 5 for alternative payout policy measures. Panel A reports results for Div/EBITDA, Panel B reports results for Rep/EBITDA, Panel C reports results for Div/TA and Panel D reports results for Rep/TA. NOP firms includes firms that voluntarily expensed options in any year prior to 2003 or did not grant options at a minimum in years 2003 and 2004. OP firms includes firms granting options prior to SFAS 123R. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to fiscal years 2001 to 2004. We then compare the alternative payout policy measures pre- versus post-SFAS 123R for the two groups. All variables are defined in the Appendix.

	N	Mean	Difference (Post-SFAS 123R – Pre-SFAS 123R)	P-value of difference
Panel A: Div/EBITDA				
Pre-SFAS 123R (NOP firms)	700	0.095		
			0.074	0.017
Post-SFAS 123R (NOP firms)	676	0.169		
Pre-SFAS 123R (OP firms)	700	0.065		
			0.039	0.000
Post-SFAS 123R (OP firms)	676	0.105		
			-0.040	0.010
Panel B: Rep/ EBITDA				
Pre-SFAS 123R (NOP firms)	700	0.092		
			0.083	0.000
Post-SFAS 123R (NOP firms)	676	0.175		
Pre-SFAS 123R (OP firms)	700	0.127		
			0.113	0.000
Post-SFAS 123R (OP firms)	676	0.241		
			0.030	0.338
Panel C: Div/TA				
Pre-SFAS 123R (NOP firms)	700	0.009		
			0.010	0.018
Post-SFAS 123R (NOP firms)	676	0.018		
Pre-SFAS 123R (OP firms)	700	0.012		
			0.007	0.000
Post-SFAS 123R (OP firms)	676	0.019		
			-0.003	0.056
Panel D: Rep/TA				
Pre-SFAS 123R (NOP firms)	700	0.019		
			0.013	0.000
Post-SFAS 123R (NOP firms)	676	0.031		
Pre-SFAS 123R (OP firms)	700	0.020		
			0.016	0.000
Post-SFAS 123R (OP firms)	676	0.037		
			0.003	0.121

Table 12 Voluntary expensers and firms not granting options, at a minimum, in years 2003 and 2004

In this table, we separate our NOP firms into voluntary expensers (Vol adopters = 1) and firms not granting options, at a minimum, in years 2003 and 2004 (Non-granters =0). We perform a difference-in-difference test employing controls found in Table 3. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to fiscal years 2001 to 2004. We then compare Div/MVE and Rep/MVE pre- versus post-SFAS 123R for the two groups. Panel A reports results for Div/MVE, while Panel B reports results for Rep/DIV. All variables are defined in the Appendix.

	N	Mean	Difference (Post-SFAS 123R – Pre-SFAS 123R)	P-value of difference
Panel A: Div/MVE				
Pre-SFAS 123R (Vol adopters)	301	0.027		
Post-SFAS 123R (Vol adopters)	287	0.040	0.013	0.000
Pre-SFAS 123R (Non-granters)	403	0.023		
Post-SFAS 123R (Non-granters)	389	0.031	0.008	0.000
Difference-in-difference			0.005	0.102
Panel B: Rep/MVE				
Pre-SFAS 123R (Vol adopters)	301	0.014		
Post-SFAS 123R (Vol adopters)	287	0.031	0.017	0.000
Pre-SFAS 123R (Non-granters)	403	0.012		
Post-SFAS 123R (Non-granters)	389	0.023	0.011	0.000
Difference-in-difference			0.004	0.176

Table 13 Small versus large option granters

In this table, we separate our OP firms into quintiles based on Option/TC >0. The treatment group (Small granters) consists of firms in the bottom quintile while the control group (Large granters) consists of firms in quintiles 1 to 4. The propensity score is estimated employing a Probit regression with the dependent variable equal to one for the treatment group and zero for the control group. We require that the difference between the propensity score of the treatment group and its matching peer does not exceed 0.1 per cent in absolute value. The propensity score for the control group is estimated employing the control variables included in Table 3. We then compare Div/MVE pre-versus post-SFAS 123R for the two groups. Post-SFAS 123R refers to the fiscal years 2005 to 2008 and pre-SFAS 123R refers to fiscal years 2001 to 2004. All variables are defined in the Appendix.

	N	Mean	Difference (Post-SFAS 123R – Pre-SFAS 123R)	P-value of difference
Panel A: Div/MVE				
Pre-SFAS 123R (Small granters)	119	0.007		
Post-SFAS 123R (Small granters)	210	0.016	0.009	0.000
Pre-SFAS 123R (Large granters)	114	0.007		
Post-SFAS 123R (Large granters)	196	0.012	0.005	0.000
Difference-in-difference			-0.004	0.076

Appendix

A.1 Variable definitions

Accounting and stock data are from CRSP/Compustat Merged database and compensation data are from Execucomp. We also give the mnemonics used by Compustat to define these variables.

A.1.1 Payout variables following Grullon, Paye, Underwood and Weston (2011)

Variable	Definition	Compustat item number
Div/MVE	Dividends / Market value of equity	DATA21/(DATA199 X DATA25)
Rep/MVE	Repurchases / Market value of equity	DATA115/(DATA199 X DATA25)
Issue/MVE	Equity issues / Market value of equity	DATA108/(DATA199 X DATA25)
Net payout/MVE	Net payout out / Market value of equity	(DATA21+DATA115-DATA108)/ (DATA199 X DATA25)
Net payout/MVE – FF	Net payout out / Market value of equity (Fama and French, 2001, change in Treasury stock)	(DATA21+ Δ DATA226)/ (DATA199 X DATA25)
Net payout/MVE – SW	Net payout out / Market value of equity (Stephens and Weisbach, 1998, decreases in preferred stock)	[(DATA115+MIN(0, Δ DATA226)]/ (DATA199 X DATA25)

A.1.2 Compensation variables following Coles, Daniel and Naveen (2014, 2013)

Pre-2006, Execucomp estimated the value of annual stock grants (RSTKGRNT) and the value of annual option grants (OPTION_AWARDS_BLK_VALUE), whereas post-2006, the comparative items are STOCK_AWARDS_FV which includes both annual stock grants and stock earned once a performance condition is met and OPTION_AWARDS_FV which also includes both annual grants and unearned options. Hence, to ensure consistency across the two periods we follow the procedure of Coles, Daniel and Naveen (2014, Appendix A.3.2 and A.3.3) in calculating RSTKGRNT, OPTION_AWARDS_BLK_VALUE, STOCK_AWARDS_FV and OPTION_AWARDS_FV, separately.

Variable	Definitions*
Salary	SALARY
Bonus	BONUS + NONEQ_INCENT
Options	We follow Daniel, Coles and Naveen (2013) except that our stock volatility is calculated over 36 months
Restricted stock (RSG)	We follow Daniel, Coles and Naveen (2013)
LTIA	We follow Hayes, Lemmon and Qiu (2012)
Total Compensation (TDC)	Pre-2006: SALARY + BONUS + LTIP + RSTKGRNT + OPTION_AWARDS_BLK_VALUE + OTHANN + ALLOTHTOT; otherwise SALARY + BONUS + NONEQ_INCENT + STOCK_AWARDS_FV + RSTKGRNT + OPTION_AWARDS_FV + OTHCOMP + DEFER_RPT_AS_COMP_TOT
Delta	(Black-Scholes delta of all options grants + number of all restricted stock grants + number of all shares granted under LTIA) x (fiscal year-end price x 0.01)
Vega	Black-Scholes vega of all options grants x 0.01
Options owned	[OPT_UNEX_EXER + OPTS_UNEX_UNEXER] / SHRSOUT
Shares owned	SHROWN_EXCL_OPTS_ / SHRSOUT

* All mnemonics are from Execucomp.

A.1.3 Firm variables

Variable	Definition	Compustat item number
Market-to-book	(Market value of equity + assets – book value of equity) / total assets	[(DATA199 X DATA25) + DATA6 – DATA60] / DATA6
Net operating cash flow/TA	(EBITDA – capital expenditure) / total assets	(DATA13 – DATA30) / DATA6
Log TA	Natural logarithm of total assets	LOG DATA6
TD / TA	Total debt	(DATA9 + DATA34) / DATA6
RD / TA	Research and development / total assets	MIN(0, DATA46) / DATA6
CX / TA	Capital expenditure / total assets	DATA30 / DATA6
Volatility of operating income/TA	Firm level standard deviation of EBITDA / total assets	STD(DATA13 / DATA6)
Market volatility	Annual standard deviation of daily stock returns	
Post-SFAS123R	Coded 1 for fiscal years 2005 through 2008; 0 otherwise	
Comp consultant	Coded 1 for fiscal years when a compensation consultant with significant market share exists; 0 otherwise	