The Retention Effects of Unvested Equity: Evidence from Accelerated Option Vesting*

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Abstract

We document that firms can effectively retain executives by granting deferred equity pay. We show this by analyzing a unique regulatory change (FAS 123-R) that prompted 767 firms to suddenly eliminate stock option vesting periods. This allowed CEOs to keep an additional $1.5 million in equity when departing the firm, and we find that voluntary CEO departure rates subsequently rose from 6% to 19%. Our identification strategy exploits FAS 123-R's almost-random timing, which was staggered by firms' fiscal year ends. Firms that experienced departures suffered negative stock price reactions, and responded by increasing compensation for remaining and newly hired executives.

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The unplanned departure of a top manager is a highly costly and disruptive event. For example, Burberry's stock price plunged 8% when CEO Angela Ahrendts announced in 2013 that she was leaving to run Apple's retail operations. Leading firms such as Google similarly identify the loss of top talent as a key risk factor for future growth. Firms are uncertain, nonetheless, how to prevent such departures, and are currently experimenting with a diverse range of ideas to promote loyalty among their top performers.[1] It is therefore important to identify policies that allow firms to effectively retain top executives.

One way that firms can prevent executives from leaving is to defer some of their compensation into the future. Incentive theory predicts that unvested equity pay can be a particularly effective retention mechanism (e.g., Edmans et al. (2012)). Equity grants typically vest only after four to five years (Gopalan et al. (2014)), and executives who voluntarily leave before this period ends forfeit their unvested equity. These holdings accumulate over time to constitute a significant fraction of top executives' total wealth, creating a large cost to pursuing an outside option. Thus, a direct economic link exists between the size of unvested equity holdings and executive turnover rates.[2]

However, previous empirical studies find no relationship between these variables (e.g., Fee and Hadlock (2003); Carter and Lynch (2004)). The dearth of empirical evidence may be due to the difficulty of disentangling the retention effects of unvested equity from other unobservable determinants of executive turnover that are correlated with vesting schedules. For example, boards may optimally set longer vesting periods when investment opportunities rise, which could coincide with industry booms that expand executives' employment options. Additionally, a large literature argues that executives endogenously match to firms based on

[1] See, for example, "Workplace Perks that Pay Off", *The Financial Times*, July 10, 2013.

[2] Angela Ahrendts' departure is one example of this link. She decided to stay at Burberry for almost a year following her departure announcement, until a previously awarded £8 million equity grant vested in June 2014. ("Doubt over Leaving Date for Outgoing Boss at Burberry", *The Guardian*, April 16, 2014.)

characteristics such as their compensation policies (e.g., Lazaer (2003); Gabaix and Landier (2008); Edmans, Gabaix, and Landier (2009)). Therefore, the executives who find it least costly to forfeit unvested equity may sort to firms that grant equity with the longest vesting periods.

This paper presents cleanly identified evidence that deferred equity pay can convey retention incentives, by documenting a large spike in executive turnover following the sudden elimination of equity vesting periods. Our analysis examines a unique feature of an important accounting change (FAS 123-R), which was adopted in December 2004 and required firms for the first time to expense stock options in their financial statements. FAS 123-R imposed retroactive accounting charges on unvested options that firms had granted years before the standard's adoption. Corporate leaders vehemently opposed the accounting charges, which they feared would lead to a sudden drop in earnings and cause investors to sell off their firms' stocks. Motivated by such concerns, 767 firms exploited a regulatory exemption to avoid these expenses: they accelerated executives' previously granted options to vest immediately, instead of over several years as originally scheduled. Option acceleration indeed allowed firms to avoid a large 23% dropoff in net income (Choudhary, Rajgopal, and Venkatachalam (2009)).[3] At the same time, however, it reduced executives' departure costs from forfeiting unvested equity by 63%. Our empirical innovation is to use this large one-time shock to estimate how unvested equity affects executive retention.

A challenge to our research design is that the decision to accelerate option vesting may be endogenous. First, some unobservable firm characteristics may affect both a firm's acceleration decision and its executive turnover. For example, cash-constrained firms may find

[3]For example, when hospital operator HCA accelerated options to avoid a $83 million decrease in net income, a company spokesperson explained that "the whole idea behind the move was absolutely to not recognize an expense" ("Firms Scurry to Avoid Booking Stock Options", *The Wall Street Journal*, January 12, 2005). Similarly, preventing a reduction in accounting earnings was by far the most prevalent explanation that firms gave for accelerating option vesting (Choudhary, Rajgopal, and Venkatachalam (2009)).

it optimal to accelerate option vesting, but also may struggle to retain executives. Such characteristics, if empirically unobservable, can bias estimates from a comparison of accelerating and non-accelerating firms, leading to the incorrect conclusion that decreases in unvested equity lead to higher turnover when in fact no relationship exists. Second, results may be plagued by reverse causality if some firms accelerated options to provide a "golden handshake" to outgoing executives (Yermack (2006)).

We overcome this identification challenge by using plausibly exogenous variation in option acceleration, based on FAS 123-R's staggered compliance dates. We exploit that the regulation took effect for each firm in its first *fiscal* year starting after June 15, 2005. Thus, firms with fiscal years ending June or later had to comply in calendar year 2005, while firms with fiscal years ending May or earlier had to comply only in 2006.[4] This setting allows us to estimate a 2SLS model that utilizes both cross-sectional *and* time-series variation to identify the effect of acceleration on turnover. Specifically, the model compares accelerating and non-accelerating firms using fiscal year ends as an instrument for option acceleration, and tests whether turnover rose first for firms with late fiscal year ends, and second for firms with early fiscal year ends. The advantage of this two-dimensional strategy is that our estimates cannot be biased by unobserved time-invariant heterogeneity between firms with early and late fiscal year ends.

Our analysis starts by validating our fiscal-year-end instrument. We show that firms were 69% more likely to accelerate option vesting in their calendar year of compliance with FAS 123-R (1^{st}-stage F-statistics of 25 or higher). Acceleration allowed these firms' CEOs to depart with \$1.5 million of newly vested equity—twice the value of their annual equity pay. Firms' fiscal year ends also likely satisfy the exclusion restriction for an instrumental

[4]Executives likely did not anticipate the timing of option acceleration, because FAS 123-R's compliance schedule was unexpectedly delayed just two months before the regulation took effect (see Section I). Furthermore, executives had to wait until acceleration actually occurred to depart with the newly vested equity.

variable, as they were set many years in advance of FAS 123-R and thus should be uncorrelated with any contemporaneous changes that affect turnover. We show that turnover does not vary across fiscal year ends before 2005, and further exclude the few firms that changed their fiscal year.

We proceed to examine how the acceleration-induced drop in unvested equity holdings affected executive turnover. A simple graphical examination shows that CEO turnover more than doubled within a year after firms accelerated option vesting (see Figure 3). Strikingly, this increase precisely corresponded to firms' staggered FAS 123-R compliance dates. Prior to FAS 123-R, turnover rates did not vary across fiscal year ends. Turnover then rose sharply, at first only at late fiscal-year-end firms that complied with the regulation in 2005. A year later, turnover rates fell for these firms while simultaneously jumping at early fiscal-year-end firms that had just complied with FAS 123-R.

Our 2SLS regressions confirm these results. We examine turnover both for CEOs and for top executives, using a sample of ExecuComp and BoardEx firms. We find that a one-standard-deviation increase in the fraction of options accelerated leads to a rise in the CEO turnover rate from 6% to 19% (t-statistic of 3.7), and in the top executive turnover rate from 8% to 16% (t-statistic of 3.3). We conduct several tests to confirm that these results are driven by voluntary turnover instead of firings following unobserved performance shocks.

We next examine how this spike in turnover affected the value of firms that lost executives. Departures following option acceleration were relatively sudden, so they may have disrupted firms' business plans and led to costly searches for replacements. Indeed, we find that accelerating firms' stocks dropped 1.5% in a [-3,+3] trading-day window around voluntary CEO departure announcements, erasing $32 million in these firms' market values (see Figure 4). In contrast, non-accelerating firms' stocks were unaffected by voluntary departures, which were likely planned further in advance.

We further find that firms responded to these departures by increasing the compensation of remaining executives and newly hired CEOs. Specifically, accelerating firms that experienced a departure subsequently raised non-departing executives' pay by 14%, relative to accelerating firms that experienced no departures. The adjustment was even larger for firms whose executives were poached by competitors. We also find that newly hired CEOs received 36% higher pay than the departing CEOs whom they replaced. These results indicate that executive turnover, while costly, allowed firms to learn about the value of top executives' outside options.

Our documented results raise the question of why firms approved option acceleration. One possibility is that at the time firms decided to accelerate option vesting, the benefits outweighed the expected costs. Our estimates imply an *expected* value loss of $5 million from acceleration-induced turnover. At the same time, by avoiding an immediate plunge in net income, accelerating firms potentially reduced their likelihood of missing analysts' earnings forecasts, which could have led to value losses exceeding $20 million (see Section IV.E).[5] Another possibility is that corporate boards underestimated the turnover effects of option acceleration. We provide tentative evidence for this explanation by showing that boards did not replenish executives' unvested equity holdings immediately after accelerating option vesting. Firms further may have been unable to grant pay increases large enough to retain executives who planned to depart after acceleration, especially those who decided to take time off from managerial work.

We conclude our analysis with numerous robustness checks showing that our results cannot be explained by unobserved performance shocks or other variables that may differ across fiscal year ends. We find that option acceleration did not affect turnover of outside board

[5]Option acceleration also may have allowed firms to avoid violating bond covenants or other contracts with earnings-based provisions.

directors, who were largely unaffected by FAS 123-R because they held little unvested equity (Yermack (2004)). We also conduct placebo tests showing no relationship between option acceleration and executive turnover in years prior to FAS 123-R. This confirms that turnover does not systematically vary across firms' fiscal year ends. Thus, an omitted variable can only confound our results if it affects executive but not director turnover, and further affects late fiscal-year-end firms only in 2005 and early fiscal-year-end firms only in 2006.

We also show that our results are likely not driven by scheduled retirements or firings. Turnover rose among CEOs who were young, only recently accepted their jobs, or achieved very high performance. Acceleration also increased the departure rate of teams of top executives at high-performing firms. It is unlikely that multiple executives simultaneously planned to retire or were fired following strong firm performance.

Our setting allows us to cleanly identify the effect of accelerated option vesting on executive turnover (high internal validity), but naturally this comes at the expense of external validity. In particular, our 2SLS estimates likely represent the Local Average Treatment Effect (LATE), so the magnitude of the turnover increase pertains to firms whose acceleration decisions were influenced by variation in FAS 123-R's compliance schedule (Angrist and Imbens (1994)). This limits the estimates' applicability for firms that would not have accelerated options under any circumstances.

Our paper contributes to a wide literature on managerial incentives and turnover. Our results imply that firms may be able to effectively prevent turnover of top executives by deferring a portion of their annual pay—a particularly important finding given the recent debate among regulators whether to defer or clawback large portions of (bank) executive pay.[6] We add to a growing literature showing that equity vesting provisions are a key deter-

[6]See, for example, "U.S. Regulators Revive Work on Incentive-Pay Rules", *The Wall Street Journal*, February 16, 2015.

minant of managerial incentives. Our work is most closely related to Gopalan, Huang, and Maharjan (2014), who show that turnover rises after the vesting of equity that was granted several years earlier. However, our setting differs from theirs as we examine a very large one-time shock to vesting periods, and also document the value and pay consequences of the resulting executive departures. Other recent papers provide evidence that executives with short vesting periods act myopically.[7] We also contribute to the literature on how compensation structure affects general employee turnover (Oyer and Schaefer (2005); Balsam, Gifford, and Kim (2007); Aldatmaz, Ouimet, and Wesep (2014)).

We further complement the literature on forced CEO turnover by providing novel evidence on a key determinant of voluntary departures. Early work in this area linked CEO turnover to corporate governance, such as the fraction of outside directors (Weisbach (1988)), the level of managerial and blockholder ownership (Denis, Denis, and Sarin (1997)), failed takeover attempts (Denis and Serrano (1996)), and earnings management (Hazarika, Karpoff, and Nahata (2012)). More recent work shows that firms do not filter out industry shocks when firing executives (Jenter and Kanaan (2015); Eisfeldt and Kuhnen (2013)), and that governance improvements have not increased the sensitivity of forced turnover to performance (Huson, Parrino, and Starks (2001)).

The rest of this paper is structured as follows. Section I provides background information on FAS 123-R. Section II describes our sample and identification strategy. Section III presents 1st-stage results for our instrument. Section IV presents our main 2SLS results. Section V contains placebo and robustness checks. Section VI concludes.

[7]Edmans, Fang, and Lewellen (2015) show that firms reduce investment when equity vests, Ladika and Sautner (2014) link option acceleration to investment cuts, and Edmans et al. (2014) find that CEOs strategically release more news when their equity vests.

I. Background on FAS 123-R

Accounting regulations prior to FAS 123-R did not require firms to expense at-the-money option grants in their financial statements, and almost all firms avoided charges by granting executives such options.[8] This accounting treatment led many firms to mistakenly view stock options as essentially free compensation, and to grant them profusely to executives (Murphy (2013)). FAS 123-R created substantial new accounting charges by mandating that firms expense the grant-date fair value of all options awarded after the regulation's compliance date. Importantly, firms also had to expense the fair value of *previously* granted options that had not vested by this time.

However, FAS 123-R unintentionally contained an exemption that allowed firms to avoid the latter charge if they accelerated the previously granted options to fully vest before the regulation took effect. The Financial Accounting Standard Board (FASB) decided that fair-value expensing did not apply to accelerated options. Firms were only required to claim an expense when accelerating in-the-money options, equal to the acceleration-date stock price minus the option strike price. For many firms this cost was significantly smaller than the fair-value expense that would apply once FAS 123-R took effect (Balsam, Reitenga, and Yin (2008)), and indeed at least 20% of the accelerating firms in our sample accelerated in-the-money options (the exact percentage is uncertain because firms often did not disclose the details of accelerated options). We also find that most executives' unvested holdings consisted primarily of in-the-money options in the year of acceleration.[9]

FAS 123-R culminated a long debate about the accounting treatment of stock options.

[8]Specifically, accounting standards required firms to expense the intrinsic value of stock option compensation (i.e., the stock price on the option grant date minus the option's strike price) while disclosing options' grant-date fair values only in financial statement footnotes. See Choudhary, Rajgopal, and Venkatachalam (2009) and Balsam, Reitenga, and Yin (2008) for more information about the regulatory history of stock option expensing and FAS 123-R.

[9]We calculate that the average ratio of the stock price to the unvested option exercise price was 1.34 for top executives of accelerating firms at the start of the acceleration year.

FASB's previous attempts to require fair-value expensing drew substantial criticism from corporate managers, shareholder groups, and politicians. The corporate scandals of the early 2000s however generated substantial momentum for changing option expensing rules, and FASB responded with a new proposal in March 2004. CEOs of large companies such as Intel vehemently opposed the proposal, claiming that it would reduce financial statement informativeness and lead to costly missed earnings forecasts.[10] However, this time FASB faced relatively little political opposition, and FAS 123-R was officially adopted on December 15, 2004.

Nevertheless, firms were unable to anticipate the precise costs and timing of FAS 123-R for two reasons. First, the regulation's final compliance schedule was unexpectedly changed just two months before the regulation took effect.[11] Second, firms did not know whether option acceleration would trigger accounting charges at all until October 6, 2004, when FASB decided in a narrow 4-3 vote to allow acceleration. Due to this uncertainty, almost no firms accelerated option vesting before October 2004 (Choudhary, Rajgopal, and Venkatachalam (2009)).

Prior work finds that firms that accelerated option vesting were smaller than non-accelerating firms, but also had higher market-to-book ratios (Balsam, Reitenga, and Yin (2008)). The average accelerating firm in our sample had a market value of $2.2 billion, and 40% of accelerating firms are part of the S&P 1500. However, it is important to note that our identification strategy accounts for any differences between accelerating and non-accelerating firms that could affect executive turnover. As we explain in Section II.B, our tests compare accelerating firms in 2005 or 2006 with similar firms that would have accelerated option vesting

[10] See, for example, "More Options for Trial Lawyers", *The Wall Street Journal*, March 31, 2004.

[11] FAS 123-R originally required all firms (independent of their fiscal years) to begin expensing options on June 15, 2005. However, without prior notice, on April 14, 2005 the SEC changed the compliance date to the first quarterly earnings report of the first fiscal year starting after June 15, 2005. The change occurred because government regulators were burdened with a heavy workload, and because accountants worried about the difficulty of firms changing accounting standards in the middle of a fiscal year (McConnell et al. (2005)).

in the same year, had the timing of their compliance with FAS 123-R not been shifted due to a different fiscal year end.

II. Data and Identification Strategy

A. Data

We collect turnover data for 5,021 firms that are in either the ExecuComp (mostly S&P 1500 firms) or BoardEx databases.[12] We exclude from this sample 404 firms that voluntarily expensed stock options at fair value before FAS 123-R was proposed, because these firms could not benefit from option acceleration and also may have differed from other firms in ways that affect turnover (e.g., Aboody, Barth, and Kasznik (2004)). We further exclude 107 firms that changed their fiscal year between 2002 and 2006, perhaps to delay compliance with FAS 123-R. Our final sample contains 4,510 firms, of which 1,690 are in ExecuComp and 2,820 are only in BoardEx. It covers calendar years 2005 and 2006.

We track the employment status of all of these firms' top executives who are listed in ExecuComp or BoardEx. We exclude interim or acting CEOs because their eventual replacement is not a substantive turnover event. We also exclude executives who are not actively involved in the firm's management, such as former or emeritus CEOs. Our final sample contains 15,451 executives, of which 64% are presidents or C-Suite executives, 23% are vice presidents, and the remaining 13% are specialized managers.

Next, we identify which sample firms accelerated option vesting using the R.G. Associates Option Accelerated Vester Database. The database contains information on acceleration events occurring between late 2004 and February 2006, which R.G. Associates, Inc.

[12]We use BoardEx to collect turnover data on non-S&P 1500 firms that accelerated option vesting. BoardEx contains detailed data on executives at a wide range of companies, and is frequently used in corporate governance studies (e.g., Fracassi and Tate (2012); Cohen, Frazzini, and Malloy (2010); Duchin and Sosyura (2013)).

compiled from company disclosures about option acceleration that were mandated by FASB. We follow their procedure to extend the database through December 2006. The combined database contains 767 sample firms that accelerated option vesting (305 from ExecuComp and 462 from BoardEx; 20 firms accelerated options in multiple years). Our data includes the option acceleration dates and the total number of options accelerated, but does not contain individual option grant-level information as most firms disclosed only aggregate figures.

B. Identification Strategy

To establish a causal link between the retention incentives of unvested equity and executive turnover, we exploit the fact that FAS 123-R's compliance dates were staggered quasi-randomly based on firms' fiscal year ends. Because firms benefitted from option acceleration only before FAS 123-R took effect, in 2005 we expect firms with fiscal years ending in June through December ("late fiscal-year-end firms") to be more likely to accelerate option vesting. Conversely, in 2006 option acceleration rates should be higher among firms with fiscal years ending in January through May ("early fiscal-year-end firms"). We then expect turnover to rise among each set of firms in the year after acceleration, as departing executives can only retain unvested options once they have been accelerated. Therefore, our identification strategy uses firms' fiscal year ends as an instrument for option acceleration. We implement this strategy using the following 2SLS model, for firm f and calendar year t:

$$accel_{f,t} = \pi_1 \textit{FAS 123-R Takes Effect}_{f,t} + \pi_2 X_{f,t} + \mu_t + u_{f,t} \qquad (1^{\text{st}} \text{ Stage})$$

$$turnover_{f,t+1} = \gamma_1 \widehat{accel}_{f,t} + \gamma_2 X_{f,t} + \mu_t + \nu_{f,t+1} \qquad (2^{\text{nd}} \text{ Stage})$$

The 1st Stage regresses option acceleration in year t, $accel_{f,t}$, on our instrument *FAS 123-R Takes Effect*$_{f,t}$, which is an indicator variable for whether firm f had to comply with FAS 123-R in calendar year t. It is equal to 1 in 2005 for late fiscal-year-end firms, 1 in 2006 for

early fiscal-year-end firms, and 0 for all other firm-years. The 2nd Stage regresses executive turnover in year $t+1$, $turnover_{f,t+1}$, on the fitted value of option acceleration from the 1st Stage. $X_{f,t}$ contains firm and executive controls and industry fixed effects, and μ_t are year fixed effects. (We describe all of our measures in detail shortly.) The key coefficient in this model is γ_1. A positive value indicates that firms that accelerated option vesting in year t due to upcoming FAS 123-R compliance experienced higher executive turnover in year $t+1$.

Figure 1 shows how our identification strategy utilizes the staggered FAS 123-R compliance dates, and also depicts the 1st- and 2nd-stage effects predicted by our 2SLS model. It is important to note that our control group consists of two sets of firms: in calendar year 2005 it contains firms with early fiscal year ends, and in 2006 it contains firms with late fiscal year ends. As such, a positive value of γ_1 would indicate that turnover rose first at late fiscal-year-end firms that complied with FAS 123-R in 2005, while remaining constant for early fiscal-year-end firms. It would also indicate that turnover rose a year later at early fiscal-year-end firms that complied with FAS 123-R in 2006, while falling for late fiscal-year-end firms. The advantage of this research design is that it ensures that results cannot be explained by time-invariant differences in turnover between early and late fiscal-year-end firms, nor by macroeconomic shocks that increased turnover across all firms when FAS 123-R took effect.[13]

[Insert Figure 1 here]

Our instrument must satisfy two key assumptions to identify the causal effect of acceleration:

1. Relevance Condition: $\pi_1 \neq 0$. $accel_{f,t}$ must be correlated with *FAS 123-R Takes Effect*$_{f,t}$ after controlling for other firm characteristics $X_{f,t}$.

[13] As a robustness check, we estimate our 2SLS model with firm fixed effects in Appendix A-5. This model is an alternative way to test whether turnover increases in the year after option acceleration.

2. Exclusion Restriction: Cov(*FAS 123-R Takes Effect*$_{f,t}$, $\nu_{f,t+1}$) = 0. Differences in the FAS 123-R compliance dates across firms must only affect turnover through their effect on option acceleration.

Section III shows that firms were far more likely to accelerate option vesting in the calendar year of compliance with FAS 123-R, thereby confirming the Relevance Condition. We cannot directly test the Exclusion Restriction, but we conduct several tests that indicate that our instrument likely satisfies it (see Figure 3 and Table 8). First, we present results showing that early and late fiscal-year-end firms had identical turnover rates in years prior to FAS 123-R. Second, we show that turnover rose for firms precisely in the year after FAS 123-R took effect. Third, we show that turnover did not rise among outside board directors who were largely unaffected by FAS 123-R. Therefore, any unobservable confounding variable that causes turnover to rise must exactly coincide with FAS 123-R's staggered compliance dates.

C. Empirical Measures

C.1. Executive Turnover

We measure annual turnover for both CEOs and a broader set of top executives. *CEO Turnover* is equal to 1 in a calendar year in which a firm experiences a CEO departure, and 0 otherwise. We follow Eisfeldt and Kuhnen (2013) by recording a departure event in calendar year $t+1$ when the CEO is at the firm at the end of year t but not at the end of year $t+1$. *CEO Turnover* is available for all firms in our sample. To ensure that our results capture voluntary departures, we additionally use *Voluntary CEO Turnover*, which is equal to 1 in a calendar year in which a firm experiences a non-forced CEO departure, and 0 otherwise. This variable is available for ExecuComp firms and identifies non-forced departures using a database constructed by Jenter and Kanaan (2015) and Peters and Wagner (2014). (Existing databases have not classified voluntary CEO turnover among non-ExecuComp firms.)

Executive Turnover Rate measures turnover among all top executives. It is the number of executives departing the firm in a calendar year divided by the total number of executives at the firm in the year. As with CEOs, we record an executive departure in year $t+1$ when an executive is at the firm in year t but not in year $t+1$.[14]

C.2. Option Acceleration

We use two measures of option acceleration. *Frac. Options Accelerated* is the total number of options accelerated in the calendar year divided by the total number of (unvested and vested) options outstanding at the beginning of the year. It is equal to 0 for all firm-years in which no options were accelerated. We use this proxy variable because data limitations prevent us from calculating the fraction of *executives'* unvested options that are accelerated at many sample firms. Nonetheless, we find an almost one-to-one association between *Frac. Options Accelerated* and changes to executives' unvested equity holdings among the subsample of ExecuComp firms for which both measures are available.[15] Furthermore, using a proxy will not bias our results in the likely case that measurement error does not vary across fiscal year ends. Our second measure, *Accelerate*, is equal to 1 if a firm accelerated options in a calendar year, and 0 otherwise. This variable does not differentiate between firms that accelerated many versus few options, but it is not a proxy variable and directly compares accelerating and non-accelerating firms.

[14]We cannot distinguish between forced and voluntary departures when constructing *Executive Turnover Rate*. This is because, to the best of our knowledge, no existing database classifies departures of the non-CEO executives in our sample. Such a classification is not feasible for most non-CEO departures, as firms do not provide sufficient information to determine whether these executives leave voluntarily or are fired (e.g., Parrino (1997)). Nevertheless, we perform in Section V several tests that indicate that our results are not affected by firings.

[15]For CEOs of accelerating firms in ExecuComp, a 1% increase in *Frac. Options Accelerated* leads to a 1.1% decrease in the dollar value of unvested option holdings (t-statistic of 2.4). Data on top executives' unvested option holdings are not widely accessible for non-ExecuComp firms.

C.3. Firm and Executive Controls

Our 2SLS model includes firm and executive characteristics that prior work has identified as determinants of option acceleration, and that may also affect executive turnover. We control for *Log Assets* and *Market/Book Ratio* because large or high-growth firms grant executives more equity pay, and hence may benefit more from acceleration. We control for stock market performance using *Stock Return* and *Stock Volatility*, and for operating performance using *ROA* and *Sales Growth*. We account for retirement-induced turnover using *Executive Age*, which is equal to 1 for CEOs who are 61 years or older. In regressions that explain top executive turnover, this variable equals the fraction of executives aged 61 or older. Our model also controls for calendar year and industry fixed effects.

Some regressions control for measures of corporate governance, to account for the possibility that worse-governed firms were more likely to accelerate option vesting. Our measures are the fraction of independent directors on a firm's board (*Frac. Independent Directors*), executives' incentives from total equity holdings in the firm (*Log Total Equity Incentives*), and an indicator for whether the CEO is also board chairman (*CEO Duality*). We do not include these variables in all regressions because data are generally available only for ExecuComp firms.

C.4. Summary Statistics

Table 1, Panel A present summary statistics for our empirical measures in calendar years 2005 and 2006. The statistics show that a CEO departure occurs in 9% of these firm-years, and that 11% of top executives depart on average per year. The rate of voluntary CEO turnover is 11% (for ExecuComp firms, total CEO turnover is 14%). Appendix A-2 contains a correlation matrix for our variables.

[Insert Table 1 here]

Panel B shows the distribution of option acceleration events across time. Acceleration occurred most often in calendar year 2005, but a similar proportion of early fiscal-year-end firms accelerated option vesting in 2006 (see Figure 2). Overall, 16.6% of sample firms accelerated option vesting (20 firms accelerated options in multiple years). On average, firms accelerated 33.5% of total options outstanding, and 60.3% of outstanding unvested options (the latter statistic is available only for firms with fiscal year ending June 2005 or later).

Panel C shows that our sample contains sufficient cross-sectional variation in firms' fiscal year ends for our identification strategy to work. The majority of firms (72%) have a December fiscal year end, but our sample contains more than 1,000 firms with fiscal years ending in other months, including 472 with fiscal year ending May or earlier.

III. Empirical Results: 1st Stage

We start our analysis by presenting results for the 1st stage of our 2SLS model, which tests whether firms were more likely to accelerate option vesting in the year in which they had to comply with FAS 123-R. We also test whether the effect of option acceleration was large enough to plausibly affect executives' retention incentives.

A. Effect of Fiscal Year Ends on Option Acceleration

Figure 2 presents graphical evidence of the relationship between staggered FAS 123-R compliance dates and option acceleration. The figure shows, for each month between December 2004 and December 2006, the fraction of firms with fiscal year ending in that month that accelerated option vesting. The figure shows that option acceleration jumped sharply starting with firms whose fiscal year ended in June 2005; these were the first firms to comply with FAS 123-R. In calendar year 2006, option acceleration increased for firms with fiscal years ending January through May, and then dropped to almost zero for firms with later

fiscal year ends, which had already complied with FAS 123-R. Overall, 17.8% of firms with fiscal year ending June 2005 through May 2006 accelerated option vesting, compared to just 5.9% of firms with fiscal year ending January through May 2005, and 0.2% of firms with fiscal year ending June through December 2006. Thus, the rate of option acceleration was much higher in the calendar year in which firms had to comply with FAS 123-R.

[Insert Figure 2 here]

Table 2 confirms that fiscal year ends are a strong predictor of option acceleration after controlling for a variety of firm characteristics. Columns (1) through (3) present estimates from OLS regressions of *Frac. Options Accelerated* on *FAS 123-R Takes Effect.* Columns (4) through (6) present estimates of marginal effects from logistic regressions using *Accelerate* as the dependent variable. In all columns the sample is calendar years 2005 and 2006.[16]

[Insert Table 2 here]

Each regression shows a strong positive relationship between option acceleration and our instrument. Column (5), for example, implies that firms were (0.115/0.166=) 69% more likely to accelerate option vesting in the calendar year in which FAS 123-R took effect. Particularly striking is our instrument's high level of statistical significance across all tests; the t-statistic on *FAS 123-R Takes Effect* is 5 or higher in each regression. Additionally, all Kleibergen-Paap F-statistics by far exceed the commonly used threshold of 10 (Staiger and Stock (1997); Stock, Wright, and Yogo (2002)), confirming our instrument's strength. Overall, these results show that our instrument satisfies the Relevance Condition.

[16]Regressions in columns (1) and (4) are estimated for the sample of firms for which we have data for control variables.

B. Effect of Option Acceleration on Unvested Equity Holdings

Next, we examine the effect of option acceleration on executives' unvested equity holdings. The results in Table 2 do not necessarily prove that top executives' departure costs experienced a meaningful decrease. Firms may have accelerated only a small fraction of these executives' options, or accelerated only deep out-of-the-money options with little economic value. In this case, option acceleration may not have affected executives' incentives to leave or stay in a material way.

However, Table 3 confirms that option acceleration led to a sharp drop in unvested equity holdings. Columns (1) and (2) show results of OLS regressions with the change in (the logarithm of) the dollar amount of unvested equity holdings as the dependent variable. We show results separately for CEOs and all top executives. Columns (3) and (4) show results for incentives from unvested equity holdings, which we measure using pay-for-performance sensitivity (PPS) (Hall and Liebman (1998)). The sample in this analysis is restricted to ExecuComp firms, for which data on executives' equity holdings are widely accessible.

[Insert Table 3 here]

The table shows that accelerating firms' executives experienced a statistically significant decrease in unvested equity holdings in the year that options were accelerated, for both the amount and PPS of unvested equity. This drop is not due to differences in performance between accelerating and non-accelerating firms, as the regressions control for stock returns. Our estimates indicate that the economic decrease in unvested equity holdings was substantial. Accelerating firms' CEOs held unvested equity worth $2.4 million at the start of the year in which options were accelerated. Our estimates in column (1) imply that these holdings then fell to $880,000. Thus, option acceleration caused equity worth $1.5 million to vest immediately, decreasing departure costs from forfeiting unvested equity by 63%. Similarly,

unvested equity holdings fell by 62% for top executives, from $1 million to $376,000, based on estimates in column (2).

This amount of newly vested equity was large relative to executives' annual compensation and total holdings in the firm. It equaled two (1.7) times the value of equity (cash) pay that accelerating firms' CEOs received in the year prior to option acceleration. These CEOs' unvested options also comprised 18% of total firm holdings (29% for top executives).[17] Option acceleration therefore led to a substantial increase in the amount of compensation that executives could keep when voluntarily leaving their firms, which likely affected their trade-off between remaining at their current employer or pursuing an outside option.

IV. Empirical Results: 2nd Stage

This section contains our main 2SLS results showing the effect of option acceleration on executive turnover. We also show that the sudden rise in turnover led to a loss in value for accelerating firms, and that these firms responded by increasing the pay of remaining executives and newly hired CEOs.

A. Option Acceleration and Executive Turnover: Graphical Evidence

We start by analyzing graphically whether turnover is related to the timing of option acceleration and to firms' fiscal year ends. Recall, our hypothesis predicts that turnover should rise in the year after option acceleration, and therefore firms that accelerated option vesting in 2005 should experience an increase before firms that accelerated in 2006. Figure 3, Panel A examines this by plotting CEO turnover rates by calendar year, separately for firms that accelerated in 2005 versus 2006 (this panel excludes non-accelerating firms). Each bar in the figure is the percentage of firms that experienced a CEO departure within the following

[17] This figure equals the ratio of the dollar value of unvested stock options to the total dollar value of all stock options and stock held in the firm, at the start of the year in which options were accelerated.

year, after netting out the effects of two key drivers of turnover, stock price performance and industry-level shocks.[18]

[Insert Figure 3 here]

The figure shows that turnover did not vary between the two groups of firms in years before options were accelerated. Turnover then jumped suddenly, but only among firms that accelerated option vesting in 2005. The trend subsequently reversed, as turnover rose for firms that accelerated in 2006. This sharp pattern indicates that a strong association exists between the timing of option acceleration and executive turnover.

Nevertheless, one concern is that this turnover pattern could be explained by performance shocks that affected some firms in 2005 and others in 2006, which simultaneously caused firms to accelerate and executives to leave. Therefore Figure 3, Panel B compares CEO turnover separately for firms with fiscal year ending June through December (complied with FAS 123-R in 2005) and January through May (complied in 2006). This panel is akin to a reduced-form regression of CEO turnover on our instrument. It shows that CEO turnover did not vary across fiscal years prior to FAS 123-R. However, after FAS 123-R first took effect in calendar year 2005, turnover doubled for late fiscal-year-end firms while remaining constant for early fiscal-year-end firms. In the next year the pattern reversed, as turnover rose for early fiscal-year-end firms and fell for late fiscal-year-end firms. In other words, for each set of firms turnover increased precisely in the year after FAS 123-R took effect.

[18]In Figure 3, Panel A we regress *CEO Turnover* on *Stock Return*, industry fixed effects, and the interaction between calendar year fixed effects and an indicator equal to 1 for firms that accelerated in 2005. This interaction term equals the difference between CEO turnover rates in each year for firms that accelerated in 2005 and firms that accelerated in 2006. Panel B repeats this analysis using an indicator equal to 1 for firms with fiscal year ending June through December.

B. Option Acceleration and Executive Turnover: Regression Results

Next, we formally estimate the effect of option acceleration on executive turnover using our 2SLS identification strategy. Table 4 examines CEO turnover, and Table 5 examines turnover among top executives. Both tables first report results of OLS regressions comparing turnover at accelerating versus non-accelerating firms, and then 2SLS regressions that instrument option acceleration using *FAS 123-R Takes Effect*. We measure option acceleration using both *Frac. Options Accelerated* and *Accelerate*. The sample period is calendar years 2005 and 2006.

[Insert Table 4 here]

In Table 4, the OLS regressions show a positive association between option acceleration and CEO turnover. This indicates that CEOs were more likely to depart accelerating than non-accelerating firms in the year after option acceleration. The estimate in column (1) indicates that a one-standard-deviation increase in *Frac. Options Accelerated* led to a (0.140×0.121=) 1.7% percentage-point increase in *CEO Turnover*, from 5.7% in the year before FAS 123-R took effect to 7.4%.

Our 2SLS models in columns (3) and (4) continue to show positive and highly statistically significant coefficients on both measures of instrumented option acceleration. The regressions in columns (5) and (6) document that this effect is robust to controlling for various corporate governance measures. These results also confirm that option acceleration affected turnover within the subsample of just ExecuComp firms. Next, columns (7) and (8) estimate the effect of option acceleration on *Voluntary CEO Turnover*. We continue to find a statistically significant effect with similar magnitudes for both acceleration variables as in previous regressions. This indicates that our results are not affected by firings.

Table 5 shows that the effect of option acceleration on turnover was not confined to CEOs. Specifically, OLS regressions in columns (1) and (2) show that *Executive Turnover Rate* is higher for accelerating than non-accelerating firms. Additionally, in each 2SLS regression in columns (3) through (6), the effect of instrumented option acceleration is positive and highly statistically significant. The acceleration of option vesting therefore led to increased departures among a range of executives within firms' leadership.

[Insert Table 5 here]

The economic magnitudes of our 2SLS results in both tables are large. Column (3) of Table 4 implies that the CEO turnover rate rose by (1.085×0.121=) 13.1% percentage points for a one-standard-deviation increase in *Frac. Options Accelerated*. This implies an increase for accelerating firms from the pre-FAS 123-R unconditional mean of 5.7% to 18.8%. Similarly, column (3) of Table 5 indicates that top executive turnover rose by (0.634×0.121=) 7.7% percentage points for a one-standard-deviation increase in *Frac. Options Accelerated*, from 8.3% to 16%.

Our 2SLS estimates are substantially larger than the corresponding OLS estimates. The reason is that our 2SLS specification likely identifies the LATE among the subset of "marginal" firms that were induced to accelerate option vesting in 2005 (2006) because of a late (early) fiscal year end.[19] Our estimates are hence not directly applicable to firms that accelerated options well before they had to comply with FAS 123-R, or to firms that would not have accelerated options under any circumstances.

[19] 2SLS identifies the LATE instead of the average treatment effect across the entire sample when the effect of acceleration on turnover γ_1 is heterogeneous across sample firms. This is likely the case in our setting as FAS 123-R created accounting expenses for all firms with unvested options, but only some firms chose to accelerate option vesting. This indicates that the benefits of acceleration were relatively higher (γ_1 is larger) for these firms.

Appendix A-3 provides additional validation for our instrument. We estimate reduced-form specifications that regress our turnover measures directly on the instrument *FAS 123-R Takes Effect*. Reduced-form regressions can help to gauge whether 2SLS results are consistent with the instrument's expected causal effect (see Angrist and Pischke (2009), pg. 213). A reduced-form coefficient of zero on *FAS 123-R Takes Effect* would indicate that 2SLS estimates are driven mostly by omitted variables or regression misspecification. Instead, we obtain coefficients that are positive and significant at the 1% level in all specifications.

Overall, our results show that accelerating firms experienced a large increase in executive turnover, and this effect precisely corresponded to these firms' staggered FAS 123-R compliance dates. These results support our hypothesis that unvested equity conveyed important retention incentives to top executives, and that the elimination of equity vesting periods reduced these incentives and increased departure rates. One implication is that prior to FAS 123-R, some executives passed up outside options because they did not want to lose their unvested equity holdings.

C. Firm Value Effects of Voluntary CEO Departures

We now turn to examining whether the sharp rise in turnover after option acceleration affected the value of firms that lost executives. Our previous results show that option acceleration led to a sudden drop in retention incentives, so the executives who subsequently departed may not have announced their plans far in advance. This in turn may have left firms with little time to adjust business plans or find replacements. In contrast, executive departures at non-accelerating firms may have been less disruptive, as they likely were not motivated by sudden changes in retention incentives. For example, CEOs departing these firms may have indicated in advance that they did not plan to extend their contracts, allowing firms time to identify and train successors. Therefore, voluntary departures following option acceleration may destroy more value than contemporaneous departures at non-accelerating firms.

To analyze firm value effects, we examine stock price reactions following the announcement of voluntary CEO departures, separately for firms that did and did not accelerate option vesting. We collect data on CEO departure announcement dates from the Capital IQ database, which covers ExecuComp firms and also smaller firms. We collect departure announcements in the two years after FAS 123-R took effect (i.e., June 15, 2005 through June 15, 2007), to capture at least one full year after each firm accelerated option vesting. We exclude announcements made by firms that fired their CEOs (as identified by the Jenter and Kanaan (2015) and Peters and Wagner (2014) database). Our sample contains 91 CEO departure events at accelerating firms and 327 at non-accelerating firms.

Figure 4 shows cumulative stock returns for a [-3,+3] trading-day window around these departure announcements. Abnormal returns are adjusted by a 4-factor model. The figure shows that accelerating firms experienced a sharp 1.5% drop in cumulative abnormal returns (CARs) on the announcement date, while the CARs of non-accelerating firms are almost zero.

[Insert Figure 4 here]

Table 6 complements the figure by estimating CARs using different models, and shows that the value loss for accelerating firms is statistically significant. We report raw returns and also returns adjusted by the CAPM and 4-factor models. Returns are reported for the announcement date and for a window of one day before to two days after the announcement.

Panel A shows that CEO departures at accelerating firms were met with significant negative raw returns of -0.48% on the announcement day. Shareholder losses increased to -0.88% in the four-day window around the announcement. Losses are even bigger for adjusted returns. For example, CARs based on the 4-factor model are -0.57% on the announcement date and -1.06% in the wider window. In contrast, CARs of non-accelerating firms are almost

zero and statistically insignificant across all models. Panel B shows that median CARs are also negative and statistically significant only for accelerating firms.

[Insert Table 6 here]

These results indicate that sudden voluntary departures due to option acceleration led to substantial losses in firm value. Our estimates imply that the average accelerating firm's market value dropped by $32 million (or $26 million relative to non-accelerating firms with CEO departures).[20] This loss is substantially larger than the additional compensation that these firms paid to their newly hired CEOs (see Section IV.D), suggesting that markets expected voluntary departures to not only generate search and additional wage costs associated with CEO replacement, but also to possibly reduce firms' future operating performance. The results also indicate that capital markets perceived departing CEOs to have provided valuable leadership to firms—markets likely would not react negatively to the departure of value-destroying CEOs.

D. Effects of Executive Departures on Firm Compensation Policies

We next examine whether accelerating firms that experienced value-reducing turnover responded by adjusting compensation for remaining and newly hired executives. Executives who are contemplating an outside option—whether it is a managerial position at a rival firm or taking time off—trade off its benefits against the costs of leaving their current employer. All else equal, executives will leave if the expected utility from future income earned at their current employers is less than the expected utility of the outside option. Firms can alter the outcome of this trade-off and reduce the chances of departure by increasing compensation.

[20]Figure 4 shows that the stock price of accelerating firms dropped in the [-3,+3] trading-day window around the announcement by 1.5% (or 1.2% relative to non-accelerating firms). The market capitalization of the average accelerating firm is $2.2 billion.

Firms that experienced turnover following option acceleration may have adjusted pay in this manner in order to stem further losses of talent. This response may have been optimal if departures provided a signal to firms that they had underestimated the value of executives' outside options (such as the market wage for top executives).

We test for such responses in Table 7 using the following difference-in-differences model:

$$pay_{f,t} = \beta_1 Post\ Acceleration_t + \beta_2 Firm\ Experienced\ Departure_f + \beta_3 Post\ Acceleration_t \times Firm\ Experienced\ Departure_f + \beta_4 X_{f,t-1} + u_{f,t}$$

The model compares executive compensation in the years before and after option acceleration, separately for accelerating firms that did and did not experience an executive departure. We examine both total and equity compensation. $Firm\ Experienced\ Departure_f$ is equal to 1 in all years for firms that experienced a departure in the year after accelerating option vesting, and 0 otherwise. $Post\ Acceleration_t$ is equal to 1 in years after option acceleration, and 0 otherwise. We use a window of two years before to two years after acceleration. In this model, a positive value for the interaction coefficient β_3 would indicate that firms that experienced a departure after option acceleration subsequently increased executive pay, relative to accelerating firms that experienced no turnover.

We use this model to analyze three different types of departure events. Panel A tests how compensation changes for remaining top executives following any executive departure, and also following an executive poaching.[21] Panel B examines pay changes following a CEO departure. We use different samples in the two panels to separately estimate pay changes for remaining and newly hired executives. The regressions in Panel A contains only executives

[21]This panel contains 351 accelerating firms, of which 169 experienced an executive departure and 29 experienced a poaching. We label a departure as a poaching if the departing executive was hired into a top executive position by another sample firm within two years.

who are present both before and after option acceleration, and examine whether firms grant these executives pay raises after a departure. The regressions in Panel B contain only CEOs, and examine whether firms pay newly hired CEOs more than the departing ones, relative to firms that continue to employ the same CEO. The samples in both panels contain only ExecuComp firms for which pay data is widely accessible.

[Insert Table 7 here]

In Panel A, the interaction term coefficients are positive in all columns, indicating that firms increased compensation following an executive departure. The coefficient in column (1) indicates that total compensation for executives remaining at departure firms increased by 14% following option acceleration, relative to executives of non-departure firms. Column (2) shows that this increase came mainly from higher equity pay. Additionally, in both columns the sum of the coefficients on *Firm Experienced Departure* and *Post Acceleration*×*Firm Experienced Departure* is positive. This indicates that departure firms granted wage hikes to remaining executives so that their pay exceeded the amounts earned at non-departure firms. Next, columns (3) and (4) show that pay increases were even larger at firms that experienced an executive poaching. Executives who remained at these firms received a 20% increase in total compensation. In untabulated results, we also find that poached executives' total pay almost doubled at their new firms, increasing from $2.5 million to $4.6 million. This increase is driven by equity pay, which increased from $1.1 million to $3.5 million.

Panel B shows that firms that lost a CEO after option acceleration subsequently granted their new CEO higher compensation. The coefficient on the interaction term in column (5) implies that newly hired CEOs received 36% higher pay than departing CEOs, $1.7 million in total.[22] Interestingly, the negative coefficient on *Firm Experienced CEO Departure* suggests

[22]This pay increase is not limited to a signing bonus in the first year. We find that newly hired CEOs' total compensation in their second through fourth years at the job was 23% higher than the pay of departing CEOs.

that the CEOs who departed were paid less than their peers at other accelerating firms, who did not leave following option acceleration. Finally, note that the statistically insignificant coefficient on *Post Acceleration* indicates that firms, on average, did not adjust pay after accelerating option vesting; we explore this in more detail in the next section.

Overall, results from both panels suggest that accelerating firms adjusted compensation policies as departures signaled that they were underpaying their executives. An implication of these results is that firms should consider both the amount of deferred compensation and the level of annual pay when designing executive retention incentives.

E. Implications for Firms' Acceleration Decisions

Our results show that option acceleration led to the departure of executives who contributed substantial value to their firms. Given these results, it is important to consider why firms approved option acceleration, and why they raised compensation following departures instead of taking ex-ante actions to stem turnover. We offer two possible reasons for firms' behavior.

One explanation is that the immediate benefits from option acceleration of reporting higher accounting income exceeded the expected value loss from potential executive departures. Our estimates in Table 6 imply that this expected loss was \$5 million at the time that firms decided to accelerate option vesting.[23] While this is sizeable, the benefit from maintaining net income at pre-FAS 123-R levels was potentially much larger. Option acceleration allowed firms to avoid reporting a sudden 23% reduction in net income (Choudhary, Rajgopal, and Venkatachalam (2009)), and this likely decreased the chances of missing analysts' earnings forecasts. Prior work finds that stock prices drop 1% to 5% following unexpectedly

[23]Our results imply that acceleration increased the probability of CEO turnover from 5.7% to 18.8%, and the departure realization (which increased turnover probability from 18.8% to 100%) then led to a \$32 million value loss. If markets priced in the effect of option acceleration on expected CEO departure, then the total value loss is (32/(1-0.188)=) \$39 million. This leads to the expected marginal cost of option acceleration of (0.131×39=) \$5 million.

low earnings announcements (e.g., Rendleman, Jones, and Latané (1982)), which would have led to losses of $22 million to $110 million for the average accelerating firm with a market capitalization of $2.2 billion. Thus option acceleration may have maximized expected firm value if it led to just a small reduction in the probability of missing analysts' expectations. Option acceleration also may have produced further benefits, such as allowing firms to avoid violating contracts with earnings-based provisions (e.g., Debt-to-EBITDA bond covenants).

Once accelerating firms realized that executives planned to leave, they may have found it too costly to renegotiate compensation and prevent departure. First, retaining such executives may have required firms to promise wage hikes that offset the $1.5 million value of accelerated options (i.e., the amount of deferred compensation that was sufficient to prevent departure prior to option acceleration). Such raises would have been large relative to these executives' pre-acceleration pay (see Section III.B). Second, rewarding executives who threatened to leave may have encouraged other top managers to search for outside offers in order to renegotiate their pay. Third, firms would have had to expense any new equity grants, which would have partially undone the benefits of option acceleration. Shareholders in turn may have viewed this as a disguised form of rent extraction.[24] Fourth, acceleration may have encouraged CEOs to take time off or pursue non-managerial employment. In this case, even large pay increases may not have offset the utility from pursuing these outside options.

An alternative explanation is that corporate boards overestimated the importance of reporting higher earnings relative to the turnover effects of option acceleration. Indeed, 80% of firms cited accounting costs as the primary motivation for accelerating option vesting (Choudhary, Rajgopal, and Venkatachalam (2009)). Boards may not have adequately

[24]Shareholders sometimes reject compensation packages designed specifically to retain executives. Shortly after Angela Ahrendts announced she was stepping down as Burberry's CEO, the company awarded her successor Christopher Bailey a massive stock grant to ward off competing job offers. However, shareholders voted to reject the large pay package. ("Burberry Investors Vote Down Christopher Bailey's £20m Pay Deal", *The Financial Times*, July 11, 2014.)

considered the long-term consequences of acceleration, especially if acceleration was recommended by management or by advisers to the firm such as accountants. Appendix A-4 provides tentative evidence consistent with this interpretation. It shows that, on average, firms that accelerated option vesting did not counter the reduction in retention incentives. We find no evidence that firms increased the value of new equity grants (columns (1) and (2)) or the length of vesting periods on new stock options (columns (3) and (4)) immediately after option acceleration. Instead, firms only adjusted compensation if they experienced an executive departure one year after acceleration (see previous section).

V. Placebo and Robustness Tests

We shore up our conclusions by further addressing two potential concerns with our analysis, namely (i) that our results may be affected by unobservables that vary across fiscal year ends; and (ii) that our results may be driven by *involuntary* turnover. We also provide several additional tests showing that our results are robust to changes in the baseline specification.

A. Placebo Tests

A.1. Option Acceleration and Board Director Turnover

We first examine whether the documented increase in turnover could be explained by unobserved firm performance shocks that coincide with FAS 123-R's staggered compliance dates. We do so by testing whether option acceleration affected turnover among outside board directors. This is a natural setting for a placebo test, because option acceleration did not substantially reduce outside directors' costs of pursuing outside options. One reason is that firms typically granted little equity to outside directors in the mid-2000s (e.g., Yermack (2004); Aon Hewitt (2010)), and hence directors of accelerating firms likely did not experience a meaningful decrease in retention incentives. Furthermore, unlike top ex-

ecutives, outside directors can accept additional board seats or employment opportunities without leaving their current firm. However, contemporaneous performance shocks should lead outside directors to depart in order to preserve their monitoring reputation (e.g., Harford (2003); Yermack (2004); Fahlenbrach, Low, and Stulz (2013)). Therefore, if executive turnover is driven by option acceleration instead of confounding performance shocks, then option acceleration should not cause outside director turnover to rise.

This is precisely what we find in Table 8, Panel A.[25] To perform this test, we collect data on all outside directors sitting on the boards of 4,187 firms in our sample. *Outside Director Turnover Rate* is the number of outside directors departing a firm in year $t+1$ divided by the total number of outside directors on the firm's board in $t+1$. We record director departures in the same way as executive departures. Column (1) reports OLS results regressing *Outside Director Turnover Rate* on *Frac. Options Accelerated*, and column (2) reports 2SLS results.

[Insert Table 8 here]

We find that the coefficients on *Frac. Options Accelerated* are statistically indistinguishable from 0 in both regressions. This indicates that firms that accelerated option vesting did not subsequently experience a rise in outside director turnover. Yet, the negative coefficients on *Stock Return* in the regressions confirm that directors were more likely to leave following poor firm performance. Therefore, if an unobserved performance shock is correlated with both option acceleration and firms' fiscal year ends, it can only bias our main results if it leads to a rise in executive but not director turnover.

[25] In this section, we only present results for *Frac. Options Accelerated* in order to conserve space. We obtain almost identical results when using *Accelerate* instead.

A.2. Executive Turnover Prior to Option Acceleration

Another potential concern is that turnover rates prior to FAS 123-R may have differed between early and late fiscal-year-end firms. If turnover rates are highly volatile, then random variation could explain the sequential increases at late and early fiscal-year-end firms. Figure 3 provides graphical evidence that turnover was similar across fiscal year ends before FAS 123-R took effect, and we confirm this result in a placebo analysis based on the method suggested by Rothstein (2010).

The tests are in Table 8, Panel B. Columns (3) and (4) examine the relationship between executive turnover in 2001/2002 and option acceleration four years into the future, and columns (5) and (6) examine the relationship between turnover in 2003/2004 and acceleration two years into the future. In each column we instrument option acceleration using firms' FAS 123-R compliance dates in four/two years.[26] If our main results are due to a decrease in retention incentives from option acceleration, then we should observe no effect on executive turnover years before any firm accelerated option vesting.

Indeed, all four regressions show that no such relationship exists. These results support our hypothesis that turnover rose only when executives were able to depart with their newly vested stock options as a result of option acceleration. Thus, to explain our results, any confounding variable must affect both option acceleration and executive turnover, and correlate with firms' fiscal year ends only when FAS 123-R took effect.

B. Further Isolating Voluntary Turnover

Table 4 provides evidence that option acceleration led to a rise in voluntary CEO turnover. We next conduct additional tests to confirm that our results are not due to firings or sched-

[26]For example, column (3) contains observations for firms in calendar years 2001 and 2002. The column regresses *CEO Turnover* in 2001 on the value of *Frac. Options Accelerated* in 2005, and *CEO Turnover* in 2002 on the value of *Frac. Options Accelerated* in 2006. We instrument *Frac. Options Accelerated* with an indicator for whether firms had to comply with FAS 123-R in 2005 or 2006. We follow the same procedure in columns (4) through (6).

uled retirements.

Table 9, Panel A presents results of turnover regressions using subsets of firms for which these types of departures are highly unlikely. Column (1) estimates our baseline 2SLS model only for firms with CEOs below the age of 55, to rule out retirement-induced turnover. The standard executive retirement age is 65, so it is very unlikely that CEOs 10 or more years younger would be scheduled to retire. Column (2) restricts the sample to firms with CEOs that have tenure of three years or less, as firms likely did not hire these CEOs just a few years before their planned retirement. Column (3) examines CEO turnover only among firms in the top tercile of operating performance (measured using *ROA*), as such high-performing firms rarely fire their CEOs.

The results confirm that option acceleration led to higher turnover in each of these subsets of firms. Therefore, our results cannot be explained by forced turnover or scheduled retirements, but rather by a rise in voluntary departures.

[Insert Table 9 here]

As an additional test, in Table 9, Panel B we investigate whether option acceleration affected executive team turnover at high-performing firms. We define executive team turnover as the simultaneous departure of two or more executives from a firm. This analysis is insightful as it is unlikely that multiple executives simultaneously planned to retire or were fired from successful firms. Such departures however would support prior findings that executives possess team-specific human capital which loses value after a CEO or other top executive departs (Fee and Hadlock (2004)). Column (4) shows that acceleration did indeed lead to greater turnover of executive teams.

C. Other Robustness Tests

Appendix A-5 examines whether our results are robust to various changes in the baseline specification. The 2SLS regressions in columns (1) and (2) show that our results are robust to excluding firms with December fiscal year ends in 2005, which constitute the majority of our sample and of accelerating firms. Columns (3) and (4) use an alternate empirical specification motivated by recent literature examining forced turnover (Eisfeldt and Kuhnen (2013); Jenter and Kanaan (2015); Peters and Wagner (2014)). This literature separately estimates the turnover effects of industry performance and industry-adjusted performance. Our results are virtually unchanged using this specification. Finally, columns (5) and (6) estimate 2SLS models with firm fixed effects to account for fixed differences in turnover rates across firms. These regressions require a wider window of calendar years 2003 through 2007 to estimate firm fixed effects precisely. We continue to find a positive and highly statistically significant relationship between option acceleration and executive turnover.

VI. Conclusion

We show that a sudden reduction in executives' retention incentives led to a substantial increase in managerial turnover. We document this effect by exploiting a unique event which prompted 767 firms to accelerate stock option vesting periods to avoid an accounting expense under FAS 123-R. Option acceleration plausibly reduced retention incentives, as on average $1.5 million in equity vested immediately (a 63% decrease in unvested equity holdings), and executives could retain this newly vested equity when departing the firm.

To identify causality, we exploit exogenous variation in the staggered timing of FAS 123-R—firms with fiscal years ending June or later had to comply in 2005, while firms with fiscal years ending May or earlier could delay compliance until 2006. We use fiscal year ends as an instrument for acceleration, allowing us to overcome identification problems due to

endogenous matching of executives to firms, and to firms' endogenous acceleration decisions.

Our main results show that firms that accelerated options experienced a sharp increase in executive turnover. Strikingly, the increase in turnover corresponded exactly to firms' staggered FAS 123-R compliance dates. Our 2SLS estimates suggest that a one-standard-deviation increase in the percentage of accelerated options due to earlier FAS 123-R compliance increased the CEO turnover rate from 6% to 19%, and the top executive turnover rate from 8% to 16%. Additionally, we show that our results are driven by voluntary turnover. We find no effect on the turnover of non-executive outside directors (who receive much less stock option compensation) in the same firms and years. Furthermore, turnover did not vary across fiscal year ends prior to FAS 123-R. Hence, an omitted variable could bias our results only if it affects executive but not outside director turnover, and if it varies across fiscal year ends precisely when FAS 123-R took effect.

We also document that CEO departures at accelerating firms led to substantial shareholder losses. Departure announcements are met with a negative stock price reaction of -1.5%, costing accelerating firms $32 million in market value. We find that after experiencing departures, accelerating firms responded by increasing the pay of their remaining executives. We further find that newly hired CEOs received higher pay than the departing CEOs whom they replaced. Both findings indicate that executive departures allow firms to learn about the value of top executives' outside options.

These results indicate that equity vesting periods are an important tool for retaining key employees. Our paper thus carries important implications for firms that are designing recruitment and retention strategies, especially in high-tech industries where competition for top talent is fierce. Our findings are also relevant for policymakers who are debating new regulations on executive compensation, such as requirements that banks defer the payout of their executives' bonuses.

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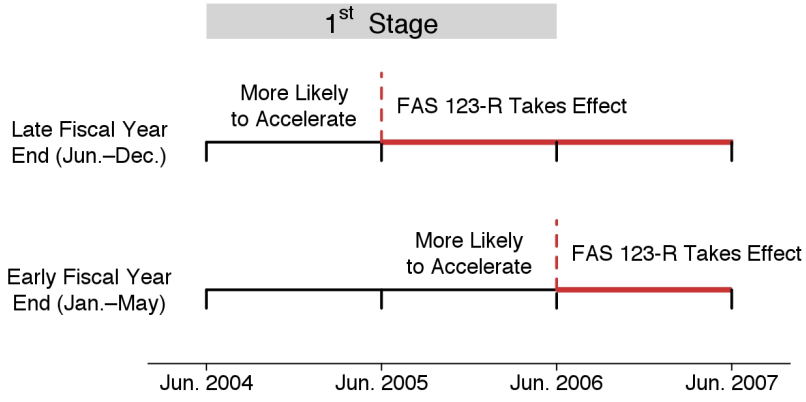
Figure 1. Hypothesis Testing using Staggered FAS 123-R Compliance

This figure shows how variation in firms' fiscal year ends leads to staggered FAS 123-R compliance dates, and how this variation should affect option acceleration and executive turnover. Panel A shows the effect of differences in fiscal year ends on the timing of FAS 123-R compliance, and the predicted effect on option acceleration (1st Stage). Panel B shows the predicted effect on executive turnover (2nd Stage). Late Fiscal-Year-End firms have a fiscal year ending in June through December, and Early Fiscal-Year-End firms have a fiscal year ending in January through May.

Panel A. 1st Stage Predicted Effect on Option Acceleration



Panel B. 2nd Stage Predicted Effect on Executive Turnover

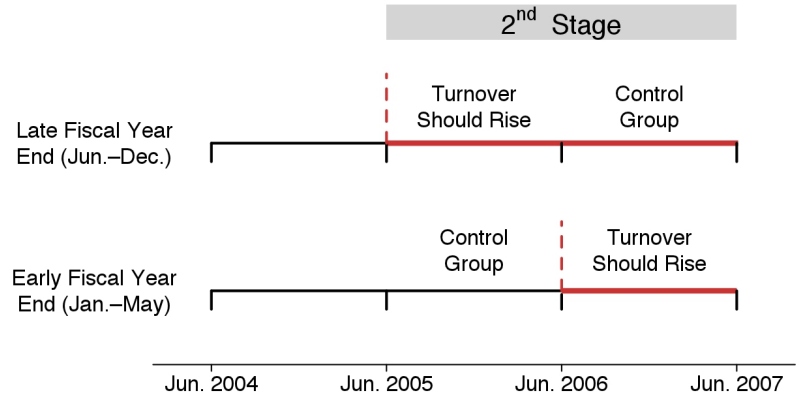


Figure 2. Effect of FAS 123-R Compliance on Option Acceleration

This figure examines the relationship between firms' staggered FAS 123-R compliance dates and the likelihood of accelerating option vesting. All sample firms are sorted based on the calendar month in which their fiscal year ends. The figure shows the percentage of firms with fiscal year ending in each month that accelerated option vesting, from December 2004 through December 2006.

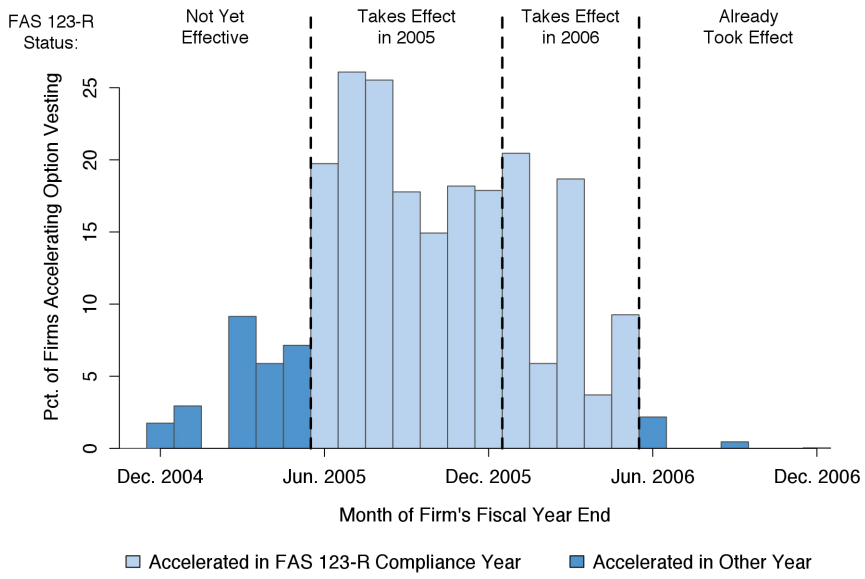
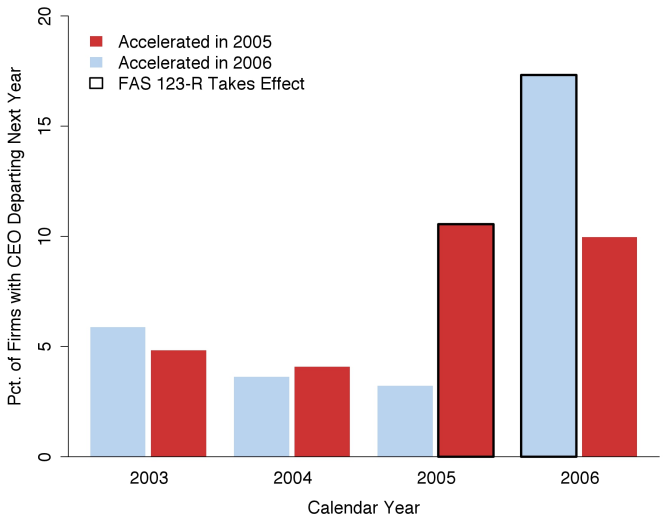


Figure 3. Effect of Option Acceleration on CEO Turnover

This figure examines whether CEO turnover rose in the year after option acceleration. Panel A sorts accelerating firms based on the calendar year in which they accelerated option vesting (firms that accelerated in 2004 are excluded). Panel B sorts all sample firms based on their fiscal year end. Late Fiscal-Year-End firms have a fiscal year ending in June through December (complied with FAS 123-R in 2005), and Early Fiscal-Year-End firms have a fiscal year ending in January through May (complied in 2006). Both panels show the percentage of firms that experienced a CEO departure within the following year. The CEO turnover rate is adjusted for firm performance (*Stock Return*) and industry fixed effects using regression analysis, to isolate the effect of option acceleration.

Panel A. Firms Accelerating in 2005 versus 2006



Panel B. Late versus Early Fiscal-Year-End Firms

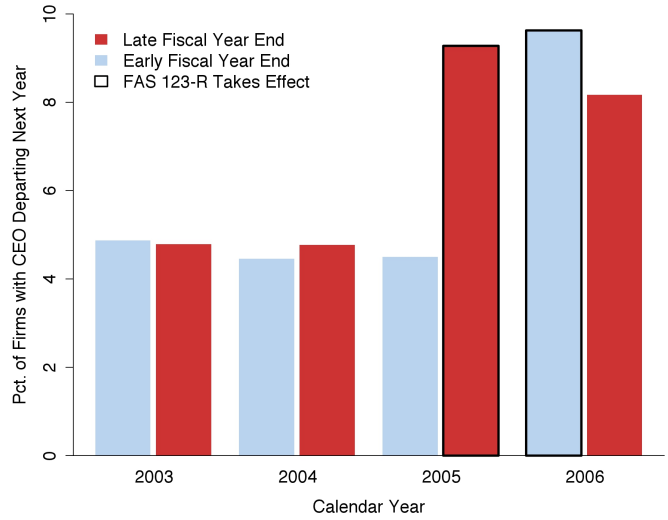


Figure 4. Stock Returns around Voluntary CEO Departures

This figure examines the effect of voluntary CEO departures on firm value. Firms that experienced a CEO departure are sorted based on whether or not they accelerated option vesting. The figure plots cumulative abnormal stock returns in the [-3,+3] trading-day window around each departure announcement. Returns are adjusted using the Fama and French (1993) 3-factor model plus the Carhart (1997) momentum factor. Data on departure announcement dates is from the Capital IQ database and covers June 15, 2005 through June 15, 2007 (i.e., from the first FAS 123-R compliance date through one year after the last).

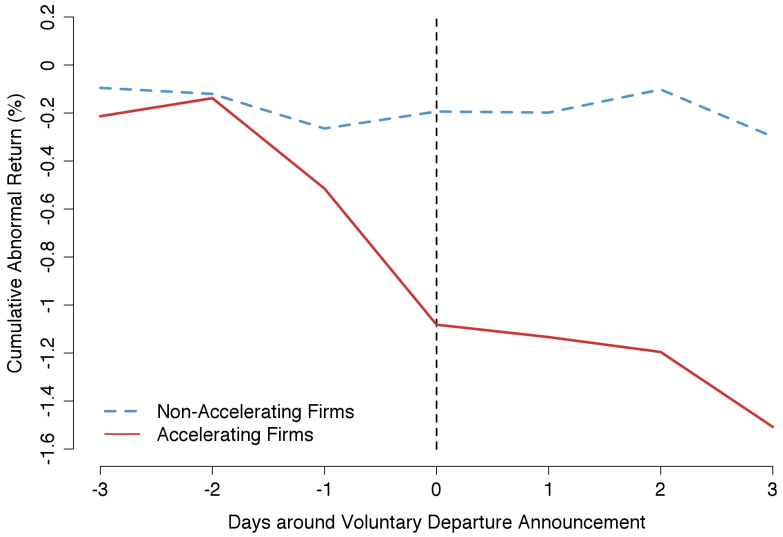


Table 1. Summary Statistics

This table presents summary statistics for our sample firms. Panel A shows statistics for turnover measures, stock option acceleration variables, and firm characteristics. The variables are measured in calendar years 2005 and 2006. Panel B shows the number and percentage of sample firms that accelerated option vesting in calendar years 2004 through 2006. It also shows for accelerating firms the mean values in each calendar year for two measures of option acceleration. Pct. Options Accelerated is the number of options accelerated in the calendar year divided by the total number of options outstanding, and multiplied by 100. Pct. Unvested Options Accelerated is the number of options accelerated in the calendar year divided by the number of unvested options, and multiplied by 100. Due to data limitations, this variable is only available for firms with fiscal years ending June 2005 or later. Panel C shows the distribution of fiscal year ends in calendar year 2005. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Variable definitions are reported in Appendix A-1.

Panel A. Turnover, Acceleration, and Firm Characteristics

Turnover Variables	Mean	Median	Std. Dev.	Obs.
CEO Turnover	0.09	0.00	0.29	8,725
Voluntary CEO Turnover	0.11	0.00	0.31	3,000
Executive Turnover Rate	0.11	0.00	0.21	7,938
Outside Director Turnover Rate	0.10	0.00	0.18	8,041
Acceleration Variables	**Mean**	**Median**	**Std. Dev.**	**Obs.**
Frac. Options Accelerated	0.03	0.00	0.12	7,656
Accelerate	0.08	0.00	0.28	8,725
Firm Characteristics	**Mean**	**Median**	**Std. Dev.**	**Obs.**
Assets ($ million)	2,769	426	9,623	8,489
Market/Book Ratio	2.30	1.57	3.40	8,168
Stock Return	0.02	0.06	0.41	8,015
Stock Volatility	0.14	0.11	0.08	6,887
ROA	-0.02	0.05	0.24	7,393
Sales Growth	0.20	0.13	0.31	8,226
Executive Age	0.19	0.00	0.38	7,690
Frac. Independent Directors	0.71	0.73	0.14	2,395
Log Total Equity Incentives	5.39	5.62	2.25	2,851
CEO Duality	0.72	1.00	0.45	2,395

Panel B. Option Acceleration Events

Calendar Year	# Firms	Pct. of Sample	Pct. Options Accelerated	Pct. Unvested Options Accelerated
2004	55	1.3%	27.3%	N/A
2005	656	15.1%	34.6%	60.6%
2006	76	1.7%	27.5%	54.3%
Total	767	16.6%	33.5%	60.3%

Panel C. Fiscal Year Ends

Fiscal Year End Month	# Firms	Pct. of Sample	Cumulative Pct.
January	140	3.2%	3.2%
February	37	0.9%	4.1%
March	180	4.2%	8.2%
April	55	1.3%	9.5%
May	60	1.4%	10.9%
June	256	5.9%	16.8%
July	57	1.3%	18.1%
August	55	1.3%	19.4%
September	247	5.7%	25.0%
October	94	2.2%	27.2%
November	49	1.1%	28.3%
December	3,112	71.7%	100%
Total	4,342	100%	100%

Table 2. 1st-Stage Results: Staggered FAS 123-R Compliance and Option Acceleration

This table examines whether firms were more likely to accelerate option vesting in the year in which they had to comply with FAS 123-R. We use two dependent variables. *Frac. Options Accelerated* is the number of options accelerated in the calendar year divided by the total number of options outstanding. *Accelerate* is equal to 1 if a firm accelerated option vesting in the calendar year, and 0 otherwise. Columns (1) through (3) are OLS regressions, and columns (4) through (6) are logistic regressions with coefficients representing marginal effects at the mean. *FAS 123-R Takes Effect* is equal to 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to option acceleration, except *FAS 123-R Takes Effect* which is measured in the same year. Definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. *F*-Stat. is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect*. In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*Frac. Options Accelerated*			*Accelerate*		
Model	OLS			Logit		
Window of Analysis	Calendar Years 2005–2006			Calendar Years 2005–2006		
Sample	All Firms		ExecuComp Firms	All Firms		ExecuComp Firms
	(1)	(2)	(3)	(4)	(5)	(6)
FAS 123-R Takes Effect	0.038***	0.041***	0.036***	0.120***	0.115***	0.122***
	(8.78)	(9.11)	(5.08)	(9.37)	(9.15)	(6.46)
Log Assets		-0.000	0.000		-0.000	-0.006***
		(-0.04)	(0.11)		(-0.23)	(-2.56)
Market/Book Ratio		-0.001**	0.001		-0.006***	-0.003
		(-2.23)	(0.23)		(-3.02)	(-0.99)
Stock Return		-0.044***	-0.058***		-0.034***	-0.072***
		(-7.40)	(-5.33)		(-6.25)	(-4.71)
Stock Volatility		0.058**	0.173***		0.011	0.206***
		(1.97)	(2.63)		(0.58)	(3.15)
ROA		0.009	-0.168**		0.032***	-0.025
		(0.78)	(-2.47)		(3.07)	(-0.63)
Sales Growth		0.001	0.017		-0.006	-0.022
		(0.18)	(0.99)		(-1.03)	(-1.42)
Executive Age		-0.005	0.003		-0.007	-0.011
		(-1.29)	(0.51)		(-1.56)	(-1.49)
Frac. Independent Directors			0.024*			0.021
			(1.71)			(0.99)
Log Total Equity Incentives			-0.000			0.004**
			(-0.21)			(2.12)
CEO Duality			0.000			0.004
			(0.10)			(0.83)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,084	5,084	1,947	5,102	5,102	1,741
Adj. R^2	0.060	0.083	0.111	0.226	0.260	0.327
F-Stat. (*FAS 123-R Takes Effect*)	77.2	82.9	25.8	92.1	94.6	42.1

Table 3. Effect of Option Acceleration on Executive Unvested Equity Holdings

This table examines how option acceleration affected executives' unvested equity holdings. We use two dependent variables. *Change Log Unvested Equity Amount* is the year-on-year change in the natural logarithm of 1 plus the dollar value of unvested stock options and restricted stock. *Change Log Unvested Equity PPS* is the year-on-year change in the natural logarithm of 1 plus the pay-for-performance sensitivity (PPS) of unvested stock options and restricted stock. PPS is defined as the change in the dollar value of equity for a 1% change in the stock price. All columns are OLS regressions. Columns (1) and (3) show results for CEOs, and columns (2) and (4) show results for all top executives. *Accelerate* is equal to 1 if a firm accelerated option vesting in the calendar year, and 0 otherwise. The sample contains firms that are in the ExecuComp database. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the change in unvested equity, except *Accelerate* which is measured in the same year. Definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*Change Log Unvested Equity Amount*		*Change Log Unvested Equity PPS*	
Model	OLS		OLS	
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2005–2006	
Sample	ExecuComp Firms		ExecuComp Firms	
	CEOs	Top Executives	CEOs	Top Executives
	(1)	(2)	(3)	(4)
Accelerate	-1.005***	-0.982***	-0.791***	-0.702***
	(-5.58)	(-7.08)	(-7.46)	(-8.55)
Log Assets	0.005	-0.169***	0.005	-0.098***
	(0.12)	(-5.18)	(0.21)	(-5.27)
Market/Book Ratio	-0.194***	-0.215***	-0.114***	-0.130***
	(-3.53)	(-5.96)	(-3.57)	(-6.15)
Stock Return	-0.368**	-0.586***	-0.157	-0.266***
	(-2.02)	(-4.41)	(-1.47)	(-3.70)
Stock Volatility	-1.694	-0.806	-0.559	-0.136
	(-1.23)	(-1.09)	(-0.71)	(-0.33)
ROA	1.747*	0.654	0.941	0.061
	(1.67)	(1.01)	(1.57)	(0.18)
Sales Growth	0.425	-0.087	0.118	-0.056
	(1.60)	(-0.49)	(0.71)	(-0.50)
Executive Age	-0.226*	-0.456	-0.125*	-0.181
	(-1.74)	(-1.51)	(-1.67)	(-1.20)
Frac. Independent Directors	-0.117	0.070	-0.154	0.008
	(-0.33)	(0.28)	(-0.81)	(0.06)
Log Total Equity Incentives	-0.017	0.250***	-0.017	0.138***
	(-0.52)	(7.24)	(-0.97)	(7.21)
CEO Duality	-0.029	-0.055	0.005	-0.041
	(-0.24)	(-0.69)	(0.07)	(-0.92)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,889	8,412	1,889	8,411
Adj. R^2	0.026	0.068	0.044	0.088

Table 4. 2nd-Stage Results: Option Acceleration and CEO Turnover

This table examines whether option acceleration led to higher CEO turnover. We use two dependent variables. *CEO Turnover* is equal to 1 for firms that experience a CEO departure in the next calendar year, and 0 otherwise. *Voluntary CEO Turnover* is equal to 1 for firms that experience a non-forced CEO departure in the next calendar year, and 0 otherwise. We identify non-forced departures using the database constructed by Jenter and Kanaan (2015) and Peters and Wagner (2014), which is only available for ExecuComp firms. We use two measures of option acceleration. *Frac. Options Accelerated* is the number of options accelerated in the calendar year divided by the total number of options outstanding. *Accelerate* is equal to 1 if a firm accelerated option vesting in the calendar year, and 0 otherwise. Columns (1) and (2) are OLS regressions. Columns (3) through (8) are 2SLS regressions that instrument for the option acceleration variables using *FAS 123-R Takes Effect*, which is equal to 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample in columns (1) through (4) contains firms that are in either the ExecuComp or BoardEx databases. The sample in columns (5) through (8) contains firms that are in the ExecuComp database. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the turnover event and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. *F*-Stat. is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect* from the corresponding 1st-stage regression (not reported). In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*CEO Turnover*		*CEO Turnover*				*Voluntary CEO Turnover*	
Model	OLS		2SLS				2SLS	
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2005–2006				Calendar Years 2005–2006	
Sample	All Firms		All Firms		ExecuComp Firms		ExecuComp Firms	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Frac. Options Accelerated	0.140***		1.085***		1.603**		1.487**	
	(2.82)		(3.72)		(2.51)		(2.31)	
Accelerate		0.033*		0.303***		0.408***		0.346**
		(1.95)		(3.95)		(3.05)		(2.56)
Log Assets	0.023***	0.022***	0.023***	0.022***	0.037***	0.041***	0.026***	0.030***
	(7.36)	(7.66)	(7.02)	(7.45)	(4.03)	(4.83)	(3.02)	(3.84)
Market/Book Ratio	0.004*	0.004*	0.006***	0.005**	0.013	0.016*	0.007	0.012
	(1.75)	(1.78)	(2.59)	(2.18)	(1.21)	(1.78)	(0.82)	(1.56)
Stock Return	-0.024*	-0.027**	0.016	0.000	0.056	0.043	0.083*	0.066
	(-1.84)	(-2.16)	(0.89)	(0.00)	(1.09)	(0.97)	(1.73)	(1.59)
Stock Volatility	0.137*	0.133*	0.082	0.106	0.131	0.194	-0.059	0.028
	(1.90)	(1.93)	(1.06)	(1.51)	(0.50)	(0.78)	(-0.23)	(0.12)
ROA	-0.098***	-0.097***	-0.107***	-0.115***	-0.023	-0.241*	0.133	-0.099
	(-3.43)	(-3.46)	(-3.59)	(-4.05)	(-0.12)	(-1.92)	(0.73)	(-0.95)
Sales Growth	-0.040**	-0.041***	-0.041**	-0.035**	-0.067	-0.023	-0.052	-0.017
	(-2.53)	(-2.74)	(-2.46)	(-2.32)	(-1.25)	(-0.54)	(-1.11)	(-0.44)
Executive Age	0.020*	0.018*	0.024**	0.021**	0.087***	0.095***	0.100***	0.110***
	(1.82)	(1.74)	(2.16)	(2.05)	(3.87)	(4.61)	(4.81)	(5.56)
Frac. Independent Directors					0.026	0.060	-0.019	0.016
					(0.43)	(1.12)	(-0.35)	(0.33)
Log Total Equity Incentives					-0.029***	-0.032***	-0.027***	-0.030***
					(-3.75)	(-4.66)	(-3.61)	(-4.54)
CEO Duality					-0.019	-0.027	-0.006	-0.012
					(-0.95)	(-1.36)	(-0.31)	(-0.65)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,084	5,337	5,084	5,337	1,947	1,997	1,887	1,935
Adj. R^2	0.020	0.019	N/A	N/A	N/A	N/A	N/A	N/A
F-Stat. (*FAS 123-R Takes Effect*)	N/A	N/A	82.9	140.4	28	60.4	21.4	50.7

Table 5. 2nd-Stage Results: Option Acceleration and Top Executive Turnover

This table examines whether option acceleration led to higher top executive turnover. The dependent variable *Executive Turnover Rate* is the number of executives departing the firm in the next calendar year divided by the total number of executives at the firm in the next calendar year. We use two measures of option acceleration. *Frac. Options Accelerated* is the number of options accelerated in the calendar year divided by the total number of options outstanding. *Accelerate* is equal to 1 if a firm accelerated option vesting in the calendar year, and 0 otherwise. Columns (1) and (2) are OLS regressions. Columns (3) through (6) are 2SLS regressions that instrument for the option acceleration variables using *FAS 123-R Takes Effect*, which is equal to 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the turnover event, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. *F*-Stat. is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect* from the corresponding 1st-stage regression (not reported). In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*Executive Turnover Rate*		*Executive Turnover Rate*			
Model	OLS		2SLS			
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2005–2006			
Sample	All Firms		All Firms		ExecuComp Firms	
	(1)	(2)	(3)	(4)	(5)	(6)
Frac. Options Accelerated	0.109***		0.634***		0.848**	
	(3.38)		(3.25)		(2.49)	
Accelerate		0.033***		0.191***		0.245***
		(2.85)		(3.61)		(2.98)
Log Assets	0.029***	0.029***	0.029***	0.028***	0.029***	0.031***
	(15.86)	(16.34)	(15.22)	(15.92)	(5.48)	(6.59)
Market/Book Ratio	0.004***	0.004***	0.005***	0.004***	0.007	0.007
	(2.91)	(2.67)	(4.00)	(3.09)	(1.22)	(1.22)
Stock Return	-0.034***	-0.037***	-0.011	-0.021**	-0.017	-0.011
	(-3.98)	(-4.48)	(-0.90)	(-2.08)	(-0.59)	(-0.43)
Stock Volatility	0.113**	0.117***	0.079	0.099**	0.279*	0.302*
	(2.48)	(2.65)	(1.59)	(2.18)	(1.72)	(1.94)
ROA	-0.018	-0.020	-0.025	-0.030	-0.065	-0.160**
	(-0.96)	(-1.07)	(-1.29)	(-1.61)	(-0.60)	(-2.18)
Sales Growth	-0.031***	-0.031***	-0.031***	-0.027***	-0.006	0.016
	(-3.00)	(-3.07)	(-2.91)	(-2.70)	(-0.20)	(0.61)
Executive Age	-0.032***	-0.031***	-0.027**	-0.028**	-0.045	-0.044
	(-2.79)	(-2.87)	(-2.23)	(-2.51)	(-1.12)	(-1.19)
Frac. Independent Directors					0.020	0.030
					(0.57)	(0.84)
Log Total Equity Incentives					-0.024***	-0.023***
					(-4.38)	(-4.83)
CEO Duality					-0.008	-0.010
					(-0.66)	(-0.89)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,120	5,394	5,120	5,394	1,943	1,995
Adj. R^2	0.069	0.070	N/A	N/A	N/A	N/A
F-Stat. (*FAS 123-R Takes Effect*)	N/A	N/A	77.7	137.6	28	63.7

Table 6: Effect of Voluntary Executive Departure on Firm Value

This table examines whether voluntary CEO departures following option acceleration affected firm value. Firms that experienced a voluntary CEO departure are separated based on whether or not they accelerated option vesting. The table shows cumulative abnormal stock returns on the date of the departure announcement [0] and in a [-1,+2] window of one trading day before to two trading days after the announcement. Panel A shows mean returns, and Panel B shows median returns. In both panels returns are measured in percentages. We use three measures of cumulative stock returns: unadjusted returns, abnormal returns based on the CAPM model, and abnormal returns based on the Fama and French (1993) 3-factor model plus the Carhart (1997) momentum factor. Data on departure announcement dates is from the Capital IQ database and covers June 15, 2005 through June 15, 2007 (i.e., from the first FAS 123-R compliance date through one year after the last). In parenthesis we report t-statistics in Panel A and z-statistics based on a Wilcoxon rank-sum test in Panel B. ***, **,* indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	Cumulative Abnormal Return around CEO Departure					
Model	Raw Returns		CAPM		4-factor	
Window of Analysis	[0]	[-1,+2]	[0]	[-1,+2]	[0]	[-1,+2]
Panel A. Mean Returns						
Accelerating Firms	-0.48*	-0.88**	-0.59**	-1.12***	-0.57**	-1.06**
(Obs.=91)	(-1.93)	(-2.03)	(-2.40)	(-2.73)	(-2.34)	(-2.55)
Non-Accelerating Firms	0.12	0.16	0.03	0.02	0.07	0.02
(Obs.=327)	(0.86)	(0.68)	(0.20)	(0.09)	(0.53)	(0.07)
Difference	0.60**	1.04**	0.62**	1.14**	0.64**	1.08**
	(2.09)	(2.12)	(2.25)	(2.43)	(2.35)	(2.25)
Panel B. Median Returns						
Accelerating Firms	-0.54*	-0.75**	-0.28**	-0.75**	-0.49**	-0.61**
(Obs.=91)	(-1.93)	(-1.97)	(-2.34)	(-2.57)	(-2.35)	(-2.53)
Non-Accelerating Firms	0.20	0.19	0.01	-0.03	0.05	0.19
(Obs.=327)	(1.35)	(0.82)	(0.86)	(0.03)	(0.64)	(0.17)
Difference	0.74**	0.94**	0.29**	0.72**	0.54**	0.80**
	(2.33)	(2.15)	(2.30)	(2.34)	(2.35)	(2.32)

Table 7: Compensation Changes Following Executive Departures

This table examines whether firms that experienced an executive departure following option acceleration respond by adjusting compensation for remaining executives or for newly hired CEOs. Panel A shows compensation changes for top executives that remained at the firm both before and after option acceleration. Panel B shows compensation changes for CEOs of accelerating firms, including those who departed or were hired after option acceleration. We use two dependent variables. *Log Total Pay* is the natural logarithm of 1 plus the dollar value of annual total compensation. *Log Equity Pay* is the natural logarithm of 1 plus the dollar value of annual equity compensation. All columns are OLS difference-in-differences regressions that cover the two-year (two-sided) window around each option acceleration event. *Post Acceleration* is equal to 1 for years after option acceleration, and 0 otherwise. *Firm Experienced Departure* is equal to 1 for firms that experienced a top executive departure in the year after option acceleration, and 0 otherwise. *Firm Experienced Poaching* is similarly defined, but is equal to 1 only when the departing executive was hired into a top executive position by another sample firm within two years. *Firm Experienced CEO Departure* is equal to 1 for firms that experienced a CEO departure in the year after option acceleration, and 0 otherwise. The sample contains firms that accelerated option vesting and are in the ExecuComp database. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the compensation grant, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 12 industry classification. In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

	Panel A. Remaining Executives				Panel B. Departing and Newly Hired CEOs	
Dependent Variable	*Log Total Pay*	*Log Equity Pay*	*Log Total Pay*	*Log Equity Pay*	*Log Total Pay*	*Log Equity Pay*
Model	OLS				OLS	
Window of Analysis	Two Years Around Option Acceleration				Two Years Around Option Acceleration	
Sample	Accelerating Firms in ExecuComp Top Executives				Accelerating Firms in ExecuComp CEOs	
	(1)	(2)	(3)	(4)	(5)	(6)
Post Acceleration	0.077	-0.166	-0.043	-0.113	0.070	0.185
	(0.90)	(-0.44)	(-0.39)	(-0.20)	(0.37)	(0.24)
Firm Experienced Departure	-0.033	-0.383**				
	(-0.65)	(-2.26)				
Post Acceleration×Firm Experienced Departure	0.141***	0.565**				
	(2.74)	(2.51)				
Firm Experienced Poaching			-0.205*	-1.168**		
			(-1.92)	(-2.34)		
Post Acceleration×Firm Experienced Poaching			0.200**	1.298**		
			(2.21)	(2.60)		
Firm Experienced CEO Departure					-0.207*	-0.862**
					(-1.83)	(-2.02)
Post Acceleration×Firm Experienced CEO Departure					0.363**	1.687***
					(2.34)	(2.78)
Log Assets	0.422***	0.648***	0.433***	0.755***	0.467***	0.742***
	(29.76)	(13.12)	(24.08)	(11.16)	(18.20)	(8.15)
Market/Book Ratio	0.161***	0.376***	0.158***	0.354***	0.134***	0.136
	(7.91)	(5.98)	(6.90)	(4.67)	(3.50)	(1.09)
Stock Return	0.084**	0.173	0.106**	0.162	0.135**	0.187
	(2.36)	(1.09)	(2.38)	(0.85)	(2.17)	(0.82)
Stock Volatility	1.153***	1.476	1.672***	4.117**	1.066	4.090*
	(2.86)	(1.10)	(2.97)	(2.14)	(1.48)	(1.75)
ROA	-0.039	-0.083	-0.071	0.171	-0.060	0.076
	(-0.46)	(-0.23)	(-0.52)	(0.35)	(-0.50)	(0.15)
Sales Growth	0.095	0.082	-0.055	-0.027	-0.036	0.528
	(1.29)	(0.32)	(-0.72)	(-0.07)	(-0.28)	(1.07)
Executive Age	0.151	-0.825	-0.093	-2.333***	-0.143	-0.997**
	(0.94)	(-1.33)	(-0.48)	(-2.98)	(-0.97)	(-2.24)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,461	6,461	3,507	3,507	783	783
Adj. R^2	0.412	0.155	0.437	0.200	0.440	0.137

Table 8. Placebo Tests: Outside Director Turnover and Pre-2005 Executive Turnover

This table presents placebo tests examining whether firms that accelerated option vesting experienced higher turnover among individuals unaffected by option acceleration. Panel A shows the effect of option acceleration on turnover of outside board directors. In this panel, the dependent variable *Outside Director Turnover Rate* is the number of outside directors departing the firm in the next calendar year divided by the total number of outside directors at the firm in the next calendar year. Panel B shows the effect of option acceleration in 2005 or 2006 on executive turnover in previous years. In this panel we use two dependent variables. *CEO Turnover* is equal to 1 for firms that experience a CEO departure in the next calendar year, and 0 otherwise. *Executive Turnover Rate* is the number of executives departing the firm in the next calendar year divided by the total number of executives at the firm in the next calendar year. We use two measures of option acceleration. In Panel A, *Frac. Options Accelerated* is the number of options accelerated in the calendar year divided by the total number of options outstanding. In Panel B, *Frac. Options Accelerated in 2005/2006* is the number of options accelerated in 2005 or 2006 (i.e., two or four years into the future) divided by the total number of options outstanding in that year. Columns (2) through (6) are 2SLS regressions which instrument the option acceleration variables with an indicator variable for whether firms complied with FAS 123-R in 2005/2006. In Panel A, this variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. In Panel B, this variable equals 1 in 2001 or 2003 for firms with fiscal year ending in June through December, 1 in 2002 or 2004 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the turnover event, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. *F*-Stat. is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect* from the corresponding 1st-stage regression (not reported). In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

	Panel A. Outside Director Turnover		Panel B. Pre-2005 Executive Turnover			
Dependent Variable	*Outside Director Turnover Rate*		*CEO Turnover*	*Executive Turnover Rate*	*CEO Turnover*	*Executive Turnover Rate*
Model	OLS	2SLS	2SLS		2SLS	
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2001–2002		Calendar Years 2003–2004	
Sample	All Firms		All Firms			
	(1)	(2)	(3)	(4)	(5)	(6)
Frac. Options Accelerated	-0.003	-0.069				
	(-0.14)	(-0.41)				
Frac. Options Accelerated in 2005/2006			0.329	0.204	-0.267	0.323
			(1.11)	(1.20)	(-0.81)	(1.48)
Log Assets	0.020***	0.020***	0.016***	0.026***	0.014***	0.027***
	(12.81)	(12.78)	(7.09)	(18.99)	(6.34)	(18.82)
Market/Book Ratio	0.000	0.000	0.002	0.001*	-0.003***	-0.001
	(0.16)	(0.04)	(1.04)	(1.65)	(-2.65)	(-1.28)
Stock Return	-0.016**	-0.019*	-0.022***	-0.012**	-0.031***	-0.025***
	(-2.08)	(-1.79)	(-2.64)	(-2.21)	(-2.73)	(-3.41)
Stock Volatility	0.060*	0.065*	0.012	0.040	0.107*	0.044
	(1.75)	(1.76)	(0.24)	(1.06)	(1.71)	(1.00)
ROA	-0.022	-0.021	-0.057***	-0.047***	-0.082***	-0.084***
	(-1.42)	(-1.40)	(-2.65)	(-3.08)	(-3.55)	(-5.34)
Sales Growth	-0.005	-0.005	-0.044***	-0.004	-0.040***	-0.018**
	(-0.58)	(-0.61)	(-3.61)	(-0.40)	(-3.56)	(-2.13)
Director Age	-0.038***	-0.038***				
	(-3.47)	(-3.47)				
Executive Age			0.018*	0.001	0.005	-0.020**
			(1.80)	(0.12)	(0.61)	(-2.18)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,151	5,151	3,999	4,377	4,541	4,865
Adj. R^2	0.040	N/A	N/A	N/A	N/A	N/A
F-Stat. (*FAS 123-R Takes Effect*)	N/A	72.4	48	57.683	41.2	41.6

Table 9: Further Evidence on Voluntary Turnover

This table presents further tests examining whether option acceleration led to higher voluntary executive turnover. Panel A examines CEO turnover among different subsets of sample firms. In this panel, the dependent variable *CEO Turnover* is equal to 1 for firms that experience a CEO departure in the next calendar year, and 0 otherwise. Panel B examines the relationship between option acceleration and executive team turnover. In this panel, the dependent variable *Executive Team Turnover* is equal to 1 if two or more executives depart the firm in the next calendar year, and 0 if no executives depart. *Frac. Options Accelerated* is the number of options accelerated in the calendar year divided by the total number of options outstanding. All regressions are 2SLS regressions that instrument *Frac. Options Accelerated* using *FAS 123-R Takes Effect*, which is equal to 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains all firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the turnover event, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. *F*-Statistic is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect* from the corresponding 1st-stage regression (not reported). In parentheses we report *t*-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

	Panel A. CEO Turnover			Panel B. Team Turnover
Dependent Variable	*CEO Turnover*			*Executive Team Turnover*
Model	2SLS			2SLS
Window of Analysis	Calendar Years 2005–2006			Calendar Years 2005–2006
Sample	CEO Age < 55 years	CEO Tenure ≤ 3 years	ROA in Top Tercile	ROA in Top Tercile
	(1)	(2)	(3)	(4)
Frac. Options Accelerated	1.103**	1.646*	1.531*	3.361**
	(2.49)	(1.83)	(1.70)	(2.32)
Log Assets	0.014***	0.034***	0.017***	0.091***
	(3.02)	(3.25)	(3.58)	(12.90)
Market/Book Ratio	0.008***	0.009***	0.001	0.024**
	(5.39)	(7.46)	(0.20)	(2.34)
Stock Return	0.016	0.020	0.053*	0.013
	(0.54)	(0.37)	(1.68)	(0.25)
Stock Volatility	0.006	-0.146	-0.014	0.219
	(0.05)	(-0.68)	(-0.13)	(1.44)
ROA	-0.096**	-0.088	0.031	-0.398
	(-2.19)	(-1.38)	(0.19)	(-1.49)
Sales Growth	-0.054**	-0.053	-0.036	-0.064
	(-2.30)	(-1.15)	(-1.01)	(-1.18)
Executive Age		0.007	0.027	-0.015
		(0.16)	(1.46)	(-0.53)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,502	780	1,766	1,299
Adj. R^2	N/A	N/A	N/A	N/A
F-Stat. (*FAS 123-R Takes Effect*)	43.9	13.5	20.6	15

Appendix A-1. Variable Definitions

Variable	Definition	Source
1. Measures of Option Acceleration and FAS 123-R Compliance		
Frac. Options Accelerated	The number of options accelerated in the calendar year divided by the total number of options outstanding. This variable is set equal to 0 for firms that did not accelerate option vesting. The number of options accelerated is from the R.G. Associates Option Accelerated Vester Database. The number of options outstanding is Compustat data item OPTOSBY.	R.G. Associates Option Accelerated Vester Database, Compustat
Accelerate	Dummy variable that is equal to 1 if a firm accelerated option vesting in the calendar year, and 0 otherwise.	R.G. Associates Option Accelerated Vester Database
FAS 123-R Takes Effect	Dummy variable that is equal to 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. We identify firms' fiscal year ends using Compustat data item FYR.	Compustat
Post Acceleration	Dummy variable that equals 1 for years after option acceleration, and 0 otherwise (including the year of acceleration).	R.G. Associates Option Accelerated Vester Database
Frac. Options Accelerated in 2005/2006	The number of options accelerated in 2005 or 2006 divided by the total number of options outstanding in that year. For observations in calendar years 2001 or 2003 in the regressions in Table 8, this variable equals the value of *Frac. Options Accelerated* in 2005. For observations in calendar years 2002 or 2004, this variable equals the value of *Frac. Options Accelerated* in 2006.	R.G. Associates Option Accelerated Vester Database, Compustat
2. Executive Turnover Measures		
CEO Turnover	Dummy variable that equals 1 for firms that experienced a CEO departure in calendar year $t+1$, and 0 otherwise. We record a departure event in year $t+1$ if the CEO is at the firm at the end of year t but not at the end of year $t+1$.	ExecuComp, BoardEx
Voluntary CEO Turnover	Dummy variable that equals 1 for firms that experienced a non-forced CEO departure in calendar year $t+1$, and 0 otherwise. We identify a departure event as non-forced if the CEO is not listed in the database of forced turnover constructed by Jenter and Kanaan (2015) and Peters and Wagner (2014).	Jenter and Kanaan (2015) and Peters and Wagner (2014)
Executive Turnover Rate	The number of executives departing the firm in calendar year $t+1$ divided by the total number of executives at the firm in year $t+1$. We record a departure event in year $t+1$ when an executive is listed at the firm at the end of year t but not at the end of year $t+1$.	ExecuComp, BoardEx
Outside Director Turnover Rate	The number of outside directors departing the firm in calendar year $t+1$ divided by the total number of outside directors at the firm in year $t+1$. We record a departure event in year $t+1$ when an outside director is listed at the firm at the end of year t but not at the end of year $t+1$. An outside director is a non-executive board member who is currently not employed by the firm.	ExecuComp, BoardEx
Executive Team Turnover	Dummy variable that equals 1 if two or more executives departed the firm in calendar year $t+1$, and 0 if no executives departed. This variable is set to missing for calendar years in which only one executive departs.	ExecuComp, BoardEx
3. Other Dependent Variables		
Change Log Unvested Equity Amount	The year-on-year change in the natural logarithm of 1 plus the dollar value of an executive's unvested stock options and restricted stock (measured in thousands of USD) at fiscal year end. The value of stock options is the Black-Scholes value calculated using the Core and Guay (2002) procedure. The value of restricted stock is ExecuComp data item STOCK_UNVEST_VAL. Winsorized at the 1% and 99% level.	ExecuComp

Appendix A-1. Variable Definitions (cont'd)

Variable	Definition	Source
Change Log Unvested Equity PPS	The year-on-year change in the natural logarithm of 1 plus the pay-for-performance sensitivity (PPS) of unvested stock options and restricted stock (measured in thousands of USD). PPS is the change in dollar value of equity for a 1% change in the stock price. PPS equals (Number of unvested stock options)×(Black-Scholes option delta)×(Year-end stock price)×(1/100)+(Shares of unvested stock)×(Year-end stock price)×(1/100). Number of unvested stock options is ExecuComp data item OPT_UNEX_UNEXER_NUM. Year-end stock price is Compustat data item PRCC_F. Black-Scholes delta is calculated using the Core and Guay (2002) procedure. We use ExecuComp data item STOCK_UNVEST_VAL to measure (Shares of unvested stock)×(Year-end stock price). Winsorized at the 1% and 99% level.	ExecuComp, Compustat
Log Total Pay	The natural logarithm of 1 plus annual total compensation (measured in thousands of USD). Total compensation is ExecuComp data item TDC1.	ExecuComp
Log Equity Pay	The natural logarithm of 1 plus annual equity compensation (in thousands of USD). Equity compensation is the sum of ExecuComp data items OPTION_AWARDS_BLK_VALUE and RSTKGRNT before 2006, and OPTION_AWARDS_FV and STOCK_AWARDS_FV after 2006.	ExecuComp
Change Log Equity Pay	The year-on-year change in *Log Equity Pay*.	ExecuComp
Change Equity Pay Duration	The year-on-year change in the duration of annual stock option compensation. We first calculate the duration of each individual option grant i that an executive receives in a calendar year, which is equal to t×(Number of options in grant i that vest in year t)/(Total number of options in grant i). We then calculate overall duration as (Duration of grant i)×(Number of options in grant i)/(Total number of options received in year t). Option vesting periods are Thomson Insiders data item XDATE. Number of options is Thomson Insiders data item NUM_DERIV_ADJ.	Thomson Insiders
4. Control Variables		
Log Assets	The natural logarithm of the value of a firm's total assets at the end of the fiscal year (measured in millions USD). Total assets is Compustat data item AT.	Compustat
Market/Book Ratio	The sum of market capitalization and book value of liabilities (Compustat item LT) at the end of the fiscal year, divided by book value of common equity (CEQ) and book value of liabilities (LT). Market capitalization is item PRCC multiplied by CSHO. Winsorized at the 1% and 99% level.	Compustat
Stock Return	The natural logarithm of 1 plus the fractional stock return. The return equals the stock price at the end of the fiscal year (Compustat data item PRCC_F) plus dividends (data item DVPSX_F), divided by the stock price at the end of the previous fiscal year, minus 1. Winsorized at the 5% and 95% level.	Compustat
Stock Volatility	The standard deviation of monthly fractional stock returns from 48 months prior to the fiscal year end date. This variable is set to missing when fewer than 12 months' returns are available. Winsorized at the 5% and 95% level.	Compustat
ROA	The sum of net income (Compustat data item NI) and interest expense (XINT) divided by total assets (AT). Interest expense is set to 0 when it is reported as missing and in the previous year the firm reported no debt due in one year. Winsorized at the 1% and 99% level.	Compustat
Sales Growth	The year-on-year fractional change in sales (Compustat data item SALE). Winsorized at the 5% and 95% level.	Compustat

Appendix A-1. Variable Definitions (cont'd)

Variable	Definition	Source
Executive Age	A dummy variable that equals 1 if the executive is 61 years or older. Age is ExecuComp data item AGE. If this value is missing, then age is calculated using BoardEx data as the current fiscal year minus date of birth (item DOB). In regressions where the sample contains CEOs, this variable is based on the CEO's age. In regressions where the sample contains top executives, this variable is the fraction of top executives aged 61 or older.	ExecuComp, BoardEx
Frac. Independent Directors	The fraction of a board's directors that are classified as independent (RiskMetrics data item CLASSIFICATION equal to "I").	RiskMetrics
Log Total Equity Incentives	The natural logarithm of 1 plus the pay-for-performance sensitivity (PPS) of an executive's total holdings of firm equity. In regressions where the sample contains CEOs, this variable is based on their holdings in the firm. In regressions where the sample contains top executives, this variable is averaged across top executives. PPS is the change in dollar value of equity for a 1% change in the stock price. PPS equals (Number of unvested stock options)×(Black-Scholes option delta)×(Year-end stock price)×(1/100) + (Vested stock options)×(Black-Scholes option delta)×(Year-end stock price)×(1/100)+(Total stock holdings)×(Year-end stock price)×(1/100). Number of unvested stock options is ExecuComp data item OPT_UNEX_UNEXER_NUM. Year-end stock price is Compustat data item PRCC_F. Number of vested stock options is ExecuComp data item OPT_UNEX_EXER_NUM. Total stock holdings is ExecuComp data item SHROWN_EXCL_OPTS. Black-Scholes option delta is calculated using the Core and Guay (2002) procedure.	ExecuComp, Compustat
CEO Duality	Dummy variable that equals 1 if the firm's CEO is also board chairman, and 0 otherwise. Dual CEO-Chairmen are identified using RiskMetrics data items EMPLOYMENT_CEO and EMPLOYMENT_CHAIRMAN.	RiskMetrics
Firm Experienced Departure	Dummy variable that equals 1 for firms that experienced a top executive departure in the year after option acceleration, and 0 otherwise.	ExecuComp, BoardEx
Firm Experienced Poaching	Dummy variable that equals 1 for firms that experienced a top executive poaching in the year after option acceleration, and 0 for firms that experienced no executive departure (this variable is set to missing for firms that experienced a non-poached departure). A departure is defined as a poaching when the executive reappears in our sample at a different firm, in an executive role, within two years of departure.	ExecuComp, BoardEx
Firm Experienced CEO Departure	Dummy variable that equals 1 for firms that experienced a CEO departure in the year after option acceleration, and 0 otherwise.	ExecuComp, BoardEx
Director Age	The fraction of outside board directors aged 61 or older. Director age is RiskMetrics data item AGE.	RiskMetrics
Ind.-Adj. Stock Return	The firm's value of *Stock Return* minus the value of *Stock Return* averaged across all firms in the same industry and calendar year. Industry is based on the Fama-French 48 industry classification. Winsorized at the 5% and 95% level.	Compustat
Industry Stock Return	The value of *Stock Return* averaged across all firms in the same industry and calendar year. Industry is based on the Fama-French 48 industry classification. Winsorized at the 5% and 95% level.	Compustat
Ind.-Adj. ROA	A firm's value of *ROA* minus the value of *ROA* averaged across all firms in the same industry and calendar year. Industry is based on the Fama-French 48 industry classification. Winsorized at the 1% and 99% level.	Compustat
Industry ROA	The value of *ROA* averaged across all firms in the same industry and calendar year. Industry is based on the Fama-French 48 industry classification. Winsorized at the 1% and 99% level.	Compustat

Appendix A-2. Correlations

This appendix provides pairwise correlations between the main variables used in the analysis. The variables are measured in calendar years 2005 and 2006. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Variable definitions are reported in Appendix A-1. * indicates significance at the 1% level.

	CEO Turnover	*Executive Turnover Rate*	*Outside Director Turnover Rate*	*Frac. Options Accelerated*	*Accelerate*	*Log Assets*	*Market/Book Ratio*	*Stock Return*	*Stock Volatility*	*ROA*	*Sales Growth*	*Executive Age*	*Frac. Independent Directors*	*Log Total Equity Incentives*	*CEO Duality*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	1														
(2)	0.6359*	1													
(3)	0.1219*	0.1843*	1												
(4)	0.0589*	0.0696*	-0.0034	1											
(5)	0.0424*	0.0559*	0.0103	0.7384*	1										
(6)	0.0639*	0.1742*	0.1542*	-0.0651*	-0.0570*	1									
(7)	0.0264	0.0144	-0.0182	-0.0366*	-0.0429*	-0.1776*	1								
(8)	-0.0477*	-0.0383*	-0.0033	-0.1714*	-0.1650*	0.1610*	0.0880*	1							
(9)	0.0108	-0.0395*	-0.0582*	0.1029*	0.0871*	-0.5087*	0.1498*	-0.1854*	1						
(10)	-0.0291	0.0457*	0.0466*	-0.0522*	-0.0174	0.3624*	-0.2412*	0.3870*	-0.3885*	1					
(11)	-0.0542*	-0.0620*	-0.0338	-0.0285	-0.0475*	-0.0529*	0.1038*	0.1408*	0.0753*	-0.0076	1				
(12)	0.0122	-0.0392*	-0.0399*	-0.0164	-0.0126	-0.0176	-0.0167	0.0208	-0.0504*	0.0475*	-0.0385*	1			
(13)	0.0085	0.025	-0.0423	0.0039	-0.0054	0.1098*	-0.0329	0.0285	-0.0663*	0.0116	-0.0638*	-0.0782*	1		
(14)	-0.1376*	-0.1119*	-0.0663*	-0.1144*	-0.0881*	0.4360*	-0.0128	0.2395*	-0.2916*	0.3492*	0.1380*	0.1112*	-0.0609*	1	
(15)	-0.0208	-0.0129	-0.1089*	-0.0219	-0.0035	0.1848*	-0.0108	0.0019	-0.1259*	0.0628*	0.0118	0.1566*	0.1213*	0.2247*	1

Appendix A-3. Reduced-Form Results: Option Acceleration and Executive Turnover

This appendix presents reduced-form regressions examining whether staggered FAS 123-R compliance affected executive turnover. We use two dependent variables. *CEO Turnover* equals 1 for firms that experience a CEO departure in the next calendar year, and 0 otherwise. *Executive Turnover Rate* is the number of executives departing the firm in the next calendar year divided by the total number of executives at the firm in the next calendar year. All columns are OLS regressions. *FAS 123-R Takes Effect* is equal to 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the turnover event, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. In parentheses we report t-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*CEO Turnover*		*Executive Turnover Rate*	
Model	OLS		OLS	
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2005–2006	
Sample	All Firms	ExecuComp Firms	All Firms	ExecuComp Firms
	(1)	(2)	(3)	(4)
FAS 123-R Takes Effect	0.044***	0.062***	2.669***	3.847***
	(3.97)	(2.99)	(3.69)	(3.08)
Log Assets	0.002***	0.002***	0.198***	0.184***
	(6.55)	(4.41)	(14.74)	(6.69)
Market/Book Ratio	0.004	0.013	0.337*	0.595
	(1.43)	(1.54)	(1.89)	(1.10)
Stock Return	-0.032**	-0.048	-4.149***	-6.535***
	(-2.51)	(-1.45)	(-5.02)	(-3.52)
Stock Volatility	0.093	0.428*	7.132	44.533***
	(1.38)	(1.93)	(1.63)	(3.17)
ROA	-0.077***	-0.303**	0.284	-19.198***
	(-2.75)	(-2.41)	(0.15)	(-2.62)
Sales Growth	-0.040***	-0.045	-2.940***	0.831
	(-2.66)	(-1.07)	(-2.87)	(0.31)
Executive Age	0.016	0.087***	-3.938***	-5.396
	(1.51)	(4.26)	(-3.61)	(-1.49)
Frac. Independent Directors		0.082		3.338
		(1.63)		(1.00)
Log Total Equity Incentives		-0.028***		-2.441***
		(-4.34)		(-5.29)
CEO Duality		-0.021		-0.545
		(-1.08)		(-0.50)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	5,337	1,997	5,394	1,995
Adj. R^2	0.017	0.036	0.062	0.084

Appendix A-4. Non-Replenishment of Unvested Equity Following Option Acceleration

This appendix examines whether accelerating firms subsequently granted new equity compensation to replenish executives' unvested equity holdings. We use two dependent variables. *Change Log Equity Pay* is the year-on-year change in the natural logarithm of 1 plus the dollar value of annual equity compensation. *Change Equity Pay Duration* is the year-on-year change in the duration of annual option compensation. Duration is the weighted average of the number of years until options vest. All columns are OLS regressions. Columns (1) and (3) show results for CEOs, and columns (2) and (4) show results for all top executives. *Accelerate in Previous Year* equals 1 if a firm accelerated option vesting in the previous calendar year, and 0 otherwise. The sample contains firms that are in the ExecuComp database. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Control variables are measured in the year prior to the pay changes, and definitions are reported in Appendix A-1. All regressions include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. In parentheses we report t-statistics based on standard errors that are clustered at the firm level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*Change Log Equity Pay*		*Change Equity Pay Duration*	
Model	OLS		OLS	
Window of Analysis	Calendar Years 2006–2007		Calendar Years 2006–2007	
Sample	ExecuComp Firms		ExecuComp Firms	
	CEOs	Top Executives	CEOs	Top Executives
	(1)	(2)	(3)	(4)
Accelerate in Previous Year	-0.341	0.049	-0.093	-0.007
	(-0.99)	(0.22)	(-0.82)	(-0.08)
Log Assets	0.090*	0.046	0.014	0.003
	(1.90)	(1.32)	(0.75)	(0.20)
Market-Book Ratio	-0.108	-0.003	-0.064**	-0.007
	(-1.56)	(-0.16)	(-2.25)	(-0.69)
Stock Return	0.250	0.280	0.180*	0.094
	(0.91)	(1.50)	(1.85)	(1.21)
Stock Volatility	1.036	1.121	0.637	0.325
	(0.71)	(1.05)	(1.21)	(0.73)
ROA	0.323	0.530	0.351	0.186
	(0.42)	(1.08)	(1.29)	(0.83)
Sales Growth	-0.234	-0.159	0.169	0.147
	(-0.57)	(-0.56)	(1.34)	(1.35)
Executive Age	-0.262*	-0.538*	-0.146**	-0.204
	(-1.65)	(-1.78)	(-2.41)	(-1.54)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,202	9,599	2,017	8,813
Adj. R^2	-0.006	0.009	-0.001	0.010

Appendix A-5. 2nd Stage: Additional Robustness Checks

This appendix examines whether our 2SLS results are robustness to variations in the baseline specification. We use two dependent variables. *CEO Turnover* equals 1 for firms that experience a CEO departure in the next calendar year, and 0 otherwise. *Executive Turnover Rate* is the number of executives departing the firm in the next calendar year divided by the total number of executives at the firm in the next calendar year. We measure option acceleration using *Frac. Options Accelerated*, which is the number of options accelerated in the calendar year divided by the total number of options outstanding. All columns are 2SLS regressions that instrument for the option acceleration variables using *FAS 123-R Takes Effect*, which equals 1 if FAS 123-R takes effect in the calendar year, and 0 otherwise. This variable equals 1 in 2005 for firms with fiscal year ending in June through December, 1 in 2006 for firms with fiscal year ending in January through May, and 0 for all other firm-years. The sample contains firms that are in either the ExecuComp or BoardEx databases. We exclude firms that voluntarily expensed the fair value of options prior to FAS 123-R or that changed their fiscal year between 2002 and 2006. Columns (1) and (2) also exclude firms with fiscal year ending in December 2005. Control variables are measured in the year prior to the turnover event, and definitions are reported in Appendix A-1. Columns (1) through (4) include year fixed effects and industry fixed effects based on the Fama-French 48 industry classification. Columns (5) and (6) include year fixed effects and firm fixed effects. *F*-Stat. is the Kleibergen and Paap (2006) *F*-Statistic of our instrument *FAS 123-R Takes Effect* from the corresponding 1st-stage regression (not reported). In parentheses we report *t*-statistics. All columns cluster standard errors at the firm level, except columns (3) and (4) which cluster at the Fama-French 48 industry level. ***, **, * indicate significance levels of 1%, 5%, and 10%, respectively.

Dependent Variable	*CEO Turnover*	*Executive Turnover Rate*	*CEO Turnover*	*Executive Turnover Rate*	*CEO Turnover*	*Executive Turnover Rate*
Model	2SLS		2SLS		2SLS with Firm Fixed Effects	
Window of Analysis	Calendar Years 2005–2006		Calendar Years 2005–2006		Calendar Years 2003–2007	
Sample	All Firms Except those with Dec. 2005 Fiscal Year End		All Firms		All Firms	
	(1)	(2)	(3)	(4)	(5)	(6)
Frac. Options Accelerated	0.822***	0.421**	0.975**	0.510***	1.029***	0.540***
	(2.58)	(2.03)	(2.57)	(2.80)	(3.27)	(2.77)
Log Assets	0.018***	0.028***	0.019***	0.023***	-0.012	-0.006
	(4.44)	(11.78)	(7.29)	(10.73)	(-0.83)	(-0.72)
Market/Book Ratio	0.005**	0.005***	0.005**	0.005***	0.001	-0.000
	(2.19)	(3.93)	(2.17)	(3.28)	(0.52)	(-0.08)
Stock Return	-0.019	-0.028**			-0.010	-0.016**
	(-1.14)	(-2.49)			(-0.96)	(-2.38)
Stock Volatility	0.132	0.116*			-0.097	0.015
	(1.43)	(1.90)			(-0.94)	(0.23)
ROA	-0.098***	-0.020			-0.058*	-0.002
	(-2.84)	(-0.91)			(-1.72)	(-0.09)
Sales Growth	-0.028	-0.031**			-0.019	-0.011
	(-1.31)	(-2.33)			(-1.37)	(-1.28)
Executive Age	0.011	-0.039***	0.019*	-0.039***	0.085***	0.057***
	(0.86)	(-2.95)	(1.79)	(-3.69)	(5.37)	(3.31)
Ind.-Adj. Stock Return			0.010	-0.009		
			(0.63)	(-1.15)		
Industry Stock Return			0.018	-0.026		
			(0.39)	(-0.76)		
Ind.-Adj. ROA			-0.074***	0.001		
			(-3.24)	(0.12)		
Industry ROA			-0.038	-0.030		
			(-0.90)	(-0.66)		
Industry Fixed Effects	Yes	Yes	Yes	Yes	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	No	Yes	Yes
Observations	3,387	3,401	5,207	5,263	10,197	10,271
Adj. R^2	N/A	N/A	N/A	N/A	N/A	N/A
F-Stat. (*FAS 123-R Takes Effect*)	56.2	51.9	52.8	48.3	N/A	N/A