The Effect of Managerial Short-Termism on Corporate Investment*

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Abstract

We provide evidence that executives with more short-term incentives engage in myopic behavior by reducing real investment. We document this effect by exploiting a unique event in 2005, in which more than 700 firms accelerated the vesting periods on executive stock options to avoid an accounting expense under FAS 123-R. To identify the effect of this shortening of incentive horizon, we exploit exogenous variation in the timing of FAS 123-R—firms with fiscal year ending June or later had to comply in 2005, while all other firms could postpone compliance until 2006. Our instrumental variables estimates suggest that a 10% increase in the probability of accelerating options leads firms to reduce industry-adjusted investment rates by a substantial 0.023 in 2005, and a further 0.014 in 2006. This reduction in investment is concentrated among industries in which investment is easier to adjust on short notice and among firms with poor governance.
1. Introduction

How does a manager’s horizon affect corporate investment? Do managers with more short-term horizons invest less, possibly causing long-run firm value to decrease? If managerial short-termism is widespread, then it is important that corporate boards and shareholders design compensation contracts and governance mechanisms that properly incentivize managers to focus on long-term value creation. Theoretical work predicts that managers with shorter horizons will increase current earnings or cash flows by engaging in value-destroying actions, such as selling productive assets, delaying vital investments, or committing accounting fraud.\(^1\) Surveys also indicate that a vast majority of corporate managers are willing to sacrifice long-term value to meet short-term targets (e.g., Graham, Harvey, and Rajgopal [2005]). Corporate investment in particular is highly susceptible to managerial myopia, because its benefits usually arise in the long term, but it depresses earnings and cash flows in the short term. Managers also have broad leeway to quickly adjust certain types of investment to meet short-term goals. This paper’s contribution is to show that a sharp decrease in managerial horizon, prompted by an accounting rule change, led to a substantial reduction in real investment.

We test whether a reduction in managerial horizon affects investment by examining decreases in the vesting periods of executives’ holdings of firm equity. Vesting periods affect horizons because executives do not receive ownership of stock options or restricted stock until the grants vest, which typically occurs over a three- to five-year period (Gopalan et al. [2013], Cadman, Rusticus, and Sunder [2013]). Once options vest, executives are generally free to exercise them and sell the underlying shares—vesting periods are usually the only explicit mechanism to prevent executives from unwinding their equity incentives. Shorter vesting periods therefore allow executives to sell equity more quickly, and also to forfeit less equity when leaving the firm. In response, managers may undertake myopic actions that boost short-term performance, because they can sell the bulk of their holdings or move to other firms before the long-term cost of their decisions is realized.\(^2\) For these reasons, several recent papers have developed vesting-based measures of executive horizon (Gopalan et al. [2013], Edmans, Fang, and Lewellen [2013]).

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\(^2\) Chi and Johnson [2009] find that unvested equity holdings are more strongly related to increases in operating performance than vested equity.
Identifying the causal effect of executive horizon on corporate investment is challenging because corporate boards set the vesting schedule of annual equity grants, and unobserved firm characteristics may affect both vesting periods and corporate policies. For example, a board may design option or restricted stock grants that vest when investment opportunities are low, perhaps because then there is less need to incentivize executives with equity. At the same time, a firm may optimally decrease spending on new investment projects. Such changes in a firm’s investment environment are likely unobservable empirically, and may lead us to incorrectly conclude that a reduction in vesting duration causes myopic investment decisions.

We account for such unobservable variables by exploiting a unique event that led to a plausibly exogenous decrease in executives’ holdings of unvested equity. In December 2004, the Financial Accounting Standards Board (FASB) adopted FAS 123-R, which required all firms to begin expensing the fair value of newly granted stock options, as well as previously granted unvested options, in fiscal year 2005. (Prior to FAS 123-R, firms did not have to factor the cost of stock option compensation into accounting earnings.) FASB allowed firms to avoid an accounting charge on previously granted, out-of-the-money options by accelerating these options to vest before FAS 123-R took effect (Choudhary, Rajgopal, and Venkatachalam [2009]). More than 700 firms, including about 15% of S&P 1500 firms, in 2005 accelerated most previously granted stock options so that they vested immediately, instead of over several years as originally scheduled. Accelerating firms avoided on average an accounting expense equal to 23% of net income (Choudhary, Rajgopal, and Venkatachalam [2009]).

We show that executives at accelerating firms experienced a 60% decrease in incentives from total unvested equity relative to executives at non-accelerating firms—larger even than the decrease during the 2008 financial crisis (see Figures 4 and 5). Option acceleration therefore likely led to a substantial decrease in executive incentive horizons.

One potential problem with comparing the subsequent investment of accelerating and non-accelerating firms is that the decision to accelerate option vesting could be correlated with other variables that affect investment. Prior work has found that less profitable and more poorly governed firms were more likely to accelerate options, perhaps because avoiding the accounting expense allowed them to report higher “headline” earnings (e.g., Balsam, Reitenga, and Yin [2008]). These firms may also

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3 Some firms also accelerated in-the-money options, but had to claim an accounting charge for this.
4 This response is consistent with previous evidence showing that firms adjust compensation policies to increase accounting earnings (Hall and Murphy [2003], Carter, Lynch, and Tuna [2007]).
have fewer investment opportunities or resources to devote to long-term projects. Similarly, firms with poor governance might be more willing to accelerate options, and such firms might also engage in more myopic corporate policies. Therefore, unobservable heterogeneity between accelerating and non-accelerating firms could bias empirical estimates of the effect of option acceleration.

We overcome this problem by exploiting exogenous variation across firms in the effective date of FAS 123-R. The FASB required firms to begin expensing options in the first fiscal year starting after June 15, 2005. Therefore, firms with fiscal year ending in June or later were required to begin expensing options already in calendar year 2005, while firms with fiscal year ending in May or earlier did not have to expense options until calendar year 2006. Our empirical specification uses firms’ fiscal year ends in 2005 as an instrument for the decision to accelerate.5 We find that firms with fiscal years ending between June and December 2005 were 79% more likely to accelerate option vesting than firms with fiscal years ending between January and May 2005, with a first-stage F-statistic exceeding 16 in our baseline specifications. This identification approach is valid as long as a firm’s fiscal year end only affects 2005 corporate investment through its effect on managerial incentive horizon. This exclusion restriction is reasonable because most firms’ fiscal years were set years before FAS 123-R was adopted. Our results are robust to accounting for firms that changed their fiscal year ends (only 3% of our sample firms).

Our measure of corporate investment is capital expenditures. Reductions in capital expenditures increase a firm’s free cash flows and sometimes also earnings. This may lead to a temporary stock price increase, which managers can exploit by exercising vested options and selling equity (e.g., Hirshleifer [2001], Rappaport [2005]). For example, a reduction in investment increases reported free cash flows when capital expenditures are internally funded with cash. Financial analysts often use free cash flows to value companies, so they may overestimate the firm’s value if they do not fully account for the long-term effects of lower capital spending (see Damodaran [2006]).6 Additionally, reducing capital expenditures indirectly boosts a firm’s earnings by reducing depreciation charges, and also interest expenses if funded by debt. We also focus on capital expenditures because they are usually easier to adjust in the short-term than other types of investment, and therefore are a likely target for managers seeking to quickly raise the firm’s stock price. Our empirical specifications examine the effect of

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5 This identification strategy is similar to van Binsbergen, Graham, and Yang [2010], who use variation in firms’ fiscal year endings to identify the effect of the 1986 Tax Reform Act on firms’ marginal costs of debt. Variation in fiscal year endings is also used in Daske et al. [2008], who exploit that IFRS applied to firms at different points in time depending on fiscal year ends to estimate the effect of IFRS on liquidity.

6 Analysts frequently use DCF models that are based on free cash flows, calculated after subtracting capital expenditures. Similarly, many investors rely on free-cash-flow multiples to value firms.
acceleration on both contemporaneous and subsequent investment, because many accelerated options were out of the money and hence may not have become profitable to exercise following an immediate reduction in investment. We use industry-adjusted investment rates to control for differences across industries.

Our instrumental variables estimation shows that option acceleration has a strong negative effect on real investment. The effect is strongest in 2005, when most firms accelerate options, but we find evidence for lower investment in 2006 as well. Our 2SLS estimates suggest that a 10% increase in the probability of accelerating options leads firms to reduce industry-adjusted investment rates by 0.023 in 2005. This is equal to about one-third of the investment variable’s standard deviation, and for the median accelerating firm it implies a $7.5 million decrease in investment below the industry average. We find that acceleration reduces the subsequent investment rate by a further 0.014. We also find that acceleration leads to investment cuts for firms with fiscal years ending in a narrow four-month window surrounding the date when FAS 123-R first took effect; fiscal year ending is probably most random for this subset of firms.

The decrease in investment is concentrated among industries with relatively short-term asset durations. In these industries, it is easier for managers whose options have been accelerated to quickly adjust capital expenditures. We also find that the effect of option acceleration on investment is concentrated among firms with bad corporate governance, measured using the G-index. This suggest that firms with good governance counterbalance the reduction in option vesting periods, perhaps by monitoring executives more closely or by granting new pay devices to restore incentives (e.g., equity with performance-based vesting conditions (Bettis et al. [2013]).

Our results may be affected by unobserved heterogeneity between firms with different fiscal year ends. To address this concern, we conduct placebo tests where we examine whether the instrumented acceleration decision in 2005 is negatively related to investment in 2003, two years before FAS 123-R took effect. We find no effect of our instrument on investment in 2003, indicating that firms which were affected by FAS 123-R in 2005 reduced investment only in that year and in 2006. We also

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7 2SLS estimates only identify the Local Average Treatment Effect (LATE). They therefore likely apply only to firms that were considering option accelerating before FAS 123-R took effect (see Section 3.2 for more details). This is why we interpret the magnitude of managerial myopia as the effect on investment of a 10% increase in the predicted probability of option acceleration, which is approximately equal to the inter-quartile range of the variable, and about twice as large as its standard deviation. Becker, Cronqvist, and Fahlenbrach [2011] provide a similar interpretation of an instrumented endogenous indicator variable.
provide evidence that firm characteristics, especially corporate investment, do not differ across fiscal year ends before 2005. In order for our results to be biased, any remaining unobservable variable would have to affect only firms with fiscal years ending in June or later and cause these firms to decrease investment specifically in 2005. Our results are further robust to excluding firms that had equity selling restrictions or firms that accelerated only small numbers of options. Moreover, accelerating firms do not simply substitute from purchasing long-term assets to leasing them. In fact, we show that shorter incentive horizons also lead to cuts in rental expenses.

Changes to other policies can also increase a firm’s earnings or cash flows, possibly causing the stock price to rise temporarily. Managers can use discretionary accruals to shift earnings from future time periods to the present. Additionally, R&D expenditures, the other major type of corporate investment, also affect earnings and cash flows. While previous work has linked both accruals and R&D to earnings management, we argue that in our particular setting myopic managers are more likely to reduce capital expenditures. First, option acceleration occurred shortly after Section 404 of the Sarbanes-Oxley Act came into effect in 2004. At this time, managers faced heightened scrutiny from regulators, accountants, and the public, and new legal sanctions imposed higher risks on managers who conducted potentially fraudulent earnings management. As a result, since the passage of SOX accruals-based earnings management has declined substantially, while real earnings management, which is likely harder to detect, has increased (Cohen, Dey, and Lys [2008], Lobo and Zhou [2006], Iliev [2010]). Second, while capital expenditures can often be adjusted quickly, R&D expenses are usually based on long-term plans and mainly represent labor expenses for scientists or engineers. Such spending is difficult to cancel on short notice, and R&D reductions may come with large adjustment costs (Lach and Schankerman [1989], Glaser, Lopez-de-Silanes, and Sautner [2013]). Moreover, Sun [2013] shows that firms subject to SEC Accounting and Auditing Enforcement Releases actually increased R&D during alleged misstatement years, perhaps because investors view R&D cuts as a negative signal for future earnings growth.

Our paper contributes to a growing literature that links firm policies to executive horizons. Gopalan et al. [2013] develop a novel measure of equity vesting duration and document that it is positively correlated with investment opportunities, long-term assets and R&D intensity. Edmans, Fang, and Lewellen [2013] measure executive horizon using the amount of equity that vests over the coming year. Consistent with our findings, they document that imminent vesting of equity incentives is associated with lower investment. Our paper is also related to Huang [2012], who finds that CEOs with short compensation horizons are more likely to buy back shares after good performance, and to Xu
[2012], who uses data from actual CEO employment contracts to show that shorter horizons lead to better acquisitions. A key difference between these papers and ours is that by using an exogenous accounting rule change, we can precisely identify the timing of the horizon change (the large one-time shock to equity vesting) and establish its causal effect on investment.

We also add to a growing body of evidence that accounting standards affect real firm outcomes. Previous work finds that the accounting treatment of stock options affects firms’ compensation policies (Carter and Lynch [2003], Carter, Lynch, and Tuna [2007]). We show that such accounting changes also affect firm investment, through their direct effect on managerial incentives. Using a similar approach, Hayes, Lemmon, and Qiu [2012] test whether the shift from stock options to restricted stock following FAS 123-R affected firm risk. Interestingly, they find no relationship between the resulting change in executive pay convexity and firm outcomes. Their analysis does not examine changes in executive incentive horizon and does not exploit the differential timing of FAS 123-R’s effective date.

The rest of this paper is structured as follows. Section 2 describes our data and provides background on FAS 123-R. Section 3 explains our identification strategy. Section 4 shows how the timing of FAS 123-R affected option acceleration. Section 5 presents the main results on the effect of incentive horizon on investment. Section 6 provides robustness checks and Section 7 concludes.

2. Data and Background on FAS 123-R

2.1 Data and Summary Statistics

We identify firms that accelerated option vesting using the R.G. Associates Option Accelerated Vester Database, which has information on 969 acceleration events by 860 firms between May 2004 and February 2006. The database contains the date on which each firm accelerated options, the total number of options accelerated, and an indicator for whether firms accelerated all options or only out-of-

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8 For example, Graham, Hanlon, and Shevlin [2011] show how accounting income tax expenses affect subsidiary location decisions and profit repatriation, Marquardt and Wiedman [2007] show how a loophole in FAS 128 affects contingent convertible bond issuance, and Dechow and Sloan [1991] and Bens, Nagar, and Wong [2002] highlight instances in which firms reduce investment to boost earnings. Additionally, several papers show that FAS 123-R affected firms’ financial reporting choices (Choudhary [2011], Bartov, Mohanram, and Nissim [2007] or Barth, Gow, and Taylor [2012]).
the-money options. For about half of accelerating firms, information is also available for whether the firm restricted selling of the underlying stock until after the original vesting date. R.G. Associates, Inc. collected these data from publicly available company filings including 8-Ks (filings of material events), 10-K annual reports, and press releases. Appendix A-4 contains an excerpt of a sample filing.

Our main sample is all Compustat firms. We match firms in the Accelerated Vester Database to Compustat. We drop 14 firms that cannot be matched to Compustat, and 26 firms that accelerated options before entering or after exiting Compustat. This leaves 820 accelerating firms, which represent 6.7% of Compustat firms in calendar year 2005. Our sample includes 329 accelerating firms that are also in ExecuComp, representing 14.4% of the firms in that database in calendar year 2005.

Using data on firms’ option acceleration dates, we create the dummy variable “Accelerate” which equals 1 in the calendar year in which a firm accelerated option vesting. Figure 1 shows that two firms accelerated options in calendar year 2003, 68 in calendar year 2004, 742 in calendar year 2005, and 32 in the first two months of calendar year 2006 (23 firms in our sample accelerated options in multiple years). The Accelerated Vester Database ends coverage in February 2006, so we may not observe all firms that accelerated options in calendar year 2006. For this reason, we restrict our analysis to accelerations in calendar years 2004 and 2005.

We also create a dummy variable “FAS 123-R Effective” which equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 0 for firms with fiscal year ending in January through May and 1 for firms with fiscal year ending in June through December. Figure 2 provides a schematic overview of how FAS 123-R affects the expensing of existing unvested and new stock options for firms with different fiscal year ends in 2005.

Table 1 Panel A reports summary statistics for the calendar years 2004 and 2005. The statistics are based on fiscal-year-end values that firms report during these calendar years. For example, assets for calendar year 2005 are from firms’ financial statements for fiscal years ending between January and December 2005. Stock returns for calendar year 2005 are firms’ annual returns during fiscal years that end between January and December 2005. Throughout this paper we distinguish between fiscal and

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9 For 88 observations in the Accelerated Vester Database, firms report only the month or quarter in which options were accelerated. For these observations we set the acceleration date to the last day of the month/quarter. A small number of firms list only the fiscal year in which they accelerated options, and for these we set the acceleration date to missing.
calendar years because they are sometimes labeled differently. In particular, Compustat labels a firm’s fiscal year as 2004 if it ends between January and May 2005.

The table shows that the median firm in the sample has $254 million in assets. The average firm has an investment rate, defined as capital expenditures over assets, of 0.054 (0.024 at the median), and a ratio of EBITDA over assets of -0.232 (0.066 at the median). About 19% of our sample firms are also in ExecuComp. Detailed variable definitions are in Appendix A-1, and correlations are in Appendix A-2.

Table 1 Panel B shows the distribution of fiscal year ends across Compustat firms in calendar year 2005. As expected, most firms have a December fiscal year end (69%). Other fiscal year ends frequently coincide with the end of a quarter, i.e. in March (5.1%), June (5.9%), or September (5.4%). Across all firms, about 12% of fiscal year ends are before June 2005, when FAS 123-R first took effective for any firm, and 88% are in June 2005 or later. The variation in fiscal year ends is sufficient to yield more than 1,000 observations for our control group of firms unaffected by FAS 123-R in calendar year 2005. Also, we show that our results hold in a narrow window of April to July 2005.

2.2 Background on FAS 123-R

FAS 123-R was the product of a decades-long debate on how to expense stock option compensation in accounting statements. To the extent relevant for our identification, this section provides a brief description of this debate, with a timeline of major events in Appendix A-3. Additional information is in Choudhary, Rajgopal, and Venkatachalam [2009], Balsam, Reitenga, and Yin [2008], and Murphy [2013].

The initial accounting treatment of stock options was set in 1972 by the Accounting Principles Board in Opinion 25. APB 25 ruled that the accounting expense for options with a clearly defined vesting schedule is based on the option’s intrinsic value—the difference between the firm’s stock price on the option’s grant date and the option strike price. Firms that granted at-the-money options therefore did not have to claim any accounting expense.

FASB first considered changing this accounting treatment in the mid-1980s. In June 1993, it released another proposal requiring firms to expense the grant-date fair value of stock options. This proposal attracted substantial opposition from accounting firms and industries that relied heavily on
stock options to compensate employees. In March 1994, more than 4,000 employees from numerous Silicon Valley firms held a rally to protest FASB’s proposal, and in May 1994 the U.S. Senate passed a resolution urging FASB to abandon the proposal. In response to such opposition, FASB adopted an amended version of FAS 123 in October 1995, which “encouraged” firms to adopt fair-value accounting, but allowed them to continue using the standard in APB 25 as long as the pro forma cost of option compensation was disclosed in a footnote to their financial statements. The vast majority of firms continued to use APB 25.

The perceived role of stock options in the corporate scandals of the early 2000s renewed momentum for changing their accounting treatment. In the summer of 2002 a number of firms voluntarily adopted fair-value accounting, and in March 2004 the FASB once more released a proposal requiring this standard for all firms. The proposal was adopted as FAS 123-R in December 2004, and all public firms except small business issuers were required to begin expensing stock options using the fair-value method in their first financial statements (typically quarterly 10-Q reports) released after June 15, 2005. However, on April 14, 2005 the Securities and Exchange Commission delayed the effective date to the first interim reporting period in the fiscal year starting after June 15, 2005. This meant that firms with fiscal year end of June 30, 2005 had to adopt FAS 123-R in the quarter starting in July 2005, while firms with fiscal year end of May 31, 2005 did not have to adopt FAS 123-R until the quarter starting in June 2006. FASB said the delay was in response to concerns from accountants about already sizeable workloads and the difficulty of changing standards mid-fiscal year.

FAS 123-R required all firms to expense the fair value of any stock options granted after the effective date, as well as previously granted, unvested stock options. This latter condition is crucial to our empirical analysis. Because stock options typically vest over three to five years (Cadman, Rusticus, and Sunder [2013]), FAS 123-R required some firms to expense options granted as far back as 2001. However, FASB permitted firms to avoid part or all of this earnings charge by accelerating the vesting schedule of these options. FASB decided on October 6, 2004 that firms would not face a charge for previously granted, out-of-the-money options that were accelerated to fully vest before the firm’s required compliance date with FAS 123-R. The vast majority of firms in our sample that accelerated options did so after this date (798 out of 820). Although this paper focuses on executive horizon, firms
typically accelerated options for all levels of employees. The average accelerating firm avoided an accounting expense equal to 23% of net income (Choudhary, Rajgopal, and Venkatachalam [2009]).

FASB placed a few restrictions on option acceleration. Firms accelerating in-the-money options had to claim an expense equal to the difference between the stock price on the acceleration date and the option strike price. Because this amount was lower than the fair-value expense for options that were not deep in the money, some firms accelerated both in- and out-of-the-money options (Balsam, Reitenga, and Yin [2008]). Firms that voluntarily adopted fair-value accounting before FAS 123-R received no benefit from accelerating options as they were prohibited from switching back to expensing options at intrinsic value. Our results are robust to excluding voluntary adopters (see Table 10).

3 Empirical Specification and Identification

3.1 Identification Strategy

Our empirical specification is for firm $f$ at time $t$. Our baseline model tests the hypothesis that firm investment is related to executive incentive horizon:

$$ y_{f,t} = \theta \times \text{accel}_{f,t} + \beta \times x_{f,t-1} + \mu_t + \lambda_f + \epsilon_{f,t} $$

(1)

where $y_{f,t}$ is a measure of firm investment, $\text{accel}_{f,t}$ is the indicator “Accelerate” which captures option acceleration in calendar year $t$, $x_{f,t-1}$ is other firm characteristics, and $\mu_t$ and $\lambda_f$ are year and industry fixed effects. Throughout the paper, we also test this model using future investment $y_{f,t+1}$. A negative value of $\theta$ would indicate that firms that accelerate option vesting spend less on contemporaneous (or subsequent) investment than firms that do not.

Estimating the causal effect of acceleration on investment is complicated by the fact that the determinants of a firm’s decision to accelerate options may also be related to investment. Only a minority of firms affected by FAS 123-R in calendar year 2005 accelerated option vesting (see Figure 3). Prior work indicates that these firms benefitted more from reporting higher earnings than non-

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10 Despite this savings in accounting earnings, Choudhary, Rajgopal, and Venkatachalam [2009] find that accelerating firms experienced a 1% decrease in cumulative abnormal returns in the two-day window surrounding acceleration announcements. This reaction is consistent with the market anticipating that option acceleration would lead to myopic decisions.
accelerating firms, and may not have been as concerned with the cost of reducing incentive horizons. Accelerating firms were less profitable, faced more stakeholder claims, and had lower blockholder and institutional ownership than non-accelerating firms (Choudhary, Rajgopal, and Venkatachalam [2009], Balsam, Reitenga, and Yin [2008]). At the same time, firms with low profits likely have fewer funds available for investment, and firms with poor governance might engage in more myopic corporate policies. Therefore, one or more elements of \( x_{f,t-1} \) might simultaneously cause some firms to accelerate options and to invest less. If any of these variables are empirically unobservable, they will bias estimates of \( \theta \) and may lead us to incorrectly conclude that reduced incentive horizon induces myopic behavior.

To overcome this challenge, we design an identification strategy that relies on the variation in FAS 123-R compliance date across firms. This variation caused some firms to receive a larger benefit from accelerating option vesting in 2005 than others. For example, a firm with fiscal year ending in June 2005 that accelerated vesting could boost accounting earnings by the fair value of its unvested options (potentially minus a charge for the intrinsic value of in-the-money options). On the contrary, the earnings of a firm with fiscal year ending in May 2005 would be the same whether or not the firm accelerated options, because the firm was not required to claim any expense for unvested options before calendar year 2006. Firms with fiscal year ending May or earlier were less likely to accelerate options in calendar year 2005 because (i) these firms’ previously granted, unvested options were more likely to finish vesting under their normal schedule before FAS 123-R took effect; and (ii) these firms could accelerate options as late as May 31, 2006. Because most firms set their fiscal years far in advance of FAS 123-R’s adoption, the variation in compliance date is likely exogenous.

We implement our identification strategy by using “FAS 123-R Effective” as an instrument for the decision to accelerate stock options. We test our hypothesis with the following Two-Stage Least Squares (2SLS) framework:

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\begin{align*}
\text{accel}_{f,t} &= \pi_1 \times \text{fas123-r_effective}_{f,t} + \pi_2 \times x_{f,t-1} + \mu_t + \lambda_f + u_{f,t} \quad (1^{\text{st}} \text{Stage}) \\
y_{f,t} &= \gamma_1 \times \text{accel}_{f,t} + \gamma_2 \times x_{f,t-1} + \mu_t + \lambda_f + v_{f,t} \quad \text{(Reduced Form)}
\end{align*}
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where \( \text{accel}_{f,t} \) is the fitted value from the 1\text{st} stage model. The coefficient of interest in this model is \( \gamma_1 \). A negative value for this coefficient would indicate that firms that were compelled to accelerate options by the earlier FAS 123-R effective date spent less on investment.
In order for $\gamma_1$ to identify the causal effect of acceleration on investment, two key assumptions must be satisfied (see Angrist and Pischke [2009]):

1. Relevance Condition: $\pi_1 \neq 0$. This means that $\text{accel}_{f,t}$ must be correlated with $\text{fas123-r_effective}_{f,t}$ after controlling for other firm characteristics $x_{f,t-1}$.

2. Exclusion Restriction: $\text{Cov}(\text{fas123-r_effective}_{f,t}, v_{f,t}) = 0$. Differences in the effective date of FAS 123-R across firms must only affect corporate investment through their effect on option acceleration. This means that there should not be any unobservable differences between firms with fiscal year end before and after June that affect investment specifically in 2005.

3.2 Informativeness of 2SLS Estimates

If the effect of acceleration on investment varies across firms (i.e., $\gamma_1$ is not constant but heterogeneous), then our 2SLS estimates can only identify the Local Average Treatment Effect (LATE).\[^{11}\] This is likely the case in our study. Many firms that were affected by FAS 123-R in calendar year 2005 probably would have avoided accounting expenses by accelerating options, but decided not to do so. For some firms, this was likely because the cost of exacerbating managerial myopia was particularly high. This suggests that the effect of acceleration varies across firms, and that $\gamma_1$ is not a homogenous treatment effect.

In this case, our 2SLS estimates identify the effect of acceleration on investment only for the subsample of firms that were considering accelerating options, and whose decision was ultimately determined by the FAS 123-R compliance date. Importantly, this LATE does not provide information on the effect of shortening incentive horizons among firms that would not have accelerated options under any circumstance, or among firms that would have accelerated options in 2005 whether or not FAS 123-R took effect then. Nevertheless, our estimates are useful because little is known about how managerial incentive horizon affects firm policy in any set of firms. Furthermore, it may be particularly important to

\[^{11}\] Our 2SLS framework only estimates the LATE if the Monotonicity Condition holds—firms that are affected by the FAS 123-R effective date are all affected in the same way. In order for this condition to hold, our sample cannot contain any firms with fiscal year ending in June or later that were planning to accelerate options when FAS 123-R was initially adopted, but then decided against acceleration when the FASB announced that these firms would be affected earlier than others. Monotonicity is likely satisfied as the primary reason to accelerate options was to avoid an accounting expense (e.g., Appendix A-4).
understand how managerial myopia affects investment in firms that face cash constraints, and these firms are likely within the subset that was considering option acceleration.

4. Empirical Results: First Stage

4.1 Effect of Fiscal Year Ends on Option Acceleration

The Relevance Condition that FAS 123-R effective date affects option acceleration is strongly supported by our data. Figure 3 shows, for each month of calendar year 2005, the fraction of firms with fiscal year ending that accelerated option vesting. Consistent with our first 2SLS assumption, option acceleration clearly increases when FAS 123-R first takes effect. For example, 4.2% of firms with fiscal year ending in May 2005 (unaffected by FAS 123-R) accelerated option vesting in 2005. On the contrary, 8.4% of firms with fiscal year ending in June 2005 (the first firms to be affected by FAS 123-R) accelerated option vesting in 2005—an increase of 100%. Over the entire year, 7.1% of firms affected by FAS 123-R accelerated options, compared to only 3.9% of unaffected firms. This difference is statistically significant at the 1% level, and indicates that affected firms were 79% more likely to accelerate options than unaffected firms.

Table 2 shows that this result holds after controlling for a variety of firm characteristics that may affect the acceleration decision. The table presents estimates from cross-sectional regressions for the calendar year 2005. The sample is all Compustat firms, except for regressions in Columns (4) and (8) which are restricted to ExecuComp firms. Columns (1) through (4) present estimates of logistic models, while Columns (5) through (8) present estimates from ordinary least squares (OLS) regressions. In each column the dependent variable is “Accelerate” and the primary explanatory variable is “FAS 123-R Effective.” The specifications control for various firm characteristics such as size and past stock returns, and all specifications include industry fixed effects. We control for annual stock returns from the previous two years because (i) firms that recently performed poorly might be more likely to accelerate options to increase “headline” earnings; and (ii) previously granted, unvested options are more likely to be out of the money, thus incurring no acceleration expense, at firms that recently experienced negative stock returns. For each firm, the control variables are measured at the fiscal year ending in calendar year 2004. For example, for firms with fiscal year ending in June, “Log(Stock Return) [t-1]” is measured from July 2003 to June 2004. Similarly, for firms with fiscal year ending in June, “Log(Total Assets) [t-1]” is
based on total assets reported in June 2004. We define firm-level control variables in this manner throughout the paper.

Column (1) of Table 2, which does not include firm characteristics other than industry fixed effects, shows that firms for which FAS 123-R takes effect in calendar year 2005 have 106% higher odds of accelerating options than firms for which FAS 123-R does not take effect (all logit specifications report exponentiated coefficients). This is virtually unchanged when firm-level controls are added in Column (2). The specification in Column (3) focuses on firms with fiscal year ends between April and July 2005; the subset of firms for which the fiscal year ending is probably most random. Within the April to July window, firms affected by FAS 123-R have 230% higher odds of accelerating options than unaffected firms. While this is the narrowest window we employ throughout the paper, it nevertheless contains 71 accelerating firms and 668 total firms. Column (4) shows that our first-stage results remain similar within the sample of ExecuComp firms, which includes 255 accelerating firms.

The OLS estimates in Columns (5) through (8) are reported because our 2SLS regressions in the next section use a linear first-stage model. The OLS results show a similarly strong relationship between option acceleration and FAS 123-R effective date, indicating that the linear model is a reasonable approximation for the first-stage relationship.

Below each regression we present Kleibergen-Paap [2006] F-statistics, which test instrument strength in regressions with heteroskedasticity-robust standard errors. These statistics are generally well above the thresholds of 10 that is commonly used to assess the quality of a first-stage regression (see Staiger and Stock [1997] and Stock, Wright, and Yogo [2002]). This suggests that our instrument is a strong predictor for option acceleration, and that it satisfies the Relevance Condition. We note, however, that the instrument is somewhat weaker among ExecuComp firms.

The firm-level variables in Table 2 indicate that larger firms are more likely to accelerate options, but the OLS coefficients on “Log(Total Assets) Squared” suggest that the relationship is concave in firm

\[ ^{12}\text{Looking at this window further ensures that our results are not driven by firms with fiscal year ends in November, December, and January, when high auditor workloads may affect the extent to which executives can manage earnings by cutting investment (e.g., Knechel, Rouse, and Schelleman [2009] or Palmrose [1989]).} \]

\[ ^{13}\text{2SLS coefficients based on a first-stage logit model may be inconsistent if the true first-stage functional form is not logistic.} \]
size.\textsuperscript{14} Our results confirm a negative relationship between stock returns and acceleration, although the relationship is statistically insignificant in the April-July window.

4.2 Fiscal Year Ends and Firm Characteristics: Validity of Exclusion Restriction

While the data indicate a strong first-stage relationship between the FAS 123-R effective date and option acceleration, our identification strategy also depends on the validity of the Exclusion Restriction. Our key identifying assumption is that the month in which a firm’s fiscal year ends is exogenous to corporate investment in the year 2005 (other than through its effect on option acceleration). We cannot explicitly test whether fiscal year ends are correlated with unobservable variables that affect investment, but we confirm that firms with different fiscal year ends are similar in observable characteristics.

Table 3 compares characteristics of firms with fiscal year ends before and after June for the calendar year 2003, i.e. two calendar years prior to FAS 123-R. Importantly, the table shows that prior to FAS 123-R, firms with fiscal years ending in June or later have investment patterns that are economically similar, and statistically indistinguishable, from those of firms with fiscal years ending in May or earlier. Both types of firms have similar levels of profitability (EBITDA over assets), debt, and working capital. Tobin’s Q is 3.5 for firms with a fiscal year end of June or later, and 3.1 for firms with a fiscal year end of May or earlier (this difference is statistically significant). All of our regressions control for these firm characteristics. Also, Table 10 shows that results hold in a subset of firms that are matched based on the variables that differ across fiscal year ends.

The Exclusion Restriction holds unless a variable that we cannot control for causes firms to accelerate options and also to reduce investment \textit{at exactly the same time} that FAS 123-R takes effect. We argue that this is unlikely because most firms’ fiscal years were set well before the FASB restarted discussion of option accounting in 2003. Moreover, only 3\% of Compustat firms (2\% of accelerating firms) changed their fiscal year between 2002 and 2006, and our main results are robust to excluding these firms. We also perform a variety of placebo and robustness tests to show that our results are likely not driven by differences in firm characteristics across fiscal year ends.

\textsuperscript{14}Balsam, Reitenga, and Yin [2008] find a negative relationship between firm size and likelihood of accelerating options. One reason our results might differ from theirs is because they compare accelerating firms with a matched sample of ExecuComp firms, while we include all Compustat firms (including many firms that are too small to be in ExecuComp) in our sample.
4.3 Effect of Option Acceleration on Executive Horizon Incentives

Option acceleration should only affect investment if it leads to a substantial decrease in executives’ incentive horizons. We perform a set of analyses that show that this is the case. We measure executives’ incentive horizons as (i) the dollar value of unvested options; and (ii) the pay-for-performance sensitivity (PPS) of unvested options, where PPS is defined as the dollar change in unvested stock options for a 1% change in stock price (Baker and Hall [2004]). Because executives may also receive incentives from restricted stock, which was not affected by FAS 123-R, we also calculate these two measures for executives’ combined portfolios of unvested options and restricted stock. We create these measures for all top executives of ExecuComp firms as they are generally not available for smaller firms.

Figure 4 reports year-on-year changes in the dollar value of unvested stock options (Panel A) and unvested options and restricted stock (Panel B) for the calendar years 2002 to 2008. The figures plot these changes separately for the median executive at accelerating and non-accelerating firms. Both panels shows that, prior to and after 2005, executives at both types of firms experience very similar trends with regard to changes in the dollar value of their unvested equity. However, in 2005 executives at accelerating firms experience a sharp 85% decrease in the dollar value of their unvested options, and a 59% decrease in the dollar value of their total unvested equity. Executives at non-accelerating firms, on the other hand, experience almost no change in the same year. Figure 5 confirms this pattern for PPS incentives, both from unvested options (Panel A) and from unvested options and restricted stock (Panel B).

These results indicate that option acceleration affected most of the unvested equity held by top executives at accelerating firms, and therefore led to a substantial reduction in incentive horizon. In fact, the figures show that the acceleration event represents a larger shock to executives’ unvested equity than the decrease that executives experienced during the 2008 financial crisis. The figures also show that the decrease in horizon is similar whether or not restricted stock is included in the measure, indicating that stock options comprised the bulk of unvested equity for executives at accelerating firms. This is not surprising, because firms had to claim an accounting expense for restricted stock grants already prior to 2005.

Table 4 analyzes the effect of option acceleration on managerial horizon incentives, controlling for firm characteristics. The OLS regressions in this table are at the executive-firm level, for calendar
year 2005 only. The dependent variables are the four measures of changes in equity incentives, and the primary explanatory variable is the indicator “Accelerate”. The regressions confirm that executives at accelerating firms experienced a substantial drop in equity incentives, relative to executives at firms that did not accelerate options in 2005. For example, Column (8) shows that after controlling for firm characteristics, executives at accelerating firms experienced a 45% decrease in PPS from all unvested equity relative to executives at non-accelerating firms.15

5. Empirical Results: Main Result on Investment

5.1. The Effect of Option Acceleration on Investment

In this section we test for the effects of managerial short-termism by examining whether firms that accelerate the vesting of their executives’ stock options reduce corporate investment. Our measure of investment is capital expenditures over total assets. To account for differences in investment patterns across industries, for each firm-year observation we adjust this measure by subtracting the median investment rate of firms in the same industry in the same fiscal year. We label the resulting variable “Ind.-adj. Capex/Total Assets.”

Table 5 presents our main results. Columns (1) to (4) examine the relationship between incentive horizon and contemporaneous investment. In Columns (5) to (8) the dependent variable is investment in the next year, to test whether option vesting affects future investment decisions. We first report OLS regressions with “Accelerate” as the primary explanatory variable in Columns (1) to (2) and (5) to (6). We then present 2SLS estimates using “FAS 123-R Effective” as an instrument for “Accelerate” in the remaining columns. The sample for each regression is all Compustat firms in the calendar years 2004 and 2005. While our instrument “FAS 123-R Effective” equals 1 for affected firms only in year 2005, we also include the year 2004 to sample each firm once before and once after the FASB adopted FAS 123-R. (Table 10 shows that our results are robust to using just calendar year 2005.) The regressions control for various firm characteristics that may affect investment behavior, and also for variables that may differ

15 Executives’ incentive horizons may also depend on the likelihood of dismissal, or on promised pension payments (e.g., Sundaram and Yermack [2007]). These incentives are difficult to measure accurately, but they will not affect our results as long as changes to these incentives are unrelated to firms’ fiscal year ends in 2005.
across firms with different fiscal year ends (see Table 3). We measure each of these control variables using financial information reported in the previous calendar year, to ensure that they are not affected by FAS 123-R. We also control for annual stock returns from the previous two years.

The OLS regressions suggest that firms that accelerate options engage in lower capital expenditures than firms that do not accelerate options—the coefficient on “Accelerate” is negative in each regression. However, once firm controls are included only the relationship between acceleration and subsequent investment is statistically significant, at the 10% level.

When we instrument the acceleration decision using fiscal year end dates in the 2SLS regressions, we find strong evidence that option acceleration causes managers to substantially cut investment. Option acceleration has the strongest effect on contemporaneous investment in the calendar year 2005. Columns (3) and (4) show a negative relationship between acceleration and contemporaneous investment, which is statistically significant at the 1% level when firm controls are included. The relationship between acceleration and subsequent investment is also negative but weaker, with statistical significance of 10% in Column (8).

The -0.232 coefficient in Column (4) indicates that a 10% increase in acceleration probability due to an earlier FAS 123-R effective date leads to an absolute decrease of 0.023 in contemporaneous industry-adjusted capital expenditures. This equals about one-third of the variable’s standard deviation of 0.076. For the median accelerating firm (total assets of $327 million), it also equals about a $7.5 million decrease in investment relative to the industry average. The coefficient in Column (8) indicates that subsequent investment decreases by -0.014 for a 10% increase in acceleration probability, equal to about one-fifth of the standard deviation of industry-adjusted investment or a $4.6 million decrease relative to the industry average. To understand the economic magnitude of our results, note that our 2SLS estimates likely apply only to firms that were initially considering accelerating option vesting—before the final FAS 123-R effective dates were set—with some positive probability (see Section 3.2). The instrumented variable $\text{accel}_{f,t}$ is the probability that such firms would accelerate stock options if required to comply with FAS 123-R in calendar year 2005. We interpret the magnitude of managerial myopia as the effect on investment of a 10% increase in $\text{accel}_{f,t}$, because this is approximately equal to variable’s inter-quartile range and is about twice its standard deviation.
The Kleibergen-Paap [2006] F-statistic is 20.9 in Column (4) and 15.3 in Column (8) confirming that our results are likely not affected by “weak instrument” problems. This, combined with the evidence provided in Section 4.2, indicates that fiscal year end is a valid instrument for the decision to accelerate options. The difference between our OLS and IV estimates suggest that unobservable variables effect both the acceleration decision and investment, confirming the importance of using an instrument for option acceleration.

Figure 6 complements the previous analysis but visualizes in an intuitive way the main effect of option acceleration on investment. Without controlling for other effects that may drive investment, we compare industry-adjusted capital expenditures in 2005 of firms that have a high or low probability to accelerate options in 2005. “Predicted Accelerators” (“Predicted Non-Accelerators”) are firms that have an above (below) median predicted probability to accelerate the vesting of stock options in calendar year 2005.” We calculate the predicted probability to accelerate options based on the first-stage model reported in Column (6) of Table 2. Figure 6 shows that firms that have a high propensity to accelerate option vesting invest only 1.3%, while those firms that are less likely to accelerate invest with 2.1% substantially more. The difference is statistically significant at the 1% level.

5.2 The Role of Asset Duration: Effects Across Industries

If shortened incentive horizon does indeed cause investment cuts, then this effect should be strongest for firms that invest in relatively short-term projects. This is because capital expenditures are easier to cut when projects are more short-term in nature. For example, firms in the entertainment industry often invest in projects like television shows for one season at a time, and shows are frequently cancelled. In the oil industry, however, it may be difficult to quickly adjust investment because oil field development is often based on long-term commitments scheduled over several years. We therefore test whether our results are concentrated in industries with short-term asset duration.

In Table 6, we partition our sample using a classification proposed by Gopalan et al. [2013], who argue that firms in industries with longer asset durations generally grant stock options with longer vesting periods. Gopalan et al. [2013] calculate the average CEO pay duration for firms in 48 different industries. We classify the 24 industries with highest CEO pay duration as long-term, and the remaining
ones as short-term.\textsuperscript{16} According to this classification, industries with more long-term assets include defense, utilities, ship building and chemicals, while industries with more short-term assets include consumer goods, agriculture and entertainment.

In Table 6, Columns (1) and (3) are for firms in industries with long-term assets, and Columns (2) and (4) are for firms in industries with short-term assets. Each column presents results for a 2SLS regression with the same structure as Table 5. As before, the dependent variable in Columns (1) and (2) is contemporaneous investment, and in Columns (3) and (4) it is investment in the subsequent year.

The results show that the previously documented effect of option acceleration on contemporaneous investment is concentrated among firms that operate in short-term industries. Column (2) shows that in short-term industries, the relationship between acceleration and contemporaneous investment is negative (-0.246) and statistically significant at the 1\% level. The relationship for long-term industries in Column (1) is small in magnitude and statistically indistinguishable from 0. We do not find a similar difference for subsequent investment, but the \( t \)-statistic for “Accelerate” is substantially larger for firms in short-term industries than for firms in long-term industries. Overall, this suggests that the effect of incentive horizon on investment is concentrated among industries where adjustments to investment are relatively easy to implement on short notice. This is consistent with managers cutting investment in response to their decreased incentive horizons.

5.3 The Role of Corporate Governance

Our results do not necessarily imply that a shorter incentive horizon is inefficient for shareholders. Bolton, Scheinkman, and Xiong [2006] show that a shorter CEO horizon can benefit (short-term) shareholders by leading to short-term actions that increase the speculative component of the stock price. Similarly, Laux [2012] shows that a shorter CEO horizon can lead to the termination of inefficient projects. Option acceleration therefore may have led to value-increasing decisions, or to capital gains for some short-term shareholders.

It is difficult to conclusively measure the effect of shortened incentive horizon on overall welfare, but we can test whether the reduction in investment is related to firm governance. Well-governed firms may be able to mitigate the effect of option acceleration on executive horizons by increasing their

\textsuperscript{16} Specifically, we sort industries based on Gopalan et al. [2013]’s variable Duration for CEOs. Duration calculates the vesting duration of CEOs’ cash, restricted stock, and option pay. Gopalan et al. [2013] define industries according to the Fama-French 48 industry classification.
monitoring of top executives’ decisions, or by using alternative compensation mechanisms to counterbalance the reduced stock option vesting periods (e.g. granting new equity with performance-based vesting requirements (Bettis et al. [2013]).

To investigate this notion, in Table 7 we separate the sample based on a measure of corporate governance, the G-index (see Gompers, Ishii, and Metrick [2003]). We separate the sample into firms with G-index values that are above the sample median (bad corporate governance) or below it (good corporate governance). Our sample in Table 7 is restricted to firms in the RiskMetrics database (mainly S&P 1500 firms), because the G-index is not available for other firms. Although the G-index measures anti-takeover mechanisms, it has been widely used as a proxy for corporate governance and managerial entrenchment as it is plausibly associated with firms’ internal governance (e.g., Giroud and Mueller [2011], Ferreira and Laux [2007]).

Table 7 presents regression results in Columns (1) and (3) for firms with good corporate governance, and in Columns (2) and (4) for those with bad governance. The results show that the previously documented effect of option acceleration on contemporaneous investment is concentrated among firms with bad corporate governance. In Column (2), the coefficient on contemporaneous investment for accelerating firms with high G-index values is negative and statistically significant (-0.141). In Column (1), the coefficient for accelerating firms with low G-index values is six times smaller (-0.026) and statistically indistinguishable from 0. Column (3) shows that subsequent investment for accelerating firms with low G-index values is positive (but insignificant), while Column (4) shows that for accelerating firms with a high G-index the relationship is negative and close to statistically significance. Overall, these results indicate that accelerating firms with low G-index values do not cut investment, while accelerating firms with high G-index values do. This suggests that firms with good governance and less entrenched managers mitigate the effect of option acceleration on executive myopia.

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17 Some work argues that firms with many anti-takeover provisions (high G-index) are better insulated against short-term pressures by financial markets, and hence may undertake more innovation (Chemmanur and Tian [2013], Sapra, Subramanian, and Subramanian [2013]). However, option acceleration affects executive horizons through a different channel, and may potentially lead to myopia even in firms insulated from investor pressure.
6. Robustness Checks

6.1 Placebo Tests

One concern with our analysis is that firms with different fiscal year ends differ based on unobservable characteristics that affect investment. In this case, our instrument would violate the Exclusion Restriction, and our 2SLS estimates may be driven by unobservable differences instead of the decrease in incentive horizon due to option acceleration.

To address this concern, we conduct placebo regressions in Table 8 where we examine whether our instrument affects investment before FAS 123-R first took effect. Specifically, we examine the effect of option acceleration in calendar year 2005 on investment in 2003 (Columns (1) and (2)) and 2004 (Columns (3) and (4)). “Accelerate” is defined as in Table 5—it equals 1 if firms accelerated option vesting in calendar year 2005 (i.e., two years into the future)—and the instrument “FAS 123-R Effective” again equals 1 if the firm’s fiscal year in 2005 ends in June through December, and 0 otherwise. If the reduction in investment in 2005 is really due to option acceleration, then “Accelerate” should not affect investment in 2003 or 2004. On the other hand, if the reduction is due to unobserved heterogeneity across firms, then the firm’s fiscal year end should also explain investment in years prior to the adoption of FAS 123-R. This falsification analysis therefore allows us to perform a reasonable placebo test for our instrument.

The results show that there is no relationship between our instrument and investment in 2003 or 2004. These results indicate that unobserved heterogeneity across firms with different fiscal year ends does not affect investment in general. Rather, firms with fiscal year ending in June or later only cut investment in 2005 and 2006—exactly when the shock to executives’ vesting horizons due to FAS 123-R occurred. In order for our results to be biased, an unobservable variable would have to affect only firms with fiscal years ending in June or later and causes these firms to decrease investment specifically in 2005.

6.2 Rental Expenses versus Investment

Another concern is that instead of reducing investment, accelerating firms merely substitute capital expenditures for rental expenditures. Our measure of investment would decrease if firms responded to option acceleration by renting or leasing long-term assets instead of purchasing them. If
this is the case, our results would misleadingly suggest that firms behave myopically, when in fact the horizon of utilized assets may not decrease. We address this concern by investigating in Table 9 how rental expenditures changed around the acceleration event. The structure of the 2SLS regressions is the same as in Table 5, except the dependent variable is industry-adjusted rental expenditures over assets. Rental expenses include operating lease expenses, payments for short-term leases, and contingent payments associated with capitalized leases (see Eisfeldt and Rampini [2009]). The regressions suggest that firms do not substitute asset purchases with rentals. In fact, the negative coefficients suggest that accelerating firms also decrease rental expenditures, although only the relationship for contemporaneous rental expenditures is statistically significant. Because rental expenditures have a direct impact on free cash flows and earnings, this is further evidence for myopic behavior in response to option acceleration.

6.3 Further Robustness Checks

Table 10 presents additional robustness checks to address a variety of other potential concerns. Each panel reports the coefficient and t-statistic for the instrumented acceleration variable only, but all regressions include the same control variables as in Columns (4) and (8) of Table 5.

- Panel A identifies the effects of option acceleration using by restricting the sample to calendar year 2005 only. Our results are robust to using this narrower window of analysis.
- Panel B restricts the sample to firms with fiscal year ends between April and July 2005. The number of observations in this panel is small, substantially reducing the statistical power of our tests, but the advantage of this test is that it compares only firms with fiscal year ending right around June 15, 2005 (when FAS 123-R first took effect for any firm). In particular, it excludes firms with December fiscal year ends, which are somewhat bigger than other firms. It also excludes firms that may have accelerated options before the effective date for FAS 123-R was postponed on April 14, 2005. Our results are again robust to this narrow window of analysis.18
- Panel C restricts the sample to ExecuComp firms. The estimates suggest that our results are not driven by small firms (not in ExecuComp), although the effect of option acceleration on investment seems weaker for larger ExecuComp firms.

18 Our results are further unaffected if we allocate fiscal years between January and May to the previous calendar year, and those between June and December to the current calendar year. This is also the approach used by Compustat to allocate fiscal year ends to calendar years.
Panel D excludes the 3% of sample firms that changed their fiscal year between 2002 to 2006. The panel shows that our main results are not affected by firms changing their fiscal year to postpone compliance with FAS 123-R.

Panel E excludes firms that explicitly restrict employees from selling the underlying stock from accelerated options until the original vesting date passes. Option acceleration may not substantially reduce incentive horizons at these firms, because executives effectively cannot unwind their incentives sooner than they could have before acceleration. Our results do not change substantially when we exclude these firms.

Panel F excludes firms that accelerate only a small number of options, perhaps because many unvested options are in the money and incur an accounting charge upon acceleration. Executive incentive horizon should not decrease substantially at such firms. Our results do not change when we exclude these firms.

Panel G excludes firms that did not grant stock options to any employee during the sample period. These firms may differ substantially from other firms, because their executives’ incentive horizons are not based on stock option ownership at all. Our result on contemporaneous investment does not change, and the coefficient for subsequent investment increases in statistical significance.

Panel H excludes firms that voluntarily adopted fair-value accounting for stock options according to FAS 123 before 2005 (see Choudhary, Rajgopal, and Venkatachalam [2009], Aboody, Barth, and Kasznik [2004]). The results are again robust to excluding such firms.

Panel I excludes financial services firms, for which the definition of capital expenditures may not be comparable to other firms. Our results become stronger once we exclude financials.

Panel J includes lagged levels of industry-adjusted capital expenditures over assets as an additional control variable in the regressions. This controls for the level of past investment and provides an alternative test to Table 8 (i.e., that firms with different fiscal year ends do not differ in investment patterns). The coefficient on contemporaneous investment remains negative and significant, although the economic effect becomes smaller.\(^\text{19}\)

\(^\text{19}\)Results are further robust to controlling for various proxies of CEO incentives, including the ratio of equity-based pay to total pay, new equity incentives granted in a given year, the total level of equity incentives or CEO tenure. Our results also do not change when we omit firms that substantially increased the vesting period of new option grants after FAS 123-R (Cadman, Rusticus, and Sunder [2013]).
Panel K uses non-industry adjusted capital expenditures over assets as the dependent variable. The effect of option acceleration on contemporaneous investment remains negative and highly significant, but the effect on subsequent investment is statistically insignificant.

Finally, Panel L reports results for a matched sample of firms. We match accelerators to non-accelerators with a similar likelihood of accelerating options. Specifically, we calculate each firms’ propensity to accelerate options, using a logistic regression with “FAS 123-R Effective”, total assets, Tobin’s Q, rental expenses over assets, and industry as control variables. Our choice of matching variables is motivated by Table 3, which suggests that firms with different fiscal year ends may differ along these dimensions. We match propensity scores using a nearest neighbor procedure with replacement (as suggested by Roberts and Whited [2013]). In this smaller matched sample, we continue to find a negative and statistically significant relationship for both contemporaneous and subsequent investment. The size of the instrumented acceleration coefficient is smaller, possibly because firms in the matched sample are more homogenous, leading to a smaller treatment effect.

7. Conclusions

We investigate whether executives with more short-term horizons spend less on corporate investment. Though it is frequently claimed that executives act myopically, little empirical evidence exists on the effects of short-termism. This lack of evidence is due to the difficulty of constructing good proxies for changes in executive horizons, and to omitted variables that complicate the identification of the causal effect of incentive horizons on corporate policies.

We overcome the first challenge by looking at a sharp reduction in the vesting period of executive options as a result of an accounting change in 2005. More than 700 US firms accelerated the vesting period on executive stock options to avoid an accounting expense under FAS 123-R. We use vesting periods to measure executive horizons as they are the only explicit mechanism that most firms use to prevent executives from unwinding their equity incentives. For the median executive in our sample, 59% of unvested equity became immediately exercisable as a result of option acceleration.

To overcome the second challenge, we identify the effect of option acceleration on corporate investment by exploiting exogenous variation in the timing of FAS 123-R. Firms with fiscal year ending in June or later had to comply with FAS123-R already in 2005, while firms with fiscal year ending before
June could postpone compliance until 2006. We therefore use firms’ fiscal year end in 2005 as an instrument for the decision to accelerate. Firms with fiscal year ending in June to December 2005 were 79% more likely to accelerate option vesting than firms with fiscal year ending in January to May 2005.

We document that option acceleration in 2005 has a strong negative effect on industry-adjusted investment. While the effect is strongest for contemporaneous 2005 investment, investment is also lower in 2006. In terms of economic significance, our 2SLS estimates suggest that a 10% increase in the probability of accelerating options leads firms to reduce industry-adjusted investment rates by 0.023 in 2005. This is equal to about one-third of the investment variable’s standard deviation. Next-year investment rates of accelerators decrease by a further 0.014. Consistent with the idea that managers cut investment when their incentives are more short-term, we find that the effects of option acceleration are concentrated among industries where it is relatively easier to adjust investment downwards on short notice as projects are generally more short-term. We further show that the effect of option acceleration is driven by firms with bad corporate governance. Firms with good corporate governance find hence counter the shock to executive horizon incentives, possibly through increased monitoring or the granting of new compensation devices that counterbalance the reduced vesting incentives.

Future research could look at how internal firm governance, especially boards and compensation committees, react to governance shocks such as the one resulting from option acceleration. Our analysis also points to possibly unintended real consequences that result from changes in accounting rules.
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Table 1: Summary Statistics

Panel A provides summary statistics of firm characteristics. The variables are reported for the calendar years 2004 and 2005. We report means, medians, standard deviations, 25th and 75th percentiles, and the number of observations. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. Panel B reports the distribution of firm-year endings across firms for calendar year 2005. The sample is all Compustat firms.

Panel A: Firm Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>STD</th>
<th>25%</th>
<th>75%</th>
<th>Obs.</th>
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<tr>
<td>Accelerate</td>
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<td>0.000</td>
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<td>FAS 123-R Effective</td>
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<td>0.000</td>
<td>0.496</td>
<td>0.000</td>
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<td>0.006</td>
<td>0.060</td>
<td>19188</td>
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<td>Ind.-adj. Capex/Total Assets</td>
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<td>0.000</td>
<td>0.076</td>
<td>-0.013</td>
<td>0.024</td>
<td>19193</td>
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<td>Total Assets ($m)</td>
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<td>254</td>
<td>14504</td>
<td>33</td>
<td>1427</td>
<td>19591</td>
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<tr>
<td>Tobin's Q</td>
<td>3.563</td>
<td>1.562</td>
<td>7.200</td>
<td>1.123</td>
<td>2.682</td>
<td>17088</td>
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<td>Stock Return</td>
<td>0.143</td>
<td>0.067</td>
<td>0.516</td>
<td>-0.161</td>
<td>0.339</td>
<td>17929</td>
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<tr>
<td>EBITDA/Total Assets</td>
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<td>Ind.-adj. Rental Expenses/Total Assets</td>
<td>0.018</td>
<td>0.000</td>
<td>0.059</td>
<td>-0.007</td>
<td>0.017</td>
<td>13200</td>
</tr>
<tr>
<td>ExecuComp Firm</td>
<td>0.186</td>
<td>0.000</td>
<td>0.389</td>
<td>0.000</td>
<td>0.000</td>
<td>22258</td>
</tr>
</tbody>
</table>

Panel B: Fiscal Year Endings in 2005

<table>
<thead>
<tr>
<th>Fiscal Year End Month</th>
<th># Firms</th>
<th>Percentage</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>274</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>February</td>
<td>105</td>
<td>1.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td>March</td>
<td>566</td>
<td>5.1%</td>
<td>8.5%</td>
</tr>
<tr>
<td>April</td>
<td>181</td>
<td>1.6%</td>
<td>10.1%</td>
</tr>
<tr>
<td>May</td>
<td>169</td>
<td>1.5%</td>
<td>11.7%</td>
</tr>
<tr>
<td>June</td>
<td>658</td>
<td>5.9%</td>
<td>17.6%</td>
</tr>
<tr>
<td>July</td>
<td>155</td>
<td>1.4%</td>
<td>19.0%</td>
</tr>
<tr>
<td>August</td>
<td>208</td>
<td>1.9%</td>
<td>20.9%</td>
</tr>
<tr>
<td>September</td>
<td>596</td>
<td>5.4%</td>
<td>26.2%</td>
</tr>
<tr>
<td>October</td>
<td>330</td>
<td>3.0%</td>
<td>29.2%</td>
</tr>
<tr>
<td>November</td>
<td>155</td>
<td>1.4%</td>
<td>30.6%</td>
</tr>
<tr>
<td>December</td>
<td>7,705</td>
<td>69.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>11,102</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
This table examines whether firms with fiscal year endings between June and December are more likely to accelerate stock options in response to FAS 123-R than firms with fiscal year endings between January and May. The dependent variable (“Accelerate”) is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. “FAS 123-R Effective” is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May 2005. We report both logistic and OLS regressions. The sample period in all regressions is calendar year 2005. The regressions in Columns (1) to (3) and (5) to (7) include all Compustat firms, while those in Columns (4) and (8) include only ExecuComp firms. The regressions in Columns (3) and (7) include firms with fiscal year endings between April and July only. “F-Statistic” is the Kleibergen-Paap [2006] F-Statistic of our instrument “FAS 123-R Effective.” “# Accelerating Firms” is the number of firms in each regression that are accelerating options. “Diff. in Odds Ratio” is the difference between the odds of accelerating options for firms with fiscal year ends between June and December, and firms with fiscal year ends between January and May, holding other variables constant. “Marginal Probability” is the change in the probability of accelerating stock options when “FAS 123-R Effective” changes from 0 to 1. We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Model:</th>
<th>Dependent Variable:</th>
<th>Logit</th>
<th>OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample:</td>
<td></td>
<td>Calendar Year 2005</td>
<td>Calendar Year 2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>FAS 123-R Effective</td>
<td>2.060***</td>
<td>2.053***</td>
<td>3.297***</td>
</tr>
<tr>
<td></td>
<td>(4.96)</td>
<td>(4.08)</td>
<td>(3.24)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>2.962***</td>
<td>3.510***</td>
<td>2.497***</td>
</tr>
<tr>
<td></td>
<td>(8.50)</td>
<td>(2.84)</td>
<td>(2.72)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>0.921***</td>
<td>0.909***</td>
<td>0.931***</td>
</tr>
<tr>
<td></td>
<td>(-7.82)</td>
<td>(-2.49)</td>
<td>(-3.05)</td>
</tr>
<tr>
<td>Tobin’s Q [t-1]</td>
<td>1.056***</td>
<td>1.012</td>
<td>0.940</td>
</tr>
<tr>
<td></td>
<td>(4.05)</td>
<td>(0.21)</td>
<td>(-1.04)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>0.506***</td>
<td>0.624</td>
<td>0.371***</td>
</tr>
<tr>
<td></td>
<td>(-6.57)</td>
<td>(-1.34)</td>
<td>(-4.57)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>0.846*</td>
<td>0.746</td>
<td>0.876</td>
</tr>
<tr>
<td></td>
<td>(-1.68)</td>
<td>(-1.01)</td>
<td>(-0.65)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>1.141</td>
<td>1.428</td>
<td>0.491</td>
</tr>
<tr>
<td></td>
<td>(0.55)</td>
<td>(0.56)</td>
<td>(-1.56)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>0.791</td>
<td>0.450</td>
<td>1.002</td>
</tr>
<tr>
<td></td>
<td>(-1.04)</td>
<td>(-1.02)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>WC/Total Assets [t-1]</td>
<td>2.056***</td>
<td>1.525</td>
<td>1.355</td>
</tr>
<tr>
<td></td>
<td>(3.71)</td>
<td>(0.65)</td>
<td>(0.81)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.079***</td>
<td>0.004***</td>
<td>0.022***</td>
</tr>
<tr>
<td></td>
<td>(-16.65)</td>
<td>(-13.70)</td>
<td>(-4.72)</td>
</tr>
</tbody>
</table>
Table 3: Firm Characteristics by Fiscal Year Endings before FAS 123-R

This table provides firm characteristics separated based on whether a firm's fiscal year ending is between January and May, or between June and December. We report means, medians, standard deviations, and the number of observations. We further report p-values of difference-in-means tests comparing firms with fiscal year endings between January and May, and firms with fiscal year endings between June and December. The sample is all Compustat firms. The variables are reported for calendar year 2003, i.e., two years before FAS 123-R first took effect. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year.

<table>
<thead>
<tr>
<th>Variable (for Calendar Year 2003)</th>
<th>Fiscal Year End: June-December</th>
<th>Fiscal Year End: January-May</th>
<th>t-test (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capex/Total Assets</td>
<td>0.048</td>
<td>0.050</td>
<td>0.3724</td>
</tr>
<tr>
<td>Ind.-adj. Capex/Total Assets</td>
<td>0.018</td>
<td>0.020</td>
<td>0.3549</td>
</tr>
<tr>
<td>Total Assets (Sm)</td>
<td>3981</td>
<td>3043</td>
<td>0.0312</td>
</tr>
<tr>
<td>Tobin's Q</td>
<td>3.565</td>
<td>3.069</td>
<td>0.0387</td>
</tr>
<tr>
<td>EBITDA/Total Assets</td>
<td>-0.248</td>
<td>-0.283</td>
<td>0.4231</td>
</tr>
<tr>
<td>Debt/Total Assets</td>
<td>0.378</td>
<td>0.372</td>
<td>0.8032</td>
</tr>
<tr>
<td>WC/Total Assets</td>
<td>-0.256</td>
<td>-0.203</td>
<td>0.5269</td>
</tr>
<tr>
<td>Rental Expenses/Total Assets</td>
<td>0.039</td>
<td>0.061</td>
<td>0.0000</td>
</tr>
<tr>
<td>Ind.-adj. Rental Expenses/Total Assets</td>
<td>0.020</td>
<td>0.033</td>
<td>0.0000</td>
</tr>
<tr>
<td>ExecuComp Firm</td>
<td>0.189</td>
<td>0.181</td>
<td>0.4941</td>
</tr>
</tbody>
</table>
Table 4: Executive Horizon Incentives and Option Acceleration

This table examines the effect of option acceleration on different measures of executive horizon incentives. The dependent variable in Columns (1) and (2) is the annual percentage change in the dollar value of unvested stock options. The dependent variable in Columns (3) and (4) is the annual percentage change in the dollar value of unvested equity. Unvested equity consists of unvested stock options and restricted stock. The dependent variable in Columns (5) and (6) is the annual percentage change in the pay-for-performance sensitivity (PPS) of unvested stock options. The dependent variable in Columns (7) and (8) is the annual percentage change in the pay-for-performance sensitivity (PPS) of unvested equity. PPS is defined as the dollar change in equity for a 1% change in the stock price. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. All regressions are at the executive-firm level. The regressions include all top executives at ExecuComp firms. The sample period is calendar year 2005. We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors and clustered at the firm level. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Percentage Change in Value of Unvested Options</th>
<th>Percentage Change in Value of Unvested Equity</th>
<th>Percentage Change in PPS of Unvested Options</th>
<th>Percentage Change in PPS of Unvested Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td>OLS</td>
<td>OLS</td>
<td>OLS</td>
<td>OLS</td>
</tr>
<tr>
<td>Sample:</td>
<td>Calendar Year 2005 and ExecuComp Firms</td>
<td>Calendar Year 2005 and ExecuComp Firms</td>
<td>Calendar Year 2005 and ExecuComp Firms</td>
<td>Calendar Year 2005 and ExecuComp Firms</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-62.441*** (-8.82)</td>
<td>-77.502*** (-9.82)</td>
<td>-47.305*** (-5.69)</td>
<td>-61.722*** (-6.84)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>-12.354 (-0.67)</td>
<td>9.490 (-0.53)</td>
<td>-8.543 (-0.95)</td>
<td>0.514 (-0.92)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>0.602 (0.51)</td>
<td>0.408 (0.36)</td>
<td>0.514 (0.92)</td>
<td>1.696* (1.67)</td>
</tr>
<tr>
<td>Tobin's Q [t-1]</td>
<td>-4.935** (-2.43)</td>
<td>-7.414*** (-3.51)</td>
<td>-1.866* (-1.71)</td>
<td>4.119*** (-2.80)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>-78.797*** (-6.46)</td>
<td>-77.791*** (-6.17)</td>
<td>-27.614*** (-4.74)</td>
<td>-42.805*** (-3.54)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>-32.643*** (-3.52)</td>
<td>-29.141*** (-3.00)</td>
<td>-4.419 (-1.09)</td>
<td>-9.966 (-1.38)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>-13.764 (-0.60)</td>
<td>10.118 (0.35)</td>
<td>2.375 (0.19)</td>
<td>12.109 (0.62)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>5.189 (0.28)</td>
<td>17.721 (0.88)</td>
<td>5.985 (0.63)</td>
<td>9.744 (0.71)</td>
</tr>
<tr>
<td>WC/Total Assets [t-1]</td>
<td>7.959 (0.83)</td>
<td>9.052 (0.91)</td>
<td>4.236 (0.44)</td>
<td>13.865 (0.88)</td>
</tr>
<tr>
<td>Constant</td>
<td>26.116*** (3.42)</td>
<td>111.040 (1.56)</td>
<td>38.309*** (4.77)</td>
<td>113.527 (1.64)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Obs.</td>
<td>7463</td>
<td>6154</td>
<td>7463</td>
<td>6154</td>
</tr>
<tr>
<td>Adjusted R-sq.</td>
<td>0.045</td>
<td>0.089</td>
<td>0.024</td>
<td>0.064</td>
</tr>
</tbody>
</table>
Table 5: Option Acceleration and Investment: Main Regression Results

This table examines whether firms that accelerate the vesting of stock options spend less on capital expenditures. The dependent variable is industry-adjusted capital expenditures over total assets. The regressions in Columns (1) to (4) use contemporaneous values of investment, while those in Columns (5) to (8) use next-year values. The regressions in Columns (1), (2), (5) and (6) are OLS regressions, while the regressions in Columns (3), (4), (7) and (8) are 2SLS instrumental variables (IV) regressions. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. The sample period in all regressions is calendar years 2004 and 2005. The regressions include all Compustat firms. “F-Statistic First Stage” is the Kleibergen-Paap [2006] F-Statistic of our instrument from the corresponding first-stage regression (not reported). We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets [t+1]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>IV 2SLS</td>
</tr>
<tr>
<td>Sample:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-0.006***</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(-3.53)</td>
<td>(-0.29)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>0.000</td>
<td>0.006**</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(2.57)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>-0.000</td>
<td>-0.001***</td>
</tr>
<tr>
<td></td>
<td>(-1.63)</td>
<td>(-3.23)</td>
</tr>
<tr>
<td>Tobin’s Q [t-1]</td>
<td>0.000*</td>
<td>0.001***</td>
</tr>
<tr>
<td></td>
<td>(1.79)</td>
<td>(2.69)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>0.011***</td>
<td>0.005**</td>
</tr>
<tr>
<td></td>
<td>(7.34)</td>
<td>(2.07)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>0.010***</td>
<td>0.011***</td>
</tr>
<tr>
<td></td>
<td>(7.86)</td>
<td>(7.33)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td>(-0.01)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(-0.47)</td>
<td>(-0.72)</td>
</tr>
<tr>
<td>WC/Total Asset s[t-1]</td>
<td>0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(-0.13)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.017***</td>
<td>0.011***</td>
</tr>
<tr>
<td></td>
<td>(15.36)</td>
<td>(3.07)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Obs.</td>
<td>19193</td>
<td>11926</td>
</tr>
<tr>
<td>Adjusted/Pseudo R-sq.</td>
<td>0.032</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>0.025</td>
<td>0.021</td>
</tr>
<tr>
<td>F-Statistic First Stage</td>
<td>27.25</td>
<td>20.95</td>
</tr>
</tbody>
</table>
Table 6: Option Acceleration and Investment: The Role of Asset Duration

This table examines whether the relation between option acceleration and investment depends on asset duration. We separate the sample based on the classification proposed in Gopalan et al. [2013] into firms in industries with more long-term or more short-term assets. The dependent variable is industry-adjusted capital expenditures over total assets. The regressions in Columns (1) and (2) use contemporaneous values of investment, while those in Columns (3) and (4) use next-year values. The regressions are 2SLS instrumental variables (IV) regressions. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. The sample period in all regressions is calendar years 2004 and 2005. The regressions include all Compustat firms. We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets [t+1]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model:</strong></td>
<td>IV 2SLS</td>
<td>Calendar Years 2004-2005</td>
</tr>
<tr>
<td><strong>Sample:</strong></td>
<td></td>
<td>Industries with Long-Term Assets</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-0.014</td>
<td>-0.246***</td>
</tr>
<tr>
<td></td>
<td>(-0.09)</td>
<td>(-2.68)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>0.004</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.88)</td>
<td>(1.10)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>-0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(-1.54)</td>
<td>(-1.54)</td>
</tr>
<tr>
<td>Tobin’s Q [t-1]</td>
<td>0.000</td>
<td>0.001**</td>
</tr>
<tr>
<td></td>
<td>(0.82)</td>
<td>(2.49)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>0.012**</td>
<td>0.004*</td>
</tr>
<tr>
<td></td>
<td>(2.48)</td>
<td>(1.70)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>0.011***</td>
<td>0.011***</td>
</tr>
<tr>
<td></td>
<td>(5.43)</td>
<td>(5.02)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>0.003</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(1.55)</td>
<td>(-1.11)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>-0.003</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(-0.94)</td>
<td>(-0.05)</td>
</tr>
<tr>
<td>WC/Total Assets [t-1]</td>
<td>-0.003**</td>
<td>0.003**</td>
</tr>
<tr>
<td></td>
<td>(-2.28)</td>
<td>(2.44)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.011</td>
<td>0.028***</td>
</tr>
<tr>
<td></td>
<td>(0.91)</td>
<td>(3.47)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td># Accelerating Firms</td>
<td>358</td>
<td>273</td>
</tr>
<tr>
<td>Obs.</td>
<td>6406</td>
<td>5520</td>
</tr>
<tr>
<td>Pseudo R-sq.</td>
<td>0.039</td>
<td>-0.489</td>
</tr>
</tbody>
</table>
Table 7: Option Acceleration and Investment: The Role of Corporate Governance

This table examines whether the relation between option acceleration and investment depends on the corporate governance of a firm. We separate the sample based on whether the G-index is above (≥9) or below (<9) the sample median. We consider firms with low G-indices to be “good” corporate governance firms, and those with high G-indices to be “bad” corporate governance firms. The dependent variable is industry-adjusted capital expenditures over total assets. The regressions in Columns (1) and (2) use contemporaneous values of investment, while those in Columns (3) and (4) use next-year values. The regressions are 2SLS instrumental variables (IV) regressions. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. The sample period in all regressions is calendar years 2004 and 2005. The regressions include firms in the RiskMetrics database (mainly S&P 1500 firms) for which G-index data is available. We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets [t+1]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model:</strong></td>
<td>IV 2SLS</td>
<td>Calendar Years 2004-2005</td>
</tr>
<tr>
<td><strong>Sample:</strong></td>
<td>Good CG (G-Index Low)</td>
<td>Bad CG (G-Index High)</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-0.026</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>(-0.48)</td>
<td>(0.73)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.23)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>-0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(-0.95)</td>
<td>(-0.95)</td>
</tr>
<tr>
<td>Tobin's Q [t-1]</td>
<td>0.002</td>
<td>0.004***</td>
</tr>
<tr>
<td></td>
<td>(1.25)</td>
<td>(-2.83)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>-0.004</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(-0.64)</td>
<td>(0.55)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>-0.002</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(-0.81)</td>
<td>(-0.96)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>0.122***</td>
<td>0.137***</td>
</tr>
<tr>
<td></td>
<td>(5.06)</td>
<td>(5.97)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>-0.006</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(-0.58)</td>
<td>(-0.07)</td>
</tr>
<tr>
<td>WC/Total Assets [t-1]</td>
<td>-0.053***</td>
<td>-0.052***</td>
</tr>
<tr>
<td></td>
<td>(-6.65)</td>
<td>(-6.60)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.041</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>(1.19)</td>
<td>(0.24)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td># Accelerating Firms</td>
<td>114</td>
<td>125</td>
</tr>
<tr>
<td>Obs.</td>
<td>1090</td>
<td>1632</td>
</tr>
<tr>
<td>Pseudo R-sq.</td>
<td>0.225</td>
<td>-0.776</td>
</tr>
</tbody>
</table>

**Note:** The sample includes only firms in the RiskMetrics database (mainly S&P 1500 firms) for which G-index data is available. Firms with fiscal year endings between January and December belong to the same calendar year.
This table provides placebo tests to analyze whether the acceleration of stock options in 2005 affects investment in years before FAS 123-R took effect. The dependent variable is industry-adjusted capital expenditures over total assets. The regressions in Columns (1) and (2) use 2003 values of investment, while those in Column (3) and (4) use 2004 values. The regressions are 2SLS instrumental variables (IV) regressions. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. The sample period in all regressions is calendar year 2003. The regressions include all Compustat firms. “F-Statistic First Stage” is the Kleibergen-Paap [2006] F-Statistic of our instrument from the corresponding first-stage regression (not reported). We report t-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets [t+1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td>IV 2SLS</td>
<td>IV 2SLS</td>
</tr>
<tr>
<td>Sample:</td>
<td>Calendar Year 2003</td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-0.058</td>
<td>0.185</td>
</tr>
<tr>
<td></td>
<td>(-1.23)</td>
<td>(1.13)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>-0.008</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(-0.96)</td>
<td>(-1.34)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.87)</td>
<td>(1.17)</td>
</tr>
<tr>
<td>Tobin’s Q [t-1]</td>
<td>-0.001</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(-0.60)</td>
<td>(-1.21)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>0.013***</td>
<td>0.016***</td>
</tr>
<tr>
<td></td>
<td>(3.53)</td>
<td>(3.46)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>0.005**</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(2.05)</td>
<td>(0.91)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>0.002</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.74)</td>
<td>(-0.24)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>0.003</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(0.74)</td>
<td>(-0.34)</td>
</tr>
<tr>
<td>WC/Total Assets s[t-1]</td>
<td>-0.002</td>
<td>-0.004**</td>
</tr>
<tr>
<td></td>
<td>(-1.09)</td>
<td>(-2.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.023***</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>(3.17)</td>
<td>(0.95)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Obs.</td>
<td>7737</td>
<td>4508</td>
</tr>
<tr>
<td>Pseudo R-sq.</td>
<td>-0.029</td>
<td>-0.900</td>
</tr>
<tr>
<td>F-Statistic First Stage</td>
<td>44.53</td>
<td>26.03</td>
</tr>
</tbody>
</table>
This table examines whether firms that accelerate the vesting of stock options spend less on rental expenses. The dependent variable is industry-adjusted rental expenses over total assets. The regression in Column (1) uses contemporaneous values of rental expenses, while the one in Column (2) uses next-year values. The regressions in Column (1) and (2) are 2SLS instrumental variables (IV) regressions. “Accelerate” is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. The sample period in all regressions is calendar years 2004 and 2005. The regressions include all Compustat firms. “F-Statistic First Stage” is the Kleibergen-Paap [2006] $F$-Statistic of our instrument from the corresponding first-stage regression (not reported). We report $t$-statistics in parentheses, which are based on White heteroskedasticity-consistent standard errors. Variable definitions are reported in Appendix A-1. Variables are calculated at fiscal year ends. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Rental Expenses/Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model:</strong></td>
<td>IV 2SLS</td>
</tr>
<tr>
<td><strong>Sample:</strong></td>
<td>Calendar Years 2004-2005</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>Accelerate</td>
<td>-0.107* (-1.86)</td>
</tr>
<tr>
<td>Log(Total Assets) [t-1]</td>
<td>-0.009*** (-3.90)</td>
</tr>
<tr>
<td>Log(Total Assets) Squared [t-1]</td>
<td>0.000** (2.20)</td>
</tr>
<tr>
<td>Tobin's Q [t-1]</td>
<td>0.001** (2.26)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-1]</td>
<td>-0.012*** (-5.31)</td>
</tr>
<tr>
<td>Log(Stock Return) [t-2]</td>
<td>-0.007*** (-4.94)</td>
</tr>
<tr>
<td>EBITDA/Total Assets [t-1]</td>
<td>-0.001 (0.57)</td>
</tr>
<tr>
<td>Debt/Total Assets [t-1]</td>
<td>0.007** (2.15)</td>
</tr>
<tr>
<td>WC/Total Assets [t-1]</td>
<td>-0.002 (1.76)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.064*** (10.57)</td>
</tr>
<tr>
<td>Industry Fixed Effects</td>
<td>YES</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>YES</td>
</tr>
<tr>
<td>Obs.</td>
<td>9397</td>
</tr>
<tr>
<td>Pseudo R-sq.</td>
<td>0.060</td>
</tr>
</tbody>
</table>

$F$-Statistic First Stage | 22.91 16.36
This table provides robustness checks for the results in Table 5. The dependent variable is industry-adjusted capital expenditures over total assets (except in Panel K). The regressions use contemporaneous and next-year investment as dependent variables. All regressions are 2SLS instrumental variables (IV) regressions. We report the coefficient and \( t \)-statistic of “Accelerate”, which is a dummy variable that equals 1 in the calendar year in which a firm accelerated option vesting. We instrument “Accelerate” using “FAS 123-R Effective”, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. Panel A restricts the sample to calendar year 2005 only. Panel B, in addition, restricts the sample to firms with fiscal year endings between April and July 2005. The sample period in the remaining panels is calendar years 2004 and 2005. Panel C restricts the sample to ExecuComp firms. Panel D excludes firms that change their fiscal year ends between 2002 and 2006. Panel E excludes firms that restrict employees from selling the underlying stock from accelerated options until the original vesting date passes. Panel F excludes firms that accelerate only a small number of options. Panel G excludes firms that voluntarily adopted fair-value accounting according to FAS 123 in 2002. Panel H excludes firms that accelerate options to any employee during the sample period. Panel I excludes firms that adopt FAS 123-R Effective, which is a dummy variable that equals 1 in the calendar year for which FAS 123-R takes effect for each firm. Panel A restricts the sample to calendar year 2005 only. Panel B, in addition, restricts the sample to firms with fiscal year endings between April and July 2005. The sample period in the remaining panels is calendar years 2004 and 2005. Panel C restricts the sample to ExecuComp firms. Panel D excludes firms that change their fiscal year ends between 2002 and 2006. Panel E excludes firms that restrict employees from selling the underlying stock from accelerated options until the original vesting date passes. Panel F excludes firms that accelerate only a small number of options. We exclude firms in the bottom 10% of all accelerating firms based on the fraction of all outstanding options that were accelerated. Panel G excludes all firms that do not grant stock options to any employee during the sample period. Panel H excludes firms that voluntarily adopted fair-value accounting according to FAS 123 in 2002. Panel I excludes financial services firms. Panel J controls for lagged levels of industry-adjusted investment. Panel K uses capital expenditures over assets (not industry-adjusted) as the dependent variable. Panel L reports regressions for a matched sample of firms. Firms are matched based on total assets, rental expenses over assets, Tobin’s Q, and their industry. The regressions include the same control variables as in Table 5 (not reported). The regressions include all Compustat firms, unless noted differently. \( t \)-statistics are based on White heteroskedasticity-consistent standard errors. “F-Statistic First Stage” is the Kleibergen-Paap [2006] F-Statistic of our instrument from the corresponding first-stage regression (not reported). “# Accelerating Firms” is the number of firms in the regressions in each panel that are accelerating options. We also report the overall number of observations (“Obs.”). Variable definitions are reported in Appendix A-1. We allocate fiscal years to calendar years such that firms with fiscal year endings between January and December belong to the same calendar year. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets ([t+1])</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model:</strong></td>
<td><strong>Coeff.</strong></td>
<td><strong>t-statistic</strong></td>
</tr>
<tr>
<td>Panel A: Year 2005 only</td>
<td>-0.244**</td>
<td>(-2.41)</td>
</tr>
<tr>
<td>Panel B: Fiscal Year End April-July 2005</td>
<td>-0.158*</td>
<td>(-1.73)</td>
</tr>
<tr>
<td>Panel C: ExecuComp Firms only</td>
<td>-0.109*</td>
<td>(-1.95)</td>
</tr>
<tr>
<td>Panel D: Exclude Firms that Changed Fiscal-Year</td>
<td>-0.227***</td>
<td>(-2.68)</td>
</tr>
<tr>
<td>Panel E: Exclude Firms with Equity Selling Restrictions</td>
<td>-0.227***</td>
<td>(-2.73)</td>
</tr>
<tr>
<td>Panel F: Exclude Firms with Few Accelerated Options</td>
<td>-0.266***</td>
<td>(-2.63)</td>
</tr>
<tr>
<td>Panel G: Exclude Firms that Do Not Grant Options</td>
<td>-0.270***</td>
<td>(-3.11)</td>
</tr>
<tr>
<td>Panel H: Exclude Voluntary Adopters of FAS 123</td>
<td>-0.223***</td>
<td>(-2.72)</td>
</tr>
<tr>
<td>Panel I: Exclude Financial Firms</td>
<td>-0.248***</td>
<td>(-2.66)</td>
</tr>
<tr>
<td>Panel J: Controlling for Lagged Levels of Investment</td>
<td>-0.115*</td>
<td>(-1.81)</td>
</tr>
<tr>
<td>Panel K: Capex/Assets (not industry adjusted)</td>
<td>-0.160**</td>
<td>(-2.04)</td>
</tr>
<tr>
<td>Panel L: Matching Sample</td>
<td>-0.075**</td>
<td>(-2.01)</td>
</tr>
</tbody>
</table>
Figure 1: Distribution of Accelerating Firms

This figure shows the distribution of accelerating firms over the calendar years 2003 to 2006. The sample is all Compustat firms. Data coverage on option acceleration ends in February 2006. 23 firms accelerated options in multiple years.
Figure 2: Illustration of FAS 123-R: Role of Fiscal Year Endings

This figure provides a schematic overview of the effects of FAS 123-R on the expensing of existing unvested and new stock options for firms with different fiscal year ends. We report these effects for firms with fiscal year ending in February (“Company 1”), August (“Company 2”) or December (“Company 3’). For each firm we show the extent to which unvested or new options need to be expensed after FAS 123-R took effect in June 2005, and how fiscal year endings influence whether options could be accelerated to avoid an accounting charge.

Company 1: Fiscal Year Runs March—Feb

Existing Unvested Options: | not expensed | not expensed | expensed UNLESS accelerated 
New Options: | not expensed | not expensed | expensed
Month: | Mar, Apr, May | July, Aug | Sep, Oct, Nov, Dec | Jan, Feb

Company 2: Fiscal Year Runs Sept—Aug

Existing Unvested Options: | not expensed | expensed UNLESS accelerated | already expensed 
New Options: | not expensed | already expensed | already expensed
Month: | Sep, Oct | Nov, Dec | Jan, Feb, Mar, Apr, May | June, Jul, Aug | Sep, Oct, Nov | Dec

Company 3: Fiscal Year=Calendar Year

Existing Unvested Options: | not expensed | not expensed | expensed UNLESS accelerated | already expensed 
New Options: | not expensed | already expensed | already expensed
Fiscal Year: | 2004 | 2005 | 2006 | 2007
Month: | Jan, Feb, Mar, Apr, May | June, Jul, Aug | Sep, Oct | Nov, Dec | Jan, Feb, Mar, Apr, May, June, Jul, Aug | Sep, Oct, Nov, Dec

Calendar Year

Month: | 2004 | 2005 | 2006 | 2007
This figure shows the percentage of firms with fiscal year endings between January and December 2005 that accelerated the vesting of their stock options. The sample is all Compustat firms. We only consider options that were accelerated during the calendar year 2005 to classify firms as accelerators.

\[
Pr(\text{Accelerate} \mid \text{FAS 123-R Effective} = 1) - Pr(\text{Accelerate} \mid \text{FAS 123-R Effective} = 0) = 3.1\%^{***}
\]
Figure 4: Acceleration and Value of Unvested Options and Equity

This figure shows how the annual percentage change in the dollar value of unvested stock options (Panel A) and unvested equity (Panel B) evolves over time for the median executive at non-accelerating and accelerating firms. Unvested equity consists of unvested stock options and restricted stock. The sample is all top executives from ExecuComp firms. Accelerating firms are firms which accelerated the vesting of stock options in calendar year 2005. Non-accelerating firms are firms which did not accelerate the vesting of options at any time.

Panel A: Unvested Stock Options

Panel B: Unvested Equity
This figure shows how the annual percentage change in the pay-for-performance sensitivity (PPS) of unvested stock options (Panel A) and unvested equity (Panel B) evolves over time for the median executive at non-accelerating and accelerating firms. Unvested equity consists of unvested stock options and restricted stock. We report changes in the PPS from one calendar-year end to the next. The PPS have been calculated for a 1% change in the stock price. The sample is all top executives from ExecuComp firms. Accelerating firms are firms which accelerated the vesting of stock options in calendar year 2005. Non-accelerating firms are firms which did not accelerate the vesting of options at any time.

Panel A: Unvested Stock Options

Panel B: Unvested Equity
This figure compares industry-adjusted capital expenditures over total assets in 2005 of firms that have a high or low probability to accelerate options in 2005. “Predicted Accelerators” are firms that have an above median predicted probability to accelerate the vesting of stock options in calendar year 2005. “Predicted Non-Accelerators” are firms that have a below median predicted probability to accelerate the vesting of stock options in calendar year 2005. We calculate the predicted probability to accelerate options based on the first-stage model reported in Column (6) of Table 2. The median predicted probability to accelerate option vesting is 10.2%.
### Appendix A-1: Variable Definitions

This appendix provides definitions of the variables used in the empirical analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerate</td>
<td>Dummy variable which equals 1 in the calendar year in which a firm accelerated option vesting, and 0 otherwise.</td>
<td>R.G. Associates Option Accelerated Vester Database</td>
</tr>
<tr>
<td>FAS 123 Effective</td>
<td>Dummy variable which equals 1 in the calendar year for which FAS 123-R takes effect for each firm, and 0 otherwise. In calendar year 2004, this variable equals 0 for all firms. In calendar year 2005, this variable equals 1 for firms with fiscal year endings between June and December, and 0 for firms with fiscal year endings between January and May. We identify fiscal year endings of firms using Compustat data item FYR.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Percentage Change in Value of Unvested Options</td>
<td>Annual percentage change, from calendar year t-1 to calendar year t, in the dollar value of an executive's unvested stock options. It is constructed using ExecuComp data item OPT_UNEX_UNEXER_EST_VAL. The dollar value is as of fiscal year end. This variable is winsorized at the 5-95% level.</td>
<td>ExecuComp</td>
</tr>
<tr>
<td>Percentage Change in Value of Unvested Equity</td>
<td>Annual percentage change, from calendar year t-1 to calendar year t, in the dollar value of an executive's unvested stock options and restricted stock. It is constructed using ExecuComp data item OPT_UNEX_UNEXER_EST_VAL plus ExecuComp data item STOCK_UNVEST_VAL. The dollar value is as of fiscal year end. This variable is winsorized at the 5-95% level.</td>
<td>ExecuComp</td>
</tr>
<tr>
<td>Percentage Change in PPS of Unvested Options</td>
<td>Annual percentage change, from calendar year t-1 to calendar year t, in the pay-for performance sensitivity (PPS) from an executive's unvested stock options for a 1% change in the stock price. PPS is constructed as follows: (Number of Unvested Stock Options)<em>(Black-Scholes Option Delta)</em>(Year-End Stock Price)*(1/100). Number of Unvested Stock Options is ExecuComp data item OPT_UNEX_UNEXER_EST_VAL. Black-Scholes Option Delta is defined using the procedure developed by Core and Guay [2002]. This variable is winsorized at the 5-95% level.</td>
<td>ExecuComp, CRSP, Federal Reserve Bond Yields</td>
</tr>
<tr>
<td>Percentage Change in PPS of Unvested Equity</td>
<td>Annual percentage change, from calendar year t-1 to calendar year t, in the pay-for-performance sensitivity (PPS) from an executive's unvested stock options and restricted stock for a 1% change in the stock price. PPS is constructed as follows: (Number of Unvested Stock Options)<em>(Black-Scholes Option Delta)</em>(Year-End Stock Price)<em>(1/100) + (Shares of Unvested Stock)</em>(Year-End Stock Price)<em>(1/100). Number of Unvested Stock Options is ExecuComp data item OPT_UNEX_UNEXER_EST_VAL. Black-Scholes Option Delta is defined using the procedure developed by Core and Guay [2002]. We use ExecuComp data item STOCK_UNVEST_VAL to measure (Shares of Unvested Stock)</em>(Year-End Stock Price). This variable is winsorized at the 5-95% level.</td>
<td>ExecuComp, CRSP, Federal Reserve Bond Yields</td>
</tr>
<tr>
<td>Total Assets</td>
<td>Total value of a firm's assets in million USD at the end of the fiscal year. It uses Compustat data item AT.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Capex/Total Assets</td>
<td>Capital expenditures over total assets at the end of the fiscal year. Capital expenditures is Compustat data item CAPX. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Source</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Ind.-adj. Capex/Total Assets</td>
<td>Industry-adjusted capital expenditures over total assets at the end of the fiscal year. We construct the variable by subtracting in each firm-fiscal-year the median ratio of capital expenditures over total assets of firms in the same industry in the same fiscal year. We use the Fama-French 12-industries classification to identify industries. Capital expenditures is Compustat data item CAPX. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Tobin’s Q</td>
<td>Sum of a firm’s market value of equity and total liabilities, divided by total assets at the end of the fiscal year. Market value of equity is Compustat data item PRCC (adjusted for stock splits by data item ADJEX) multiplied by data item CSHO. Total liabilities are Compustat data item LT. Total assets is Compustat data item AT. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Stock Return</td>
<td>Stock price at the end of the fiscal year plus dividends minus stock price at the end of the previous fiscal year, and divided by the stock price at the end of the previous fiscal year. This variable is winsorized at the 5-95% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>EBITDA/Total Assets</td>
<td>Earnings before interest, taxes, depreciation and amortization over total assets at the end of the fiscal year. EBITDA is Compustat data item EBITDA. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Debt/Total Assets</td>
<td>Total debt over total assets at the end of the fiscal year. Total debt is Compustat data item DLTT (long-term debt) plus Compustat data item DLC (debt in current liabilities). Total assets is Compustat data item AT. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>WC/Total Assets</td>
<td>Working capital over total assets at the end of the fiscal year. Working capital is Compustat data item WCAP. Total assets is Compustat data item AT. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Rental Expenses/Total Assets</td>
<td>Rental expenses over total assets at the end of the fiscal year. Rental expenses include operating lease expenses, payments for short-term leases, and contingent payments associated with capitalized leases. Rental expenses is Compustat data item XRENT. Total assets is Compustat data item AT. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>Ind.-adj. Rental Expenses/Total Assets</td>
<td>Industry-adjusted rental expenses over total assets at the end of the fiscal year. We construct the variable by subtracting in each firm-fiscal-year the median ratio of rental expenses over total assets of firms in the same industry in the same fiscal year. Rental expenses include operating lease expenses, payments for short-term leases, and contingent payments associated with capitalized leases. We use the Fama-French 12-industries classification to identify industries. Rental expenses is Compustat data item XRENT. This variable is winsorized at the 1-99% level.</td>
<td>Compustat</td>
</tr>
<tr>
<td>ExecuComp Firm</td>
<td>Dummy variable which is equal to 1 if a firm is included in ExecuComp.</td>
<td>ExecuComp</td>
</tr>
<tr>
<td>G-index</td>
<td>Anti-takeover index constructed by Gompers, Ishii, and Metrick [2003]. Higher index values indicate more anti-takeover provisions.</td>
<td>Gompers, Ishii, and Metrick [2003], RiskMetrics</td>
</tr>
</tbody>
</table>
## Appendix A-2: Correlations

This appendix provides pairwise correlations of the main variables used in the analysis. The sample is all Compustat firms. Correlations are reported for calendar year 2005. * indicates significance at the 1% level.

<table>
<thead>
<tr>
<th></th>
<th>Accelerate</th>
<th>FAS 123-R Effective</th>
<th>Capex/Total Assets</th>
<th>Ind.-adj. Capex/Total Assets</th>
<th>Total Assets</th>
<th>Tobin's Q</th>
<th>Stock Return</th>
<th>EBITDA/Total Assets</th>
<th>Debt/Total Assets</th>
<th>WC/Total Assets</th>
<th>Rental Expenses/Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerate</td>
<td>(1)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAS 123-R Effective</td>
<td>(2)</td>
<td>0.0382*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capex/Total Assets</td>
<td>(3)</td>
<td>-0.0633*</td>
<td>-0.0094</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind.-adj. Capex/Total Assets</td>
<td>(4)</td>
<td>-0.0361*</td>
<td>-0.0233</td>
<td>0.9093*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Assets</td>
<td>(5)</td>
<td>-0.0357*</td>
<td>0.0106</td>
<td>-0.0670*</td>
<td>-0.0614*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobin's Q</td>
<td>(6)</td>
<td>-0.0678*</td>
<td>-0.0043</td>
<td>0.0491*</td>
<td>0.0413*</td>
<td>-0.0835*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock Return</td>
<td>(7)</td>
<td>-0.1132*</td>
<td>0.0074</td>
<td>0.1304*</td>
<td>0.0513*</td>
<td>0.0299*</td>
<td>0.0081</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBITDA/Total Assets</td>
<td>(8)</td>
<td>0.0520*</td>
<td>-0.0007</td>
<td>-0.0266</td>
<td>-0.0353*</td>
<td>0.0659*</td>
<td>-0.7675*</td>
<td>0.1199*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt/Total Assets</td>
<td>(9)</td>
<td>-0.0607*</td>
<td>0.019</td>
<td>0.0008</td>
<td>-0.0013</td>
<td>-0.0234</td>
<td>0.5835*</td>
<td>-0.0889*</td>
<td>-0.5902*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>WC/Total Assets</td>
<td>(10)</td>
<td>0.0576*</td>
<td>-0.0135</td>
<td>-0.0113</td>
<td>-0.01</td>
<td>0.0264</td>
<td>-0.6985*</td>
<td>0.0659*</td>
<td>0.7175*</td>
<td>-0.7765*</td>
<td>1</td>
</tr>
<tr>
<td>Rental Expenses/Total Assets</td>
<td>(11)</td>
<td>-0.0077</td>
<td>-0.1014*</td>
<td>0.0565*</td>
<td>0.0691*</td>
<td>-0.1223*</td>
<td>0.4780*</td>
<td>-0.1118*</td>
<td>-0.5253*</td>
<td>0.4466*</td>
<td>-0.4833*</td>
</tr>
</tbody>
</table>
## Appendix A-3: Timeline of Events around Adoption of FAS 123-R

This appendix provides an overview of the events around the adoption of FAS123-R.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1972</td>
<td>Accounting Principles Board (APB) issues Opinion 25, which defines the accounting expense for stock options as the difference between the strike price and the grant-date market price.</td>
</tr>
<tr>
<td>1986</td>
<td>FASB tables a proposal that would have required stock options to be expensed according to their grant-date fair value (determined by the Black-Scholes formula or similar option pricing model).</td>
</tr>
<tr>
<td>April 1992</td>
<td>FASB unanimously votes to endorse changing accounting treatment of stock options, and begins holding numerous meetings with practitioners as it devises a formal proposal.</td>
</tr>
<tr>
<td>June 30, 1993</td>
<td>FASB issues an Exposure Draft that requires options to be expensed at fair value.</td>
</tr>
<tr>
<td>March 25, 1994</td>
<td>More than 4,000 employees of Silicon Valley firms rally in opposition to FASB’s proposal. Soon afterward, U.S. Senate passes a resolution urging FASB to abandon the fair-value proposal.</td>
</tr>
<tr>
<td>December 14, 1994</td>
<td>FASB votes to abandon the fair-value proposal.</td>
</tr>
<tr>
<td>Oct. 1995</td>
<td>FASB adopts FAS 123, which encourages firms to expense options using the fair-value method, but also allows firms to continue using APB Opinion 25 so long as they disclose the option fair value in a footnote.</td>
</tr>
<tr>
<td>July - August 2002</td>
<td>96 firms announce the decision to voluntarily begin accounting for options using the fair-value method.</td>
</tr>
<tr>
<td>March 2003</td>
<td>FASB adds to its agenda the reconsideration of accounting treatment for options.</td>
</tr>
<tr>
<td>March 31, 2004</td>
<td>FASB issues an Exposure Draft that requires firms to adopt fair-value accounting for options in the first fiscal year starting after December 15, 2004.</td>
</tr>
<tr>
<td>October 6, 2004</td>
<td>FASB votes that firms do not have to expense accelerated options unless they are in the money.</td>
</tr>
<tr>
<td>December 6, 2004</td>
<td>SEC clarifies that firms must publicly disclose option acceleration.</td>
</tr>
</tbody>
</table>

Sources: FAS 123-R, Murphy [2013], Aboody, Barth, and Kasznik [2004].
Appendix A-4: Example of Option Acceleration Release

This appendix provides an excerpt of a 8k material event filing by Sun Microsystems, Inc., which accelerated the vesting of its stock option in calendar year 2005 in response to FAS 123-R. The form was filed with the SEC on April 28, 2005. Emphasis is ours.

**Item 1.01. Entry into a Material Definitive Agreement.**

On April 28, 2005, Sun Microsystems, Inc. (the “Company”) approved the acceleration of vesting of certain unvested and “out-of-the-money” stock options with exercise prices equal to or greater than $6.00 per share previously awarded to its employees, including its executive officers, and its directors under the Company’s equity compensation plans. **The acceleration of vesting will be effective for stock options outstanding as of May 30, 2005.** Options to purchase approximately 45.2 million shares of common stock or 18% of the Company’s outstanding unvested options (of which options to purchase approximately 2.75 million shares or 1% of the Company’s outstanding unvested options are held by the Company’s executive officers) are subject to the acceleration. […]

The **purpose of the acceleration** is to enable the Company to **avoid recognizing compensation expense** associated with these options in future periods in its consolidated statements of operations, upon adoption of FASB Statement No. 123R (Share-Based Payment) in July 2005. The **pre-tax charge to be avoided amounts to approximately $400 million** over the course of the original vesting periods, which on average is approximately 1.5 years from the effective date of the acceleration. […]