# THE COSTS AND BENEFITS OF LONG-TERM CEO CONTRACTS

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## Abstract

This paper uses a new dataset of 3,717 US CEO employment contracts to study the time horizon of executives. Longer contracts offer protection against dismissals: turnover probability increases by 20% each year that passes towards contract expiration. In theory, this should encourage CEOs to pursue long-term projects. Using an instrumental variable approach based on inter-state judicial differences, I show that contract horizon indeed affects investment positively. However, because longer contracts make it harder to dismiss managers, they also impose less discipline. Consistent with this argument, CEOs under shorter contracts perform better in acquisitions, and CEOs with a longer contractual horizon receive more salary increases and perquisites. Overall, firm value does not differ across contract types.

JEL classifications: G32, G34, J41, J63

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Executives are often accused of myopia, i.e., of failing to invest in projects that only improve long-term shareholder value.[1] Much of this discussion has focused on incentive pay. This paper seeks to draw attention to another, less explored dimension of executive incentives: the contract horizon. Long-term contracting differs from long-term incentive pay. It determines the ease of dismissal and therefore affects discipline. A long contract term promises the executive that he will not get fired if payoffs do not materialize quickly; however, it also allows him to underperform for other reasons without an immediate threat of dismissal.

Empirical literature on executive horizon has been limited so far. Yet, many US chief executive officers (CEOs) operate under explicit employment contracts that are publicly available. Based on a new, hand-collected dataset of 3,717 of these documents, I find that contract horizon is relevant for both investment and discipline. On the one hand, CEOs with a shorter remaining contract term invest less than their peers do, both in terms of CAPEX and R&D expenses. On the other hand, CEOs with a shorter contract horizon perform better in acquisitions and receive less perquisites or salary increases. Neither the investment nor the discipline effect dominates: firm value does not differ significantly between firms with different CEO horizon.

In the US, CEOs can be employed under two contract types. Under *fixed-term* employment, dismissal before the contractual termination date is costly and can lead to litigation; under *at-will* employment, the firm or the employee can terminate the relationship at any time and for any cause. From a legal perspective, this makes at-will contracts the easiest to end, but also infinitely short-term. I study the incentive effects of both contract *types* and *length*. Since remaining contract length decreases over time, I am able to track the behavior of a given CEO under different horizon. The comparison between fixed-term and at-will contracts is less

[1] Effects of a short executive horizon ("myopia") have been discussed by, among others, Narayanan (1985), Stein (1988), Stein (1989), Froot et al. (1992), and Bolton et al. (2006). Laverty (1996) provides an overview of the strategy literature on this topic.

straightforward due to endogeneity, i.e., firms may choose the CEO contract type based on their investment opportunities. Therefore, I use the legal environment to instrument the choice of contract type. Some states have more employee-friendly court records – particularly states that restrict the right to dismiss at-will employees. These states have a greater proportion of at-will and shorter fixed-term employment contracts. In this sample, 30% of the contracts governed by state laws with the so-called at-will exceptions are at-will, as opposed to 19% in non-exception states. The exceptions have antecedents that are not correlated with investment.

Contracts affect the actual timing of turnover. Using a hazard model, I estimate the likelihood of turnover as a function the contract horizon, tenure, performance and characteristics of the CEO, the firm, and the industry. CEOs under at-will contracts on average have a 22% higher probability of turnover than CEOs under fixed-term contracts. Under a fixed-term contract, one year closer to the expiration date translates into a 20% higher probability of termination.

The focus of the theoretical debate on "economic short-termism" is the hypothesis that myopic CEOs fail to make investments in projects with long-term payoffs (e.g., Dechow and Sloan, 1991; Froot et al., 1992). Consistent with this view, I find a positive impact of the expected CEO horizon on investment. CEOs with one more year remaining to expiration invest 2.1%-points more in industry-adjusted capital expenditures over sales, equivalent to $9 million per year in dollar terms. That is, a CEO under a five-year contract invests in his first year on average 11%-points more than in his last year. The magnitudes are comparable in terms of R&D expenses. Effects are more pronounced when I compare CEOs under fixed-term contracts with CEOs under at-will contracts. In terms of industry-adjusted capital expenditures, the difference between an at-will and a fixed-term contract is six times the difference between a first- and last year CEO under a five-year contract. This translates to 44% of one standard deviation of the industry-adjusted

capital expenditures. In terms of industry adjusted-R&D expenses, the effect amounts to 56% of one standard deviation of the dependent variable. Contract type has a similar effect on acquisition activity. A CEO under a fixed-term contract on average makes one more acquisition in every two years.

For an analysis on discipline, I follow Masulis et al. (2007) and use acquisitions as large, significant and observable investment projects. Acquisitions take time to implement: enough time for a board to dismiss the CEO if it wants to prevent closure. Consistent with the argument that CEOs under at-will contracts face a higher dismissal threat, announcement returns are higher for acquirers with CEOs under such contracts and do not reverse in the subsequent 24 months. In addition, a longer horizon allows CEOs to derive greater personal benefits. CEOs with more time remaining until expiration have greater salary increases and more "other compensation", which includes perquisites and unspecified, non-incentive pay. One more year under the contract is associated with a 2% increase in salary and $21 thousand higher "other compensation".

Contract design faces a trade-off between these effects. Edmans (2011) describes a similar dilemma in a debt structuring setting (without employment horizon). A short contract horizon makes it easier for the firm to dismiss non-performing CEOs, but also deter the executive from long-term investments. Empirically, neither the costs nor the benefits of horizon dominate. In terms of the market-to-book ratio, I find no significant effect of expected horizon, contract type, or the remaining time under a fixed-term contract. In other words, there is no evidence that firms systematically write contracts that are too myopic or too long.

Throughout the analysis, I control for other time-varying effects such as the executive's age and tenure, the firm's age and year-fixed effects. This disables me to include executive-fixed effects into the regressions, but the results are robust for including executive-fixed effects (without the

time-varying control variables). Results also remain similar controlling for the compensation horizon and incentive pay, which is only available for a subset of the sample. A subsample of firms switches their contract type. The results are similar, if not of greater magnitude, for this subsample. This suggests that the results are unlikely to be driven by unobservable firm characteristics. Finally, not all CEOs sign employment contracts: CEOs without contracts are technically at-will. The results are robust for including all public firms under this assumption. To ensure that the results are not driven by unobserved firm characteristics, I also match CEOs with fixed-term contracts to at-will CEOs that work in firms with similar characteristics and show that the comparison between them is consistent with the baseline results.

Empirical studies of CEO employment contracts are recent and few in number. Schwab and Thomas (2005) describe a sample of 375 contracts from a legal perspective. Gillan et al. (2009) show that many CEOs operate without an explicit employment contract, and study the choice between explicit and implicit contracts. I build on their work by showing the impact of contract horizon on career outcomes and performance. My findings imply that employment contracts affect decisions. In praxis, this means that contract design is not trivial, and I hope that my work can give some first guidance on this matter.

More generally, this paper contributes to the literature on management horizon and managerial turnover. The theoretical literature on horizon describes "myopic" as negative effects of short managerial horizon on investment (Narayanan, 1985; Stein, 1988; Stein, 1989; Bebchuk and Stole, 1993; Noe and Rebello, 1997; Chemmanur and Ravid, 1999, and Bolton et al., 2006). The literature on CEO turnover discusses effects of the ease of dismissal (and determinants of it) on monitoring and performance (Weisbach, 1988; Hartzell, 2001; Morck et al., 1989; Denis et al., 1997, and Mikkelson and Partch, 1997). The following analysis, on the interface of the horizon

and the turnover literature, argues that short managerial horizon trades off "myopia", or negative effects on the investment horizon, and positive effects of discipline. A similar trade-off in spirit has been described by Edmans (2011) in a debt financing setting.

Previous empirical work on horizon shows contradictory evidence on the relation between managerial horizon and investment, using dates such as the actual termination or retirement date to mark horizon (Dechow and Sloan, 1991; Gibbons and Murphy, 1992; Murphy and Zimmermann, 1993; Antia et al., 2010, and Gao, 2010). The employment contract dataset, in contrast, provides an ex ante measure of horizon. Together with the instrumental variable, this allows me to be more precise about causal effects of CEO horizon on investment.

Finally, contract length and type are direct determinants of CEO turnover. As a consequence, this analysis of contract characteristics contributes to the empirical literature that measures effects of monitoring and ownership on executive turnover.[2] Isolating contractual turnover explains a greater fraction of dismissals and makes it easier to identify effects of other mechanisms.

The paper proceeds as follows. Section I sketches potential effects of contract horizon. Section II describes the data. Section III links contractual horizon to the actual turnover probability of CEOs. Section IV identifies determinants of the choice between contract types, which allows me to control for any selection bias. Section V presents the results on the potential benefits of a long horizon; Section VI the potential costs. Section VII studies overall effects on firm value, and Section VIII concludes.

## I. Hypothesis development

### *A. Legal background*

[2] See Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Weisbach (1988), Gilson (1989), Denis, Denis, and Sarin (1997), Huson, Parrino, and Starks (2001), Jenter and Kanaan (2010) and Jenter and Lewellen (2010).

**Fixed-term employment.** In a fixed-term contract, the firm commits to paying compensation for a certain number of years; this remains valid after possible premature termination. That is, the cost of termination is increasing in the numbers of years remaining under the contract. Upon early termination, the executive is typically entitled to a multiple of the base salary and the minimum bonus, but this sum can be augmented contractually. As an example, take John Mack's 2005 five-year contract with Morgan Stanley:

*If, during the Employment Period, the Company shall terminate the Executive's employment other than for Cause, death or Disability or the Executive shall terminate employment for Good Reason: (i) the Company shall pay to the Executive in a lump-sum cash payment as soon as practicable after the Date of Termination the aggregate of the following amounts:*

*…an amount equal to the product of (1) the Executive's Total Compensation for the most recently completed fiscal year and (2) the greater of (x) a fraction, the numerator of which is the number of days from the Date of Termination through the fifth anniversary of the Effective Date, and the denominator of which is 365 and (y) 1.[…]*[3]

Hence, in Mr. Mack's case, the cost of dismissal prior to contract expiration is the product of his total compensation and the number of years remaining until the contractual termination date. The total compensation of Mr. Mack was $45 million in 2006, the first year of his employment contract, and so severance pay for termination in 2006 would have exceeded $182 million. Assuming that compensation remains at this level, severance pay in 2009 would have been $45 million, which is $137 million less.[4]

Morgan Stanley's operating income in 2009 was over $1 billion. While $137 million is a non-trivial amount, it seems less so compared with the firm value a CEO can destroy. Also, fixed-

[3] Morgan Stanley, Form 8K, filed September 22, 2005, Exhibit 10.
[4] For details on severance pay, see Rusticus (2006), Rau and Xu (2009) or Goldman and Huang (2010).

term contracts are renewable, typically with a 30 day notice period before the expiration date.[5] If renewal happens always and automatically, contracts should have no effect. Before we begin the analysis, it is therefore important to see whether CEO employment contracts are credible.

*Prediction 1 (fixed-term contracts and turnover): The probability of turnover is inversely related to the number of years remaining under the contract.*

**At-will employment.** In the US, employment can be fixed-term or at-will. Under at-will employment, both the employer and the employee can terminate the relationship for "good cause, for no cause, or even for cause morally wrong, without being thereby guilty of legal wrong".[6] In other words, at-will employment can be terminated at any time. One example is Carleton Fiorina's 1999 contract with Hewlett-Packard:

*Executive and the Company understand and acknowledge that Executive's employment with the Company constitutes "at-will" employment. Subject to the Company's obligation to provide severance benefits as specified herein, Executive and the Company acknowledge that this employment relationship may be terminated at any time, upon written notice to the other party, with or without Cause or Good Reason and for any or no cause or reason, at the option of either the Company or Executive.*[7]

These provisions do not imply that termination is costless, but that dismissal is equally costly at any time from a legal point of view.[8] In the case of Ms. Fiorina, the contract specifies the amount and composition of severance pay for all of the mentioned cases (with cause, without cause,

[5] Very few contracts, less than 2% of our sample, automatically renew every day in a way that fixes the remaining period at a specified number of years, the so-called "evergreens".
[6] Payne vs. Western & Atlantic Railroad Co., 81 Tenn. 507, 519-520, 1884 WL 469 at *6 (September Term, 1884).
[7] Hewlett-Packard Co., Form 10Q, filed September 20, 1999, Exhibit 10 (gg).
[8] The cost of termination is not necessarily confined to severance. Additional cost, e.g., reputation cost, may change over time, but it is not obvious that they differ across contract types.

etc.). Compared to fixed-term contracts, at-will contracts have an infinitely short term. This should affect the probability of dismissal if contractual terms matter.

*Prediction 2 (contract type and turnover): The probability of turnover is higher for CEOs under at-will employment.*

*B. Potential benefits of long-term contracts*

It can be difficult to assess the performance of an investment project before its payoffs materialize. If a CEO's employment contract is due for renewal soon, he has an incentive to forego projects that will not positively affect his visible performance (Stein, 1988; Stein 1989; Chemmanur and Ravid, 1999). A longer contractual horizon encourages the CEO to take projects that are initially more costly if they become profitable before the end of his contract. One can consider the contractual employment horizon a signal of commitment: it shows a mutual understanding between the CEO and the board that some investment projects can be initially unpopular and take time to become profitable. In the meantime, the CEO is able to work without an immediate threat of dismissal. Of course, there must be a limit: the additional severance pay upon early termination is not trivial per se but may become so in the presence of crass value destruction.

A longer employment horizon also allows for more incentive-compatible compensation for longer-term projects. It is easier to assign responsibility when the executive is still in charge after the project has paid off. If the CEO performs well, the board can reward him with salary increases, boni and perquisites (Gibbons and Murphy, 1992; Narayanan, 1985). Given that non-vested stock and options are often forfeited upon termination (Dahiya and Yermarck, 2008), a longer contractual horizon also increases the expected value and incentive effect of long-term stock and option vesting schemes. Non-pecuniary benefits are discussed not only in the

management (Matta and Beamish, 1998), but also in the finance literature (Casamatta and Guembel, 2010): some CEOs want to build legacies, become recognized or even famous for their performance. CEOs may reduce effort if they do not expect to be rewarded in time. These arguments predict a positive relation between horizon and investment:

*Prediction 3 (contract horizon and investment): CEOs with more time remaining until contract expiration invest more than CEOs with less time remaining or CEOs under at-will employment.*

A disincentive to invest given a short *contract* horizon is not necessarily suboptimal. On the one hand, an executive with a short horizon has little incentive to exert the effort to start a long-term project. On the other hand, he also has little incentive to exert effort to work on the long-term project, even if started. In addition, Noe and Rebello (1997) argue that the firm can have difficulties changing a CEO with project-specific knowledge. Therefore, *given* a short CEO horizon, it can be optimal for the firm to forego positive-NPV projects. In addition, lower-rank executives may have to reverse decisions under new leadership and therefore incentives to reduce effort on long-term projects. At the same time, tournaments for a possible succession give the upper management incentives to focus on short-term results.[9]

This phenomenon is known in the Political Science literature as "lame-duck": at the end of election cycles, politicians refuse to implement policies that may be reversed under new leadership. The parallels between corporate and public governance are not restricted to the organizational support. One argument in favour of dictatorships is that long election cycles and discretion allow governments to implement unpopular measures in the early stages of the cycle. Durham (1999), for example, documents higher investment ratios in one-party dictatorships.

*C. Potential costs of long-term contracts*

[9] For a more qualitative discussion of organizational and psychological arguments, see Laverty (1996) who provides an overview of the literature in the management area on myopia.

Durham (1999) also finds that one-party dictatorships, despite their high investment ratios, do not grow faster. This is because democracies, in contrast to authoritarian regimes, "check arbitrary rule, perhaps more effectively limit corruption, and thereby preserve established property rights". Taking the view of the corporate governance literature, Gompers et al. (2003) write that "corporations are republics. […] One extreme, which tilts towards a democracy, reserves little power for management and allows shareholders to quickly and easily replace directors." The corporate governance literature has discussed the disciplining effect of different aspects that allow CEO turnover more easily, ranging from board composition to ownership structure (e.g., Weisbach, 1988; Hartzell, 2001; Morck, Shleifer and Vishny, 1989; Denis et al., 1997; and Mikkelson and Partch, 1997). Unlike other employees, CEOs rarely take up comparable positions after contract termination. Only 6.3% of the sample becomes CEO of other firms. This is comparable to the Gibbons and Murphy (1992) sample (2.2%) or the Brickley, Linck and Coles (2009) sample (3.2%). Dismissal can therefore serve as a threat: it seems unlikely that most CEOs would happily terminate their contract.

Contractual employment horizon is the most direct determinant of the ease of dismissal. Premature termination of fixed-term contracts leads to negotiations and perhaps litigation, and the costs of termination are proportional to the time remaining between the actual and contractual expiration date. In contrast, at-will contracts can be terminated at any time and for any cause, posing a more immediate dismissal threat. This should have a disciplining effect both on the CEO's effort and potential self-serving behavior. As before, any lack of effort or self-serving must stay within the limits of a trade-off with the costs of early termination: crass value destruction is unlikely to be tolerated even under fixed-term contracts.

To study effects on effort, I use a sample of acquisitions which allow me to isolate performance effects better than smaller, less observable decisions. They are also less standard and therefore have a greater likelihood to involve the CEO personally. If shorter horizons induce more effort, we should observe better acquisition performance under CEOs with at-will contracts.

*Prediction 4 (contract horizon and effort): Firms perform better after acquisitions made by CEOs under shorter contract terms and at-will contracts.*

A lack of effort is harder to distinguish from the initial underperformance of longer-term projects than self-serving behavior. Yet, executives may use the protection of long-term contracts for more obvious treats to their personal account, for example in form of perquisites and increases in base salary. Executives directly benefit from compensation, and some consider executive pay in general a sign of rent-extraction by powerful CEOs (e.g., Bebchuk and Fried, 2004). Consistent with this view, Malmendier and Tate (2009) report higher compensation levels after CEOs win awards (so-called "superstar CEOs"). If the relative lack of dismissal threat leads to more rent-seeking behavior, I expect CEOs with a longer horizon to receive greater salary increases. Compensation can set incentives: Gibbons and Murphy (1992) show that compensation becomes more sensitive to performance at the end of executive tenures, thereby offsetting (dis-)incentive effects set by the near end. To isolate intended incentives from rent-seeking motivations, I exclude incentive pay and focus on base salary. I complement this analysis with the 402 (c)(2)(ix) "other compensation" item of the proxy statement, as reported by *Execucomp*, as a rough measure for perquisites.

*Prediction 5 (contract horizon and rent-seeking): Salary increases and perquisites are larger for CEOs with a longer horizon.*

*D. A trade-off*

Long-term contracts commit to discretion over a certain period of time. This gives executives freedom to implement costly investment projects that are more lucrative in the long-run as well as costly projects that are less lucrative. Longer contracts can alleviate myopic underinvestment, but they may induce less effort during the implementation. The public discussion sometimes blames executives for being too myopic and other times for being not being responsible. It is an empirical question which effect – if any dominates.

*Prediction 6 (contract horizon and firm value): Firm value does not differ across contract length and type.*

## II. Data

### *A. Sample*

I use a sample of employment contract terms between US firms and their CEOs. In the US, the Securities Exchange Act of 1934, Regulation S-K, Item 402 requires the disclosure of terms of employment contracts between the registrant and named executive officers. Following Schwab and Thomas (2005) and Gillan et al. (2009), I collect contracts and descriptions of terms from SEC filings and, where possible, from *The Corporate Library*.

This yields 3,717 employment contracts or summaries of employment terms. Almost all the sample documents are explicit executive employment contracts or a summary of employment terms; 192 (1%) of them are, instead, explicit retention agreements or renewal amendments that contain the terms of the original agreement in addition to the terms of the amendment. I recover the terms of both agreements for these CEO employment relationships after verifying in *BoardEx* that the CEO was employed in the previous term. A smaller proportion of the sample (less than 1% of the documents) are agreements that have been negotiated following a change in control, compensation agreements that contain the original contract terms and offer letters that

have been confirmed by the CEO. I exclude agreements that have not yet been valid (e.g., applicable following a change in control) and offers that have been rejected. I obtain separation dates from *Execucomp*, *Risk Metrics*, or *BoardEx*. I also exclude contracts for which I can find no real expiration date or verify that the CEO is still in office.

Not all CEOs sign explicit employment contracts: Gillan et al. (2009) report that fewer than half of the CEOs of S&P 500 firms do. These CEOs are *de facto* under at-will employment. I address sample selection issues in Section V. My results remain similar when I include CEOs that are not in the contracts sample, assuming that they are indeed employed at-will.

*B. Descriptive Statistics*

Panel A of Table I reports a breakdown of the sample by year. The sample contains 3,717 contracts starting during the period 1989-2008, of which most are dated between 1996 and 2008. The contracts involve 2,371 firms (Panel B reports a breakdown of the contract number per firm). 1,299 of the sample firms are represented with one, 705 firms with two, and 367 firms with more than two contracts.

TABLE I HERE

This procedure yields a sample similar to the COMPUSTAT population in the sample period. The average firm size in terms of book assets is $1,182 million, compared to the average non-sample firm size of $1,268 million (Panel C). Return on assets (ROA) averages 0.9% for the sample, compared to -2.3% for the non-sample firms. The proportion of the sample represented by each state (Panel D) is almost identical to the distribution of the COMPUSTAT population.[10]

[10] The results are similar when I exclude any of the five states that are most frequently represented in our sample.

The governance characteristics (reported in Panel E) are comparable to those in the samples used by Gillan et al. (2009) and Schwab and Thomas (2005).[11] The age of an average CEO is 52 years, and he already been in office for four years. He holds 3% of voting shares and earns a total compensation of $2.6 million per year[12]; 51% of his total benefits are in the form of incentive pay. About half of the CEOs also hold the position of chairman of the board. Although CEOs starting fixed-term contracts have a significantly higher tenure than those who start at-will contracts, there are no significant differences in the other governance or compensation characteristics between contract types.

I provide a breakdown of the sample by year and type in Panel A. About 22% of the sample contracts are at-will, compared with 15% of the Schwab and Thomas (2005) sample. Gillan et al. (2009) collect a sample of contracts that were valid in 2000. The distribution of contract types in my sample is comparable, with a 14% fraction of at-will contracts among the contracts that started in 1999 (*cf.* 13% of the Gillan et al. (2009) sample). I define contract *length* as the number of years between the start and expiration year; Panel F shows the breakdown of the sample by contract length. Following the approach of Gillan et al. (2009), I consider the length of at-will contracts to be zero. Most contracts with specified expiration dates have a length of between one and five years. Three-year contracts are the most common (33%).

I track the performance of the sample CEOs up to expiration, as long as they do not leave office. Thus, the 3,717 contracts result in an unbalanced panel of 12,202 firm-year combinations for which there are data on employment terms. Table II shows summary statistics for firm-year combinations. Of the 12,202 years, 30% are under at-will contracts.

[11] Gillan, Hartzell, and Parrino (2009) describe a sample of 184 explicit contracts for S&P 500 companies that were in place in 2000. Schwab and Thomas (2005) use a sample of 375 contracts starting between 1984 and 2003.

[12] Note that compensation data is only available for S&P 1500 firms, which are larger than the average sample firm. I report compensation numbers adjusted for inflation, in 2000 $.

TABLE II HERE

Over the course of their employment, CEOs with fixed-term contracts are more likely to become chairman of the board ($t$ = 3.1) than CEOs under at-will contracts, their firms have a less shareholder-oriented governance index ($t$ = 2.8) and their total as well as "other compensation", which includes perquisites, are higher ($t$ = 2.0 and 3.3). This suggests that CEOs have more bargaining power under fixed-term contracts. CEOs under at-will contracts, on the other hand, earn more incentive pay ($t$ = −3.1). Note, however, that the fraction of unexercisable options is not significantly different between CEOs with and without at-will contracts. Compensation sets incentives in addition to the contract horizon. I will discuss their effects explicitly in Section V.

## III. Contractual Horizon and Realized Turnover

Figure 1 plots the distribution of realized tenure by contract type. Notice the difference between contractual and *ex post* horizon: some executives leave prior to expiration, others renew their contract. Yet, realized tenure differs between executives with long and short contracts. Of the CEOs with five or more years remaining under their contracts (Panel D), around 10% terminate within the current or following year. In contrast, 25% of CEOs with less than one year (Panel C) terminate within the current, and a further 24% within the following year. In the near future, at-will contracts (Panel A) are similar to fixed-term contracts in the last year, with 22% of the sample leaving in the current and 23% in the following year. After ten years, however, CEOs under at-will contracts are more likely to survive than CEOs under short fixed-term contracts, with a tail more comparable to the average CEO under a fixed-term contract (Panel B).

FIGURE I HERE

To account for the effect of tenure on the turnover probability, I use a hazard model to measure the link between contract horizon and likelihood of turnover (for another application of hazard

models in the turnover literature, see Jenter and Kanaan, 2010). The hazard model allows me to treat the probability of turnover as a function of tenure rather than treating every firm-year as an independent observation in a pooled regression. I use a Cox (1972) proportional hazard model as my main specification, which specifies the hazard rate *r(t),* or the rate of departure, as

$$r(t) = h(t)\exp(\alpha X), \qquad (1)$$

where t is tenure and X a set of independent variables. The specification allows to separate time effects from the effects of covariates. The exponential form serves to avoid negative hazard rates. The specification requires no distributional assumption: the estimation is computed by maximizing the partial likelihood function. This way, the terms that include the underlying hazard rates remain separate and do not enter the estimation.

To test for robustness, I use a Weibull specification of the model which makes assumptions on the distribution: it assumes that the conditional probability of departure is monotonically increasing or decreasing in tenure. More specifically, the hazard rate is estimated as:

$$r(t) = pt^{p-1}\exp(\alpha X), \qquad (2)$$

where p is greater (smaller) than one when the probability of turnover is increasing (decreasing) in time. When p = 1, the hazard rate is constant, implying an exponential distribution.

Data availability restricts the sample to 5,821 firm-years. Of these, 3,495, or 60% are right-censored observations of CEOs who have not left office by the end of 2008. This composition is comparable to the previous literature (e.g., the sample of Hartzell, 2001 consists to 58% (200 out of 346 observations) of right-censored observations).

TABLE III HERE

I report the results in Table III. Columns 1 (Cox) and 2 (Weibull) present the results on the whole sample and Columns 3 (Cox) and 4 (Weibull) on the subsample of fixed-term contracts.

At-will contracts are significantly more likely to be terminated (z = 2.34). All other variables equal, a CEO with an at-will contract has a 22% higher probability to leave office under the Cox specification. The term of fixed-term contracts is also relevant. One more year remaining before the contract expiration date translates into a 20% lower probability of turnover under the Cox specification (z = -6.10). The results remain almost exactly the same under a Weibull distribution.

I control for executive and firm age as alternative determinants of horizon. Older CEOs are more likely to leave under the Weibull distribution, consistent with Hartzell (2001) who documents a positive relationship between executive age and voluntary turnover.

The previous evidence on the effects of firm performance on CEO turnover is mixed, depending on the sample and the performance measure used.[13] I use year-on-year stock returns to measure market performance, growth in return on assets to measure operating performance, and control for annual (equally weighted) industry returns (see Jenter and Kanaan, 2010). CEOs are less likely to leave after a period of higher returns, albeit only on a 10% significance level.

I follow Jenter and Lewellen (2010) in their choice of other control variables. Larger firms are more likely to separate from CEOs, and firms with a higher market-to-book ratio (controlling for returns) have a higher CEO turnover, albeit only in the sample of fixed-term contracts. This indicates that these firms are more willing to pay the additional cost of dismissing a CEO under a fixed-term contract. The relation between turnover and institutional ownership is significantly negative. This suggests that institutional investors solve differences with the CEO in other ways than dismissal (see Denis, Denis and Sarin, 1997, for a discussion). CEOs that also chair the

[13] See Benston (1985), Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Weisbach (1988), Gilson (1989), Morck, Shleifer and Vishny (1989), Jensen and Murphy (1990), Murphy and Zimmermann (1993), Denis, Denis, and Sarin (1997), Murphy (1999), Huson, Parrino, and Starks (2001), Jenter and Kanaan (2010) and Jenter and Lewellen (2010).

board are less likely to leave, consistent with the notion that they have more influence. I confirm the negative relationship between stock rewards and turnover that Mikkelson and Partch (1997) document. CEOs with more voting rights, which make it harder to dismiss them, face a lower turnover risk, albeit not significantly for the fixed-term subsample. Overall, the Weibull estimation does not give significantly different estimations from the Cox model.

To summarize, contract horizon has a significant impact on actual careers. At-will contracts are associated with a significantly higher probability of turnover, and fixed-term contracts are less likely to end when there is more time left before expiration.

## IV. Determinants of Contract Type and Length

Before proceeding to the main results, it is important to model the choice of contracts to control for endogeneity.

### *A. Approach*

To address endogeneity between the choice and the effect of contract types, I take an instrumental variable (IV) approach. With this method, the exogenous variation (of the contract type decision) provided by the instrument is used to limit exposure to endogeneity bias. I use differences in the legal environment across states as the instrument. In the so-called at-will exception states, at-will contracts are more popular. The listing of at-will exceptions comes from Walsh and Schwarz (1996) and Muhl (2001) and is reported in the Appendix.

At-will exceptions have historical roots. The debates that led to the current pattern were driven by political sentiments of that time as well as the particularities of isolated precedent cases. Between 1960 and 1980, various states started to accept exceptions to the at-will rule. In particular, states that recognize the *exception of good faith and fair dealing* require that dismissal decisions be subject to a "just clause" standard: terminations made in bad faith or motivated by

malice are prohibited.[14] This rule protects employees from dismissals for a wide range of reasons.

The at-will exception affects the choice of contract type. The more employee-friendly court treatment of at-will contracts lowers the perceived cost of an at-will contract for the employee, making it a more attractive option. As a consequence, at-will contracts became more common in "exception" states. Such obtained popularity reinforces itself: not only do lawyers and boards become more familiar with them, but executives also must justify a differing treatment for themselves. Kedia and Rajgopal (2009) document a similar dynamic with compensation practices that firms adapt to the practise of neighboring firms. Consistent with this argument, firms with headquarters[15] in states that adopt the *good faith and fair dealing* exception are significantly more likely to offer at-will ($t$ = 6.63) contracts. On average, in states with a *good faith and fair dealing* exception, 30% of all contracts are at-will, as opposed to 19% in non-exception states.

A valid instrument should be associated with the dependent variables only because it affects the contract type (exclusion). While the at-will exception affects the choice of contract type and legal consequences for rank-and-file employees, it is unlikely to affect court treatment of executives. This is because unlike other employees, CEOs are protected by elaborate severance agreements that define good and bad causes for dismissal. Given the contractual terms, differences in state law enforcement are unlikely to result into different treatment at court. Consistent with this argument, the expected tenure of at-will CEOs is not different between

[14] Under the public policy exception, dismissal is not allowed if it violates the state's public policy or a statute. Under the implied contract exception, an employee can dispute his/her dismissal if he/she can prove the existence of an implicit (i.e., not written) contract. Compared with the *good faith and fair dealing* clause, these two exceptions are much more limited in scope.

[15] The contracts explicitly declare the governing state law. It coincides with the state of the headquarter location in most cases. In contrast, the choice of contract type and the state of incorporation are not significantly related.

exception and non-exception states ($t$ = 1.47). Nor is the exception significantly related to investment levels: its correlation with capital expenditure (normalized by sales) is only 1.1%; the correlation between *growth* in capital expenditure and the exception is 3.8%, and the correlation between the number of patents issued (between 1977 and 2004)[16] and the exception is 8%. For example, California, the state with the highest number of patents, is an exception state, while New York and Texas, the next active states, are not. Some industries are concentrated in exception states, albeit not resulting in a pattern related to investment. Mining (SIC 10 and 14, metal and non-metal mining, or Fama-French 27 and 28, gold and mining), the industry with the highest capital expenditure per sales, is more prevalent in exception-states, while oil (SIC 13, Fama-French 30), the industry with the next-highest capital expenditures, is not. Within the least investment-intense industries, there are more apparel manufacturers (SIC 23, Fama-French 10) based in exception states but more textile firms (SIC 22, Fama-French 16) based in non-exceptions states. The exception treatment developed over time, but development ended for almost all states about two decades before the sample starts.

Technically, I use the following strategy. First, to compare at-will and fixed-term contracts, I take an instrumental variable (IV) approach. With this method, the exogenous variation (for the contract type decision) provided by the instrument is used to limit exposure to endogeneity bias. I use a least-squares approach because the alternative of using probit estimates to generate first-stage predictions could introduce inconsistency (Angrist and Krueger, 2001).

Second, to track performance of CEOs over time and compare their behavior in terms of more versus less time remaining to contract expiration, I exclude at-will contracts. To control for the selection bias arising from this non-random exclusion, I follow the approach of Heckman (1979), this time using the probit version of the choice regression to compute the Mill's ratio.

[16] I obtain the number of patents issued by state from the United States Patent and Trademark Office.

This procedure does not control for the choice between contracts of different lengths. To address this concern, I repeat the analysis with the subsample of five-year contracts. For this purpose, I follow Gillan et al. (2009) and view contract length as a continuum with at-will contracts at one end and five-year (or longer) contracts at the other. This allows me to estimate the probability of choosing a five-year contract as opposed to all other (including at-will) contracts with the first-stage specification described previously.

*B. The choice of contract type*

Panel C of Table I reports a univariate comparison between contract types. There are no clear patterns of performance before the choice, with the market-to-book ratio significantly higher ($t$ = 2.34) and the ROA significantly lower ($t$ = 2.51) in firms that employ at-will CEOs. Furthermore, sales volatility is higher in firms that enter into fixed-term contracts with CEOs ($t$ = 3.67). The other main performance variables of interest – stock returns, ratios of capital and R&D expenditures to sales – are not significantly different between firms offering at-will versus fixed-term contracts on a 5% level.

Panel E shows the CEO and governance characteristics sorted by contract type. States with at-will exceptions have a higher fraction of at-will contracts. This encourages the use of legal aspects as instrumental variables. CEOs with fixed-term contracts have a longer existing tenure ($t$ = 2.54). Because CEOs with higher tenures tend to have more bargaining power, this finding indicates that the CEOs themselves prefer longer term contracts. Finally, I track the real date of separation (for those CEOs who left office before the end of 2008) and refer to the time until then as "*ex post* horizon". As conjectured, at-will CEOs remain in office for a shorter period of time ($t$ = 2.73). Other variables are not significantly different across contract types.

Panel G of Table I reports the industry breakdown for industries with more than 100 observations. Of these industries, the one with the highest concentration of at-will contracts is the software industry (122 out of 396 contracts). This seems consistent with Gillan et al. (2009), who argue that firms with high operating risks prefer to limit their contract risk by offering shorter contracts. The industry with the highest concentration of fixed-term contracts is the banking industry (485 out of 548 contracts).

TABLE IV HERE

Table IV reports the multivariate results. I start with a probit specification in which I predict the choice of contract type based on the state indices (Column 1). First, states with an at-will exception for *good faith and fair dealing* are 25% more likely to issue at-will contracts ($t$ = 4.22). This is consistent with my previous argument and with the findings of Miles (2000). Other at-will exceptions are not significantly related to the proportion of at-will contracts. To ensure that geographical effects are due to the at-will exceptions and not to other legal differences across states, I control for other geographical indices such as the anti-takeover index of Bertrand and Mullainathan (1999) and the anti-competition enforceability index of Garmaise (2009). I do not find a significant relation between at-will contract prevalence and either index. The results remain similar when I exclude any of the largest five states, California, New York, Texas, New Jersey and Florida.

Executive and governance characteristics can affect the bargaining for the contract. Consistent with this argument, CEOs with a longer existing tenure are more likely to choose fixed-term contracts ($t$ = 2.34, Column 2). This suggests that CEOs are rewarded with a more stable contract after they have worked in the position in a previous term. The Gompers et al. (2003) governance index is also significantly related to the choice of contract type ($t$ = 2.60), albeit not in all

specifications. Firms with more shareholder-oriented governance are more likely to choose a fixed-term contract. The indicator for former CEOs is not significantly related to contract type, and neither is the CEO's age.

Gillan et al. (2009) argue that companies operating in an uncertain environment prefer to limit the potential costs of breaking a contract by offering only short-term contracts. This reasoning reflects not only the company's but also the CEO's perspective. It is costly for both parties to modify or break a contract because each has made an up-front investment in the relationship. I confirm the finding of Gillan et al. (2009) that operating risk is relevant for the choice of contract type (Column 3). Firms in industries with higher sales volatility are more likely to offer an at-will CEO contract ($t$ = 1.94), albeit only at a 10% significance level and not across all specifications. There is no significant relationship between the choice of at-will contracts and any of the other risk measures.

To compute Lambda for the Heckman (1979) selection model between contract types, I use a model with the relevant variables identified above: the exception, tenure, the governance index, and industry sales volatility. The results are reported in the Column 4 of Table IV. For the analysis of contract types, I use a least-squares approach in the first stage because probit estimates could introduce inconsistency (Angrist and Krueger, 2001). I report the ordinary least squares (OLS) regression results for the first stage in Columns 5-7. The coefficient on the instrumental variable remains significant when the second stage variables are included to ensure consistency. The coefficients for the second stage control variables are omitted except for the ones that have been mentioned in the table before.

## V. The Benefits: CEO Horizon and Investment

Figure 2 shows as initial evidence the average investment by number of remaining years for three-, four- and five-year contracts. Panels A and B show capital and R&D expenditures, respectively. Overall, investment declines with horizon, an effect that is most pronounced for contracts with an initial length of four years. Four-year contracts exhibit comparatively high investment in the first year.

FIGURE II HERE

I regress investment spending on the horizon variables, controlling for variables that previous literature has shown to be relevant for investment. The dependent variable is normalized by sales and adjusted for the industry average.[17] I start with an analysis of CAPEX.

*A. Capital expenditures*

As a first indication, I regress investment on the expected horizon, where I calculate the expectation by regressing the actual remaining time in office on contract terms. Expected horizon matters for investment (Table V, Panel A, Column 1). One further expected year corresponds to CAPEX exceeding the industry average 0.4 times ($t$ = 2.52). This represents 25% of one standard deviation or 1.1 times the mean (industry-adjusted) capital expenditures over sales.

TABLE V HERE

Next, I study the investment behavior of CEOs under fixed-term contracts (Panels A and B, Columns 2 and 3). I exclude firms with at-will CEOs and control for the selection of at-will contracting as described in Section II. To eliminate potential bias from a higher number of observations of longer contracts, I repeat the analysis with only five-year contracts (Column 3).

For fixed-term CEOs, investment decreases over the course of a contract. Firms invest more when the CEO contract has a higher number of remaining years ($t$ = 2.13). One more year remaining translates into 2% higher CAPEX over the industry average. The effect is more

[17] This variable differs from the non-adjusted numbers shown in Figure 2.

pronounced when I restrict the sample to five-year contracts. One more year remaining, given an originally five-year contract, translates into 4% higher CAPEX over the industry average ($t$ = 2.45). In other words, CEOs spend 20% more on CAPEX in the first year than in the last year of a five-year contract.

Is the horizon effect on investment rooted at the beginning or at the end of the contract? Panel B of Table V reports the results of a regression which includes indicator variables for the number of years remaining. Other than that, the specification remains as previously described. The horizon effect on investment is most pronounced in the last two years before contract termination. Investment is lower by 9% in the last year and 8% in the second-to-last year ending before the contract. This indicates that CEOs rather invest less at the end than more at the beginning of their contract.

For the analysis of the effect of contract types, Column 4 of Table V, Panel A, reports the results of an OLS regression of investment on the at-will indicator. At-will CEOs invest less than their peers. Given that endogeneity is a main concern in this setting, I repeat the analysis in Column 5 with an instrumented at-will indicator. Consistent with the underinvestment hypothesis, the instrumented at-will indicator is significantly negatively associated with investment. On average, an at-will CEO spends 0.65 less on (industry-adjusted) CAPEX over sales. The investment measures are not significantly different between firms in the year prior to the employment agreement. The sample firms start out with a similar investment policy, but firms with at-will CEOs subsequently decrease their investments. In the first stage, the instrument is significant ($p < 0.01$) with an $F$-statistic of 79.04. The instrumented approach is relevant because according to a Hausman test ($\chi^2 = 69.61$, $p < 0.00001$), the instrumented coefficients are significantly different from the OLS estimates. The coefficients estimated with the instrumented variable are

higher than those estimated with an OLS regression. This indicates endogeneity between investment and the choice of contract type: firms with fewer investment opportunities perhaps sign more fixed-term contracts to stimulate investment.

*B. R&D and acquisitions activity*

Panel C reports the results of an analysis of two other measures of investment: R&D and the number of acquisitions. Some studies of myopic underinvestment argue that CEOs with career concerns underinvest in order boost their earnings (Dechow and Sloan, 1991; Ghosh, Moon and Tandon, 2007). Because R&D expenses have a direct impact on profitability whereas CAPEX do not, I expect the effect on R&D expenses to be stronger if this is the case. The horizon effects on R&D are similar to the ones on CAPEX: each remaining year is associated with 2% more R&D expenses ($t$ = 2.20). The coefficient on at-will contracts, -1.9 (t = -7.08), exceeds the one for CAPEX. The comparison holds accounting for the higher standard deviation of R&D expenses. The effect of at-will contracts in terms standard deviation of the dependent variable is 0.9 for R&D expenses and 0.4 for CAPEX.

Acquisition activity is significantly different between at-will and fixed-term contracts ($t$ = -2.81), but does not differ significantly across the tenure of a CEO with a fixed-term contract. This is likely because acquisitions are large projects that can take more than one year to implement. Overall, CEOs with fixed-term contracts make one more acquisition every two years.

*C. Control variables*

I control for other variables related to time: the executive's tenure and age as well as the (logarithm of) firm's age. In most specifications, the coefficients are not significant. The CEO's tenure is negative and significant in only one specification (the IV on CAPEX), his age

significantly positive in one of the R&D specifications. The firm's age is significantly negatively associated with investment in several, but not all specifications.

I follow Polk and Sapienza (2009) in the choice of other control variables. Firms invest more when they are smaller, when their market-to-book ratio is higher, when they are less levered, have less idiosyncratic risk, and when their fraction of tangible assets is higher. This is consistent with the existing literature: smaller firms and firms with a high market-to-book ratio have greater growth opportunities. Firms with less leverage, a higher fraction of tangible assets and less idiosyncratic risk can finance their investment more easily. An exception is acquisition activity: larger firms make more acquisitions, and firms that make more acquisitions have more intangible assets. More institutional ownership translates into significantly higher CAPEX, consistent with Wahal and McConnell (2000). Firms with more shareholder-oriented governance, measured with the index of Gompers et al. (2003), invest more. The coefficients on accruals are negative and significant for some specifications but economically small, and the coefficients on profitability are negative and significant but not for the CAPEX regressions. Other coefficients are small and insignificant or change their signs.

*D. Non-contracted CEOs*

Many US CEOs do not sign employment contracts (see the discussion by Gillan et al., 2009). From a legal perspective, this implies that their employment is at-will. While few firms may not report their CEO employment contracts, the vast majority of the "missing" contracts are in fact non-existent and therefore the CEOs are employed at-will. Fixed-term CEO contracts are only missing if not or not fully reported.

I assume for this robustness check that all CEOs outside the contract sample are employed at-will. I repeat the baseline specification, the regression analysis of capital expenditure. I keep all control variables that are available in COMPUSTAT, but do not collect governance data.

Column 1 of Panel D reports the results. The coefficient on the at-will indicator is significantly negative (t = -3.24). At-will employment is associated with 16% lower investment compared to the industry mean. This is higher than the original OLS coefficient, but lower than the IV coefficient. Thus, the results are robust with the COMPUSTAT population. With the large sample, all other control variables gain significance with their expected sign.

*E. Propensity score matching*

The extended sample allows me to use another technique to test the robustness of the results: propensity score matching. The results of the baseline regression could be driven by non-linear effects of the control variables. I address this concern by creating two subsamples that are comparable for all covariates and differ only in terms of contract type (Rosenbaum and Rubin, 1983, Hirano, Imbens and Ridder, 2003). To create similar subsamples, I estimate the propensity score, the probability of treatment (at-will employment) conditional on the control variables of the baseline specification. I then match at-will and fixed-term contracts that are similar in terms of their propensity score. Because I have many more observations under at-will employment, I can include ten similar firms under at-will employment for each firm under a fixed-term contract. I add industry effects to the matching procedure and therefore do not adjust the dependent variables for the industry average. This also makes it easier to compare the means.

TABLE VI HERE

I report the results in Table VI. In Panel A, I report summary statistics on the un-matched sample for comparison, and in Panels B and C, the comparisons between the matched samples. The

matched samples differ for the dependent variables because of the limited availability of R&D expenses. In the un-matched sample, firms with at-will CEO employment are significantly smaller and have lower market-to-book ratios. These differences become insignificant after the matching procedure.

The matched samples are significantly different in terms of investment. CEOs with at-will contracts invest significantly less, both in terms of capital expenditure ($t$ = -3.63) and in terms of R&D expenses ($t$ = -6.39). This affirms that the results are not driven by distributional differences in observed covariates between firms with at-will and fixed-term contracts.

*F. Switching firms*

The contract sample contains 148 firms that switch from fixed-term to at-will contracts, 236 that switch from at-will to fixed-term contracts, and 46 that switch in both directions. In total, I obtain a "switcher" subsample with 1,451 firm-year observations, of which 739 are under fixed-term contracts. These allow me to calculate how the same set of firms reacts to a change of contract type: I compare the average investment after the switch to the average investment before the switch. This does not completely remove the potential selection bias, but it does reduce the effect of unobservable firm characteristics.

I report results in Columns 2 and 3 of Panel D, Table V. First, I regress CAPEX over sales (adjusted for industry) on the at-will indicator. I cannot use the instrument because it is time invariant. The coefficient of the at-will indicator is significantly negative. Next, I repeat the regression using fixed-term contracts only and including the number of remaining years under the contract as an independent variable. The coefficient on the number of remaining years is significantly positive. That is, the underinvestment effect is not entirely accounted for by unobserved firm characteristics.

*G. Alternative instrumental variable*

In Column 4 of Panel D, I report the results on the baseline sample, using the industry-year average proportion of at-will contracts an alternative instrumental variable. This variable is highly correlated with the probability of assigning an at-will contract and fulfils the exclusion condition because it affects performance and executive behaviour through the same and no other channel than the firm's own contractual horizon itself. The results remain in line with the baseline results, with the coefficient of at-will slightly augmented to -0.85 (t = -5.16). In the first stage, the instrument is significant ($p < 0.01$) with an *F*-statistic of 55.01. The instrumented approach is relevant because according to a Hausman test ($\chi^2 = 73.38$, $p < 0.00001$), the instrumented coefficients are significantly different from the OLS estimates.

*H. Fixed effects*

Performance may be affected by unobservable manager characteristics (Bertrand and Schoar, 2003). However, it is not possible to control for fixed effects at the same time as other time-varying variables such as tenure and age that are linearly related to contract horizon. I therefore use CEO fixed effects in a separate analysis, excluding tenure and age. I use *BoardEx* to identify CEOs who share the same name. As before, at-will contracts are negatively associated with investment, and the number of remaining years is positively associated with investment, although only at a 10% significance level.

*I. Compensation*

Compensation and ownership incentives may alleviate the negative effects of contract horizon (Dechow and Sloan, 1991). I use data from Execucomp, RiskMetrics, and Capital IQ to control for effects of compensation and ownership. Compensation data are not available for a large fraction of my observations (see Panel E of Table I). To control for this, I include variables that

indicate when such data are available. The results, which are in line with the previous findings, are reported in Columns 7 and 8. At-will CEO contracts have a significantly negative effect on investment, and the number of remaining years in fixed-term contracts has a positive effect. Incentive pay, voting stock ownership, or the fraction of unexercisable options are not able to alleviate the underinvestment problem: only one relation between compensation features and investment is significant. In the sample of fixed-term contracts, the coefficient of incentive pay is negative and significant ($t$ = -2.74). It is, however, economically small, at -0.06. What does have an alleviating effect is the level of compensation. The coefficient of the logarithm of total compensation is positive and significant in both specifications.

*J. Discussion*

My evidence supports the prediction on investment and horizon. CEOs with a longer expected horizon invest more than their peers, a finding that applies both to at-will CEOs and to CEOs whose fixed-term contracts are close to expiration, as well as for both CAPEX and R&D expenditures. At-will employed CEOs also make significantly fewer acquisitions although the differences among fixed-term contracted CEOs are small. I find little evidence of an effect of tenure, age, or the compensation horizon. The results remain similar when I control for sample selection, using a propensity score analysis or a subsample of firms that change their contracts.

## VI. The Cost: CEO Horizon and Discipline

*A. Effort*

Does contract horizon affect discipline? CEOs under a shorter contract horizon face a more immediate dismissal threat. This should encourage them to work harder and make better decisions. To test this prediction, I follow Masulis et al. (2007) and Bebchuk et al. (2011) and examine stock returns after the announcement of acquisitions. I obtain 585 acquisitions made by

contracts sample CEOs from SDC's Mergers and Acquisitions database. Table VII reports descriptive statistics.

TABLE VII HERE

As common in the M&A literature, the sample of acquiring firms is larger, with $2.5 billion (vs. $1.2 billion) and has a higher average market-to-book ratio of 2.74 (vs. 2.52) than the firms in the baseline sample. The average acquiring firm is also more profitable, with an average ROA of 4% (vs. 1%), and invests more in terms of CAPEX/sales, with an average of 14% (vs. 11%). I obtain firm characteristics only for publicly listed target firms, 255 out of the 585. These firms are larger than the average target, with book assets of average $2.9 billion. The average transaction value including both public and private targets, in comparison, is $0.3 billion.

In total, 32% of the transactions are made by CEOs under at-will contracts, similar to the fraction of at-will CEOs in the baseline sample. The acquirers with CEOs at-will are smaller than the ones with fixed-term contracts ($t$ = 3.22), but their target firms are comparable in terms of their size relative to the acquirer ($t$ = 0.12). Contrary to the baseline sample, acquirer CEOs under at-will contracts are older and more tenured than their fixed-termed counterparts ($t$ = 2.39 and 3.99, respectively), perhaps because these CEOs face less termination risk for undertaking an acquisition in the first place. I control for tenure and age in the subsequent analysis.

In terms of the transaction itself, CEOs under at-will contracts act more conservatively. The sample at-will CEOs make not a single transaction that SDC classifies as hostile. The difference is not statistically significant because SDC assigns hostility flags conservatively, resulting in only 1% hostility for the fixed-term employed CEOs. At-will employed CEOs also make more acquisitions in the same industry ($t$ = 2.27) and more stock-paid acquisitions ($t$ = 2.20).

I begin with a regression of three-day announcement returns on contract terms, controlling for other variables that usually affect announcement returns. In Panel A of Table VIII, Column 1 reports the regression results. At-will acquirer CEO contracts are associated with 1.7 percentage higher announcement returns ($t$ = 2.02). For fixed-term CEOs, the remaining time horizon is not significantly related to announcement returns, similar to the results on acquisition activity. This is likely because acquisitions take a long time to implement, which implies that the number of years remaining at the time of announcement is perhaps not the correct measure of their horizon. The effect on at-will CEOs is robust for controlling for the compensation horizon and incentive pay (Column 3).

TABLE VIII HERE

Next, I divide the sample between firms that have a cash/assets ratio above and those below median. Column 4 reports the regression results for firms that are less cash-rich than the ones reported in Column 5. The results are particularly strong for cash-rich firms, but not significant for firms with cash below median. For cash-rich acquirers, at-will CEO contracts translate to an average 5.0 percentage of announcement returns ($t$ = 3.68). This indicates that the positive announcement returns for at-will CEOs are indeed associated with discipline.

None of the alternative measures of horizon is significantly associated with returns. The results on the other control variables resemble the previous literature but are only significant in some of the specifications. Acquiring a public target is associated with smaller returns, consistent with the findings of Fuller et al. (2002). Hostile transactions are met with negative stock reaction, consistent with Schwert (2000). Termination agreements, which allow for less flexibility, are associated with lower returns. Firms with a higher market-to-book ratio (and lower leverage) tend to have lower announcement returns. This indicates that firms with higher valuation (less

leverage) may have more flexibility to overpay for acquisitions (Shleifer and Vishny, 2003). None of the compensation and governance variables is significantly related to returns.

Perhaps CEOs under at-will contracts only make acquisitions look better at announcement. To examine potential reversals, I implement the Fama and French (1993) calendar-time portfolio approach as advocated by Fama (1998) and Mitchell and Stafford (2000). For each month of the sample period, I form portfolios of firms that announced an acquisition: one that is long acquirers with CEOs under at-will contracts, a second that is long acquirers with CEO under fixed-term contracts, and a third that is long the former and short the latter. Portfolios are rebalanced monthly, dropping firms that have been in the portfolio for 12 (24) months; also, I exclude multiple observations of the same firm that occur within the same period. This approach has two advantages: it takes cross-sectional dependence into account, and it is less sensitive to model misspecification (Mitchell and Stafford, 2000). Once the portfolios are constructed, I use the Carhart (1997) four-factor model to perform a time-series regression on the excess returns of the portfolio of interest.

The results are shown in Panel B (using equally weighted portfolios) and Panel C (using value weighted portfolios) of Table VIII. None of the abnormal returns are significantly different from zero. Direction-wise, the results do not imply a reversal. Portfolio alphas for acquirers with CEOs at-will are higher than the ones for CEOs with fixed-term contracts across all specifications and even positive for the value weighted portfolios. There is no evidence that acquirers with CEOs under at-will contracts boost announcement returns over and above the fundamental value of acquisitions.

*B. Personal benefits*

This subsection considers the relation between contract horizon and CEO compensation. Compensation directly benefits the CEO, although it can serve to provide incentives (Gibbons and Murphy, 1992) or profitability gains from easing the executive's lifestyle (Rajan and Wulf, 2006). To isolate incentive pay, I focus on base salary increases and the "all other compensation" item (204 (c)(2)(ix) of the proxy statement), which I call "perks" supra. This item encompasses perquisites, personal benefits and property exceeding $10,000, tax gross-ups, discounts, insurance premiums, registrant contributions to defined contribution plans, dividends paid on options awards, and severance pay. To separate effects of severance pay, I repeat the analysis excluding the year of termination.

TABLE IX HERE

The results are displayed in Table IX. In all specifications, the coefficient of the years remaining under the contract is positive and significant, indicating that a longer remaining horizon under a fixed-term contract is positively correlated with base salary increases and perks. Contract horizon explains perks better than salaries, with an R-square of 13% vs. 2%, and the magnitudes of the coefficients are also higher for perks. One more year is associated with a 2% increase in salary ($t$ = 2.09) and $21 thousand higher perks ($t$ = 2.34). For an executive under a five-year contract, this translates into 8% difference in base pay and $103 thousand higher perks. These equal 33% of the average salary increase and 39% of the average perks in the sample. The effect is even stronger excluding the termination year (Column 5). The coefficient of at-will contracts is not significant. That is, CEOs under fixed-term contracts do not get more salary increases or perks in general. They do receive more of those, however, when they have more time left under the contracts.

## VIII. Contract Horizon and Firm Value

How do the effects on investment, effort, and personal benefits affect the overall performance? To establish a relationship between contract horizon and firm value, I regress the market-to-book ratio on contract characteristics.[18] I construct the market-to-book ratio according to the method of Kaplan and Zingales (1997) and Gompers et al. (2003).

TABLE X HERE

Results are reported in Table X, Panel A. There is no clear evidence of a significant effect of horizon on the market-to-book ratio. Neither the expected horizon, nor the time remaining under a fixed-term contract, nor the contract type is significantly related to the market-to-book ratio. Panel B reports robustness checks as introduced in Section V. The coefficients of the contract terms are insignificant in all but two specifications. First, in the expanded sample of the total COMPUSTAT population, at-will contracts are associated with a lower market-to-book ratio (Column 1). This result is robust to propensity score matching (Table VI). Second, with executive fixed-effects, the coefficient on the number of remaining years under fixed-term contracts is positive and significant on a 10% level ($t$ = 1.92). Overall, the evidence points towards a positive effect of horizon, but only weakly.

The control variables are related to the market-to-book ratio in the manner previously documented in the literature. I find a negative relation between the market-to-book ratio and for tenure as well as the executive's age. This is consistent with Murphy and Zimmermann (1992) who document that performance worsens towards the end of tenures and retirement. The firm's age is also negatively related to the market-to-book ratio, consistent with the argument that young firms have more growth potential. Higher investment levels are positively associated with market-to-book ratio. Levered firms are associated with lower market-to-book ratios, consistent

[18] Using the market-to-book ratio as a measure of firm value follows the tradition of Demsetz and Lehn (1985), Morck et al. (1988), Lang and Stulz (1994), Yermack (1996), Loderer and Peyer (2002), and Gompers et al. (2003).

with the argument that growth firms need more flexibility and therefore refrain from debt financing. I confirm the Delaware premium found by Daines (2001). Industry concentration is positively related to market-to-book. More shareholder-oriented governance is associated with a higher market-to-book ratio, consistent with Gompers et al. (2003).

The evidence on contract type suggests that neither at-will nor fixed-term contracts dominate in their performance effects. Empirically, myopic underinvestment and discipline effects of horizon offset each other. This also implies that firms do not systematically choose suboptimal contracts. I find no evidence that CEOs destroy firm value because they are too myopic or their contracts are too long. The weak relation between the market-to-book ratio and CEO horizon applies also as the number of remaining years changes under fixed-term contracts. In this respect, the result is less conclusive: consistent with the rational expectations models of Stein (1988) and Stein (1989), the market perhaps anticipates and accounts for horizon effects before they materialize.

## VIII. Conclusion

Using a dataset of 3,717 CEO employment contracts, I document heterogeneity in the employment horizon of US CEOs. The data include both at-will and fixed-term contracts of different lengths. Employment contracts are not empty promises. The contractual horizon predicts the likelihood that an executive actually leaves office. CEOs with a longer remaining contract (CEOs with at-will contracts) have a lower (higher) probability of termination.

These factors have consequences on decision making. Consistent with the predictions of myopic underinvestment models, CEOs with a shorter horizon invest less. This applies to both CAPEX and R&D expenditures as well as acquisition activity. Given that they become acquirers, however, stock price responses to the acquisition announcements are greater for CEOs under at-will contracts. This effect does not reverse in the subsequent 24 months. Finally, CEOs under

fixed-term contracts receive greater salary increases and perks when they have more time left under their contract.

Ultimately, firms have to trade-off the effects of CEO horizon on discipline and investment. Firms that are more concerned about investment are perhaps better off with a longer horizon CEO contract, while firms with concerns about discipline and entrenchment should prefer shorter contracts. On average, neither the cost nor the benefits of CEO horizon dominate. Contract horizon does not exhibit any significant relations to firm value. In other words, firms do not systematically write CEO contracts that destroy value because they are too myopic or too long.

This is a first effort to document the effects of contract horizon. I hope that the results can give some practical orientation to both the governance literature and the contract design praxis. Given the availability of new data, I am confident that future research will illuminate various other effects, interactions, and remedies for the phenomena described in the current paper. For example, executive horizon may affect capital structure policies and decisions. Horizon may also explain time-varying risk-taking behavior, and investor horizon and executive horizon may affect each other. The findings on the time variation of investment may have implications for the cyclicality of investment and, ultimately, of stock prices.

Understanding the interaction between compensation and horizon is crucial for contract design. This analysis shows that contractual horizon is not a substitute for long-term compensation: in addition of setting a long-term horizon, it also provides the threat of abandoning all compensation. Whether and how long-term compensation and severance pay can dampen or accentuate some of the effects are promising questions for future research.

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## VARIABLE DEFINITIONS

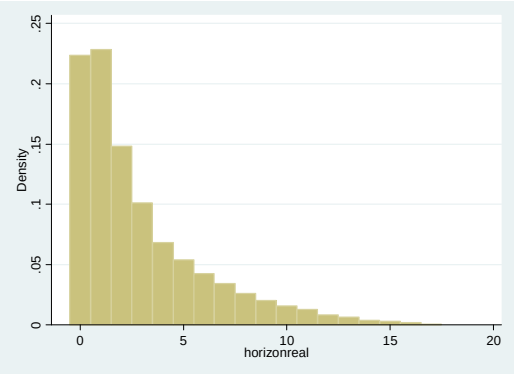
| | |
|---|---|
| *Accrual* | Residual of a regression of the year-to-year change in non-cash working capital minus depreciation on the average year-to-year sales growth in the 49 Fama-French industries |
| *Age* | Executive's age in years |
| *Acquisition expenses* | Ratio of acquisition expenditures to total assets |
| *All other compensation* | Value of item 402 (c)(2)(ix), all other compensation, of the proxy statement in thousands of US $ , adjusted to 2000 $ |
| *Anti-takeover* | State with "business combination laws" according to Bertrand and Mullainathan (1999) |
| *Assets* | Book assets (in $ millions) |
| *At-will* | 1 when the contract is at-will and 0 otherwise |
| *Board size* | Number of board members |
| *CAPEX/sales* | Capital expenditures divided by sales |
| *Cash Flow* | Earnings before extraordinary items plus depreciation divided by lagged assets |
| *CEO voting* | Voting rights held by the CEO as a fraction of all |
| *Chairman & CEO* | 1 if the CEO is also the chairman |
| *Compensation* | CEO's total annual compensation (TDC2) in thousands of US$, adjusted to 2000 $ |
| *Delaware* | 1 if the firm is incorporated in Delaware |
| *Directors voting* | Fraction of voting rights held by directors |
| *Ex post horizon* | Year in which the executive left office minus the current year |
| *ExecuComp data available* | 1 if ExecuComp data (e.g., compensation, incentive pay, unexercised option value) are available |
| *Exception (good faith & fair dealing)* | 1 if the contract is governed by the law of a state with a good faith & fair dealing at-will exception |
| *Exception (implied contract)* | 1 if the contract is governed by the law of a state with an implied contract at-will exception |
| *Exception (public policy)* | 1 if the contract is governed by the law of a state with a public policy at-will exception |
| *Firm age* | Current year minus year of incorporation. If year of incorporation is not available, current year minus year of first appearance in COMPUSTAT |
| *Dividend payer* | 1 if the firm pays dividends in the previous year |
| *Former CEO* | Indicator variable for CEOs who were in office at the time of the contract start |

| | |
|---|---|
| *Garmaise* | Index of Garmaise (2006) |
| *Governance index* | The index developed by Gompers, Ishii and Metrick (2003) |
| *Herfindahl* | Industry Herfindahl index |
| *High R&D industry* | 1 if the Fama-French 49 industry average R&D expenses are above median |
| *Hostility* | 1 if the board officially rejects the offer according to SDC |
| *Idiosyncratic risk* | Standard deviation of the residuals from a regression of acquirer excess returns on the Fama and French factors (RM, SMB, HML) and the matched 49-industry portfolio return. |
| *Incentive to total compensation* | Value of bonus, stock, and option grants to total CEO pay |
| *Industry homogeneity* | Median (across all firms of one of the 49 Fama-French industries) of the percentage variation in monthly stock returns that is explained by an equally weighted industry index; market-adjusted returns are annual stock returns adjusted by the value-weighted CRSP index. |
| *Industry returns* | Equally-weighted annual stock returns of the 49 Fama-French industry |
| *Industry sales volatility* | 49 Fama-French industry average of variance in sales over the past seven years |
| *Industry survival rate* | Industry rate of year-to-year survival within the COMPUSTAT database |
| *Insider board* | 1 if the board is dominated by insiders |
| *Institutional ownership* | Fraction of institutional ownership listed in the 13f filings compiled by Thomson |
| *KZ* | Index of Kaplan and Zingales (1997) |
| *Leverage* | Ratio of net debt divided by assets |
| *Lockup* | 1 if an acquisition involves an acquirer lockup agreement |
| *Market-to-book* | Ratio of the market value of assets to the book value of assets: the market value is calculated as the sum of the book value of assets and the market value of common stock less the book value of common stock, cash, and deferred taxes. Market values are measured at the end of the fiscal year. |
| *Multiple bidder* | 1 if there are contesting bids for an acquisition |
| *Over 60* | 1 if the CEO is more than 60 years old |
| *Percent unexercisable* | Value of unexercisable options divided by the value of unexercised options |
| *Percent voting power* | Percentage of voting shares held by the CEO |
| *Public target* | 1 if the target firm in an acquisition is publicly listed |
| *R&D/sales* | Research and development expenditures divided by sales |
| *Remaining years* | Expiration year minus current year |
| *Relative size* | Ratio between target and acquirer assets in an acquisition |
| *RiskMetrics data available* | 1 if RiskMetrics data (e.g., voting power) are available |
| *ROA* | Earnings before interest and taxes divided by assets |

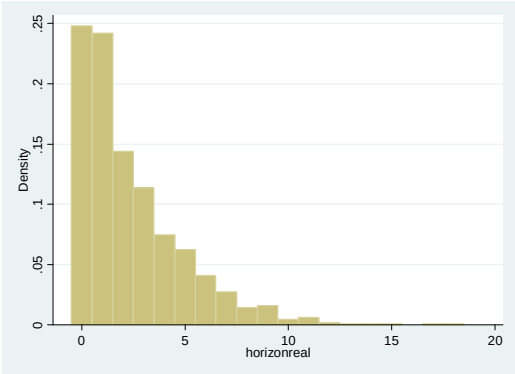
| | |
|---|---|
| *Returns* | Annual stock returns |
| *Salary* | CEO's base salary (in $ thousands) |
| *Same industry* | 1 if acquirer SIC code = target SIC code |
| *Speed* | 1 over the number of days between annoucement and completion of an acquisition |
| *Stock payment* | 1 if an acquisition is completely paid in stock |
| *Stock award* | Value of stock awarded in the current year as a fraction of total pay |
| *Success* | 1 if an acquisition is completed |
| *Tangibility* | 1 minus the ratio of intangible assets to total assets |
| *Tenure* | Number of years the CEO has been in office |
| *Tender offer* | 1 when a tender offer is launched in an acquisition. A tender offer is a formal offer of determined duration to acquire a public company's shares made to equity holders |
| *Termination fees* | 1 if the target or acquirer has agreed to a termination fee agreement whereby a failure to consummate the transaction results in a payment of one party to another |
| *Toehold* | 1 if the acquirer owns more than 0.5% of the target prior to an acquisition |
| *Transaction value* | The total value of consideration paid by an acquirer, excluding fees and expenses, in million US$. The dollar value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants, and stake purchases made within six months of the announcement date of the transaction. Liabilities assumed are included in the value if they are publicly disclosed. Preferred stock is only included if it is being acquired as part of a 100% acquisition. If a portion of the consideration paid by the acquirer is common stock, the stock is valued using the closing price on the last full trading day prior to the announcement of the terms of the stock swap. If the exchange ratio of shares offered changes, the stock is valued based on its closing price on the last full trading date prior to the date of the exchange ratio change |

## FIGURE 1: EX POST HORIZON

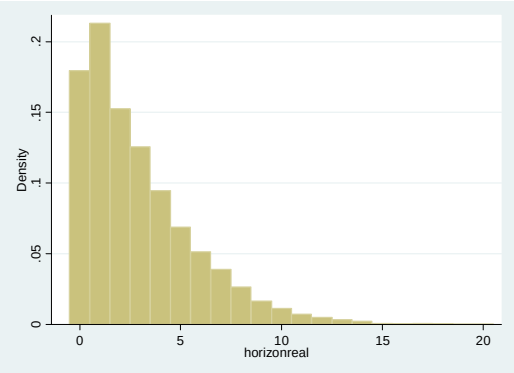
This graph shows the distribution of *ex post* horizon by contract type and the number of remaining years. *Panel A* shows the distribution of at-will contracts, *Panels B, C* and *D* fixed-term contracts. *Panel B* shows all fixed-term contracts, *C* all fixed-term contracts with one year or less remaining, and Panel *D* all fixed-term contracts with five or more years remaining under the contract.



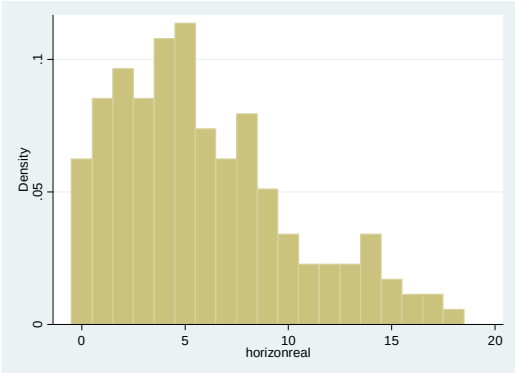

**Panel A: At-will contracts.**




**Panel C: Less than one year remaining** (Fixed-term contracts).



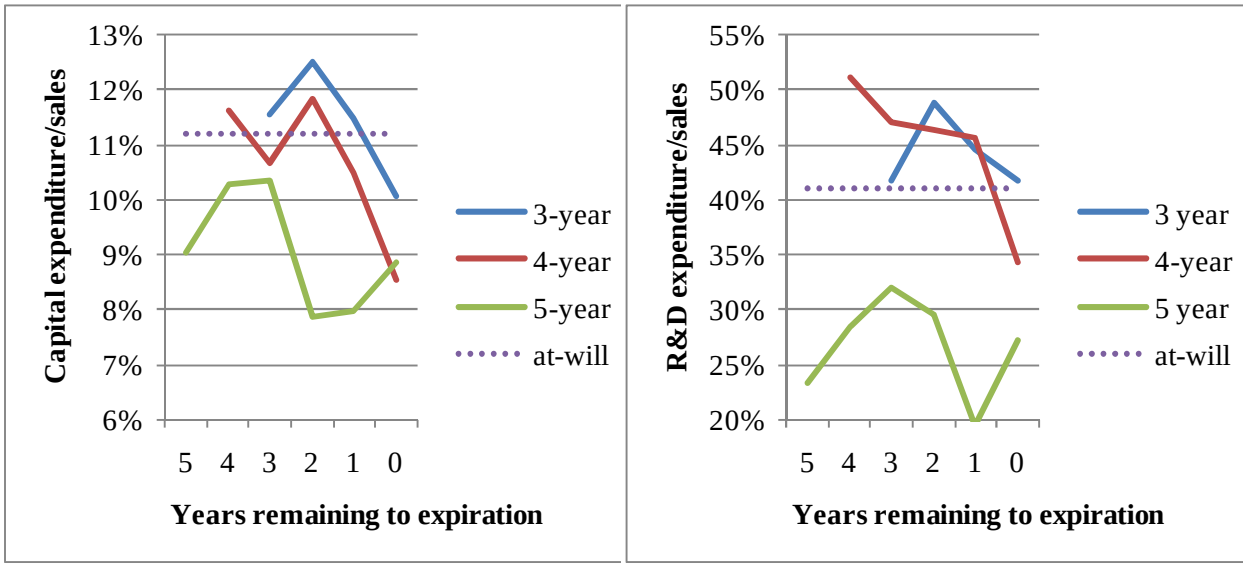

**Panel B: Fixed-term contracts.**




**Panel D: Five or more years remaining** (Fixed-term contracts).

## FIGURE 2: INVESTMENT BY CONTRACT HORIZON

This graph shows the mean investment per remaining year and contract type. *Panel A* shows the average CAPEX/sales, and *Panel B* shows the average R&D/sales.



## TABLE I: SUMMARY STATISTICS AT THE START OF THE CONTRACT

This table presents summary statistics of the sample contracts. *Panel A* shows the number of contracts and their average length sorted by their start year. *Panel B* shows the number of contracts per firm. *Panel C* shows average firm and industry characteristics. *Panel D* reports a breakdown of the contracts by state, excluding states with fewer than 100 contracts. *Panel E* shows average CEO and governance characteristics. *Panel F* shows the number of contracts sorted by length. *Panel G* reports a breakdown of the contracts by Fama-French 49 industry (excluding industries with fewer than 100 contracts). It reports the total number of contracts and the number of at-will and fixed-term contracts per industry. All numbers are measured in the last fiscal year ending before the start date of the contract. All non-discrete numbers are winsorized at the 1% level, except for R&D expenses and market-to-book, which are winsorized at the 5% level.

**Panel A: Number and length of contracts per year**

| Year | Number of contracts | | | Average length | |
|---|---|---|---|---|---|
| | Total sample | Fixed-term | At-will | Total sample | Fixed-term |
| 1989 | 3 | 0 | 3 | | |
| 1990 | 4 | 1 | 3 | 2.00 | 8.00 |
| 1991 | 7 | 1 | 6 | 0.43 | 3.00 |
| 1992 | 10 | 6 | 4 | 2.70 | 4.50 |
| 1993 | 18 | 13 | 5 | 2.78 | 3.85 |
| 1994 | 65 | 45 | 20 | 2.57 | 3.71 |
| 1995 | 111 | 77 | 34 | 2.32 | 3.34 |
| 1996 | 181 | 153 | 28 | 2.91 | 3.44 |
| 1997 | 199 | 159 | 40 | 2.61 | 3.26 |
| 1998 | 239 | 179 | 60 | 2.54 | 3.40 |
| 1999 | 252 | 216 | 36 | 2.80 | 3.26 |
| 2000 | 303 | 242 | 61 | 2.57 | 3.22 |
| 2001 | 291 | 221 | 70 | 2.31 | 3.05 |
| 2002 | 289 | 241 | 48 | 2.48 | 2.97 |
| 2003 | 338 | 262 | 76 | 2.48 | 3.20 |
| 2004 | 367 | 293 | 74 | 2.43 | 3.04 |
| 2005 | 340 | 255 | 85 | 2.11 | 2.81 |
| 2006 | 303 | 233 | 70 | 2.15 | 2.79 |
| 2007 | 345 | 258 | 87 | 2.15 | 2.88 |
| 2008 | 52 | 36 | 16 | 1.88 | 2.72 |
| Total | 3,717 | 2,891 | 826 | | |

**Panel B: Number of contracts per firm**

| # Contracts | Frequency | Percent | Cumulated |
|---|---|---|---|
| 1 | 1,299 | 54.79 | 54.79 |
| 2 | 705 | 29.73 | 84.52 |
| 3 | 241 | 10.16 | 94.69 |
| 4 | 80 | 3.37 | 98.06 |
| 5 | 25 | 1.05 | 99.11 |
| 6 | 12 | 0.51 | 99.62 |
| 7 | 5 | 0.21 | 99.83 |
| 8 | 1 | 0.04 | 99.87 |
| 9 | 2 | 0.08 | 99.96 |
| 10 | 1 | 0.04 | 100 |
| Total | 2,371 | | |

**Panel C: Average firm and industry characteristics by contract**

| | Sample Mean | Fixed-term Mean | At-will Mean | t-Statistic of differences | Non-sample Mean |
|---|---|---|---|---|---|
| Assets ($ millions) | 1,181.62 | 1,200.33 | 1,116.19 | 0.97 | 1,268.18 |
| ROA | 0.9% | 1.2% | -0.1% | 2.51 ** | -2.3% |
| Market-to-book | 2.52 | 2.47 | 2.73 | -2.34 ** | 2.26 |
| Leverage | 21.9% | 23.5% | 16.1% | 5.31 *** | 24.4% |
| Industry sales volatility | 44% | 43% | 47% | -3.67 *** | 48% |
| CAPEX/sales | 11.3% | 11.1% | 11.9% | 0.86 | 14.9% |
| R&D/sales | 39.3% | 38.3% | 42.1% | -0.87 | 39.7% |

**Panel D: Breakdown by state**

| State | *N* | | At-will | | Fixed-term | | COMPUSTAT distribution |
|---|---|---|---|---|---|---|---|
| CA | 604 | 14% | 212 | 35% | 392 | 65% | 14% |
| NY | 373 | 8% | 64 | 17% | 309 | 83% | 10% |
| TX | 265 | 6% | 52 | 20% | 213 | 80% | 7% |
| NJ | 191 | 4% | 28 | 15% | 163 | 85% | 4% |
| FL | 190 | 4% | 35 | 18% | 155 | 82% | 5% |
| PA | 183 | 4% | 30 | 16% | 153 | 84% | 3% |
| IL | 178 | 4% | 53 | 30% | 125 | 70% | 5% |
| MA | 157 | 4% | 45 | 29% | 112 | 71% | 4% |
| OH | 147 | 3% | 20 | 14% | 127 | 86% | 2% |

**Panel E: Average CEO and governance characteristics by contract**

| | Sample Mean | Fixed-term Mean | At-will Mean | t-Statistic of differences |
|---|---|---|---|---|
| Age | 51.87 | 51.98 | 51.47 | 1.62 |
| Former CEO | 25% | 25% | 26% | 0.98 |
| Tenure | 3.76 | 3.89 | 3.31 | 2.54 ** |
| Over 60 | 14% | 14% | 13% | 1.05 |
| Percent CEO voting power | 3.34 | 3.64 | 2.26 | 1.61 |
| Compensation (2000 $, thousands) | 2,607.26 | 2,685.22 | 2,329.08 | 1.26 |
| Incentive to total compensation | 50.7% | 50.6% | 51.2% | -0.37 |
| Percent unexercisable | 26.4% | 26.0% | 27.6% | -0.65 |
| Governance index | 9.11 | 9.18 | 8.90 | 1.38 |
| Stock award | 0.41 | 0.41 | 0.42 | -0.38 |
| CEO voting | 3.15 | 3.38 | 2.34 | 1.28 |
| Directors voting | 9.08 | 9.28 | 8.42 | 0.61 |
| Board size | 7.02 | 7.07 | 6.88 | 0.53 |
| Insider board | 0.06 | 0.07 | 0.04 | 1.80 * |
| Chairman and CEO | 52.3% | 53.0% | 49.9% | 1.58 |
| Ex post horizon | 3.87 | 3.99 | 3.67 | 2.73 *** |
| Exception (public policy) | 72.8% | 71.4% | 77.7% | -3.61 *** |
| Exception (implied contract) | 66.6% | 65.5% | 70.7% | -2.81 *** |
| Exception (good faith and fair dealing) | 25.8% | 23.2% | 34.6% | -6.63 *** |

**Panel F: Number of contracts sorted by length**

| Length (years) | Frequency | Percent | Cumulated |
|---|---|---|---|
| 0 | 842 | 22.65 | 22.65 |
| 1 | 329 | 8.85 | 31.50 |
| 2 | 508 | 13.67 | 45.17 |
| 3 | 1,252 | 33.68 | 78.85 |
| 4 | 267 | 7.18 | 86.04 |
| 5 | 416 | 11.19 | 97.23 |
| 6 | 60 | 1.61 | 98.84 |
| 7 | 21 | 0.56 | 99.41 |
| 8 | 6 | 0.16 | 99.57 |
| 9 | 4 | 0.11 | 99.68 |
| 10 | 8 | 0.22 | 99.89 |
| >10 | 4 | 0.12 | 100.00 |

**Panel G: Breakdown by industry**

| Industry | At-will | | Fixed-term | | Total |
|---|---|---|---|---|---|
| Software | 122 | 31% | 311 | 79% | 396 |
| Medical equipment | 43 | 25% | 139 | 82% | 169 |
| Chips | 48 | 21% | 191 | 84% | 228 |
| Drugs | 69 | 20% | 272 | 80% | 339 |
| Wholesale | 27 | 18% | 130 | 89% | 146 |
| Business services | 51 | 18% | 236 | 83% | 286 |
| Trading | 27 | 14% | 171 | 86% | 199 |
| Insurance | 18 | 13% | 106 | 77% | 137 |
| Communication | 21 | 13% | 131 | 82% | 160 |
| Oil | 16 | 13% | 101 | 80% | 127 |
| Retail | 34 | 13% | 225 | 83% | 272 |
| Banking | 55 | 10% | 485 | 89% | 548 |

## TABLE II: SUMMARY STATISTICS BY FIRM AND YEAR

This table presents summary statistics of the subsequent performance in the contract period. The sample contains an observation for each sample firm for each year in which the contract is not terminated. *Panel A* shows average contract horizon characteristics. *Panel B* shows average firm characteristics. *Panel C* shows average firm characteristics for all firm-years of the COMPUSTAT population outside the contract sample. All non-discrete numbers are winsorized at the 1% level, except for R&D expenses and market-to-book, which are winsorized at the 5% level.

**Panel A: Average governance characteristics by firm and year**

| | *N* | Total sample | Fixed-term | At-will | t-Statistic of differences |
|---|---|---|---|---|---|
| Chairman and CEO | 12,202 | 53% | 54% | 50% | 3.08 *** |
| Tenure | 12,202 | 5.59 | 5.48 | 5.82 | -2.69 *** |
| Age | 12,202 | 52.76 | 52.97 | 52.28 | 4.34 *** |
| Over 60 | 12,202 | 20% | 21% | 18% | 3.01 *** |
| Governance index | 5,559 | 9.34 | 9.40 | 9.16 | 2.81 *** |
| Compensation (2000 $, thousands) | 7,509 | 2,414 | 2,482 | 2,252 | 1.99 ** |
| Incentive to total | 6,638 | 31% | 31% | 33% | -3.06 *** |
| Percent unexercisable | 2,474 | 7% | 7% | 7% | -0.79 |
| Change in base salary | 2,751 | 27% | 27% | 26% | 0.44 |
| All other compensation (2000 $, thousands) | 2,958 | 231 | 257 | 173 | 3.25 *** |
| Ex post horizon | 5,933 | 2.88 | 2.88 | 2.87 | 0.07 |

**Panel B: Average firm characteristics by firm and year**

| | *N* | Total sample | Fixed-term | At-will | t-Statistic of differences |
|---|---|---|---|---|---|
| Assets ($ millions) | 12,202 | 1257.47 | 1287.20 | 1186.76 | 2.24 ** |
| ROA | 11,963 | -1.69% | -1.55% | -2.01% | 0.87 |
| CAPEX/sales | 11,130 | 8.90% | 8.64% | 9.50% | -3.05 *** |
| R&D/sales | 5,466 | 31.23% | 29.82% | 33.96% | -2.44 ** |
| # of acquisitions | 12,202 | 53.13% | 53.59% | 52.02% | 0.64 |
| Market-to-book | 11,366 | 2.48 | 2.37 | 2.75 | -6.66 *** |
| Returns | 12,196 | 1.75% | 1.52% | 2.24% | -2.14 ** |
| Leverage | 12,202 | 21.74% | 24.03% | 16.28% | 8.93 *** |
| Tangibility | 11,284 | 87% | 88% | 86% | 4.95 *** |

**Panel C: Average firm-year characteristics of sample without contracts**

| | *N* | Mean |
|---|---|---|
| Assets | 87,494 | 1,268.18 |
| ROA | 85,165 | -2.28% |
| CAPEX/sales | 81,067 | 14.91% |
| R&D/sales | 39,417 | 39.72% |
| Market-to-book | 75,987 | 2.26 |

## TABLE III: CONTRACT HORIZON AND TURNOVER PROBABILITY

This table presents the results of hazard model estimations, reporting hazard ratios for CEO turnover and z-statistics underneath. Columns 1 and 3 report results for the Cox proportional hazard model, Columns 2 and 4 for the Weibull hazard model. Columns 1 and 2 report results for the whole sample, Columns 3 and 4 for the subsample of fixed-term contracts.

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| | | all observations | | fixed-term | |
| | | Cox | Weibull | Cox | Weibull |
| **Horizon** | At-will | 1.224** | 1.235** | | |
| | | (2.34) | (2.43) | | |
| | Remaining years | | | 0.805*** | 0.804*** |
| | | | | (-6.1) | (-6.15) |
| | Age | 0.994 | 0.988** | 0.993 | 0.986** |
| | | (-1.16) | (-2.19) | (-1.06) | (-2.06) |
| | Log firm age | 0.778*** | 0.754*** | 0.824*** | 0.797*** |
| | | (-4.79) | (-5.29) | (-3.12) | (-3.59) |
| Control variables | Returns | 0.575* | 0.563* | 0.461* | 0.463* |
| **(Performance)** | | (-1.74) | (-1.8) | (-1.93) | (-1.91) |
| | Industry returns | 1.007 | 1.026 | 0.855 | 0.855 |
| | | (0.02) | (0.08) | (-0.41) | (-0.41) |
| | ROA growth | 0.986 | 0.986 | 0.992 | 0.993 |
| | | (-0.69) | (-0.71) | (-0.32) | (-0.28) |
| Control variables | Divdend payer | 1.022 | 1.034 | 0.946 | 0.949 |
| **(Firm** | | (0.24) | (0.37) | (-0.5) | (-0.47) |
| **Characteristics)** | Market-to-book | 1.012 | 1.016 | 1.059** | 1.062** |
| | | (0.56) | (0.76) | (2.24) | (2.34) |
| | Log sales | 1.053** | 1.053** | 1.072** | 1.067** |
| | | (2.17) | (2.12) | (2.33) | (2.16) |
| | Acquisition expenses | 1.511 | 1.605 | 0.302 | 0.299 |
| | | (0.24) | (0.27) | (-0.53) | (-0.53) |
| | Industry homogeneity | 0.848* | 0.856 | 0.849 | 0.861 |
| | | (-1.74) | (-1.63) | (-1.37) | (-1.25) |
| | Institutional ownership | 0.447*** | 0.443*** | 0.487*** | 0.487*** |
| | | (-5.17) | (-5.23) | (-3.85) | (-3.86) |
| Control variables | Chairman and CEO | 0.386*** | 0.355*** | 0.400*** | 0.373*** |
| **(Governance)** | | (-10.96) | (-11.91) | (-8.62) | (-9.27) |
| | Stock award | 0.555*** | 0.550*** | 0.562** | 0.553** |
| | | (-2.88) | (-2.93) | (-2.34) | (-2.41) |
| | CEO voting | 0.960* | 0.957* | 0.984 | 0.981 |
| | | (-1.8) | (-1.96) | (-0.81) | (-0.92) |
| | Insider board | 0.998 | 0.997 | 1.001 | 1.001 |
| | | (-0.36) | (-0.45) | (0.17) | (0.18) |
| | Board size | 1.013 | 1.013 | 1.013 | 1.017 |
| | | (0.79) | (0.74) | (0.64) | (0.85) |
| | Directors voting | 1.393 | 1.362 | 1.78 | 1.802 |
| | | (0.69) | (0.64) | (1.07) | (1.1) |
| | Risk metrics data available | 0.948 | 0.946 | 0.872 | 0.852 |
| | | (-0.29) | (-0.3) | (-0.59) | (-0.68) |
| **Time** | Year fixed | Yes | Yes | Yes | Yes |
| *N* | | 5,821 | 5,821 | 3,986 | 3,986 |

## TABLE IV: CHOICE OF CONTRACT TYPE

This table presents the marginal effects from Probit regressions and coefficients of OLS regressions in which the dependent variable is the at-will indicator. All variables are measured in the last fiscal year ending before the start date of the contract. Standard errors are heteroskedasticity robust and clustered by year. All variables (except for discrete variables) are winsorized at the 1% level. This table shows coefficients along with *t*-statistics in parentheses.

| | | **Dependent variable = Contract type (1 = at-will, 0 = fixed-term)** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** |
| | | **Probit** | **Probit** | **Probit** | **Probit** | **OLS** | **OLS** | **OLS** |
| **Geography** | Exception (good faith & fair dealing) | 0.248*** | 0.323*** | 0.353*** | 0.337*** | 0.355*** | 0.252*** | 0.265*** |
| | | (4.22) | (7.09) | (7.16) | (6.59) | (4.72) | (2.95) | (4.4) |
| | Exception (implied contract) | 0.076 | | | | | | |
| | | (1.42) | | | | | | |
| | Exception (public policy) | 0.027 | | | | | | |
| | | (0.51) | | | | | | |
| | Anti-takeover | -0.015 | | | | | | |
| | | (-1.22) | | | | | | |
| | Garmaise | -0.045 | | | | | | |
| | | (-0.86) | | | | | | |
| **Governance** | Tenure | | -0.010** | -0.012*** | -0.011** | -0.012* | -0.006 | -0.008 |
| | | | (-2.34) | (-2.69) | (-2.46) | (-1.9) | (-0.83) | (-1.52) |
| | Governance index | | 0.014*** | 0.007 | 0.008 | 0.002 | 0.009 | 0.013* |
| | | | (2.6) | (1.39) | (1.55) | (0.24) | (0.81) | (1.8) |
| | Former CEO | | -0.052 | | | | | |
| | | | (-0.43) | | | | | |
| | Age | | -0.005* | | | | | |
| | | | (-1.94) | | | | | |
| **Risk** | Industry sales volatility | | | 0.641* | 0.505 | 0.717 | | |
| | | | | (1.94) | (1.44) | (1.078) | | |
| | Industry survival rate | | | -0.237 | | | | |
| | | | | (-0.96) | | | | |
| | Industry homogeneity | | | 0.017 | | | | |
| | | | | (0.33) | | | | |
| **Second stage variables** | Investment regressions | | | | | Yes | | |
| | Compensation regressions | | | | | | Yes | |
| | Firm value regressions | | | | | | | Yes |
| **Data availability** | RiskMetrics data available | | Yes | Yes | Yes | Yes | Yes | Yes |
| **Constant** | | -0.844*** | -0.606*** | -0.647*** | -0.865*** | 0.346 | -0.584 | 1.647 |
| | | (-11.11) | (-4.73) | (-2.63) | (-19.53) | (0.41) | (-0.87) | (1.45) |
| *N* | | 3,717 | 3,717 | 3,717 | 3,717 | 3,717 | 1,636 | 2,846 |

## TABLE V: CONTRACT HORIZON AND INVESTMENT

The dependent variable is CAPEX/sales minus the Fama-French industry average in *Panels A, B* and *D*, R&D/sales minus the industry average in Columns 1 and 2 of *Panel C* and the number of acquisition made by the firm in the year according to the SDC in Columns 3 and 4 of *Panel C*. *Panel A*, Column 1 is a three-stage least-squares regression in which expected horizon is estimated as a function of contract type, the number of remaining years if the contract has a fixed term, an indicator for incumbent CEOs, firm size, tenure, and executive age, and the at-will indicator is instrumented with the regression reported in Column 6 of Table IV. The sample used in Column 2 of *Panel A*, Columns 1 and 3 of *Panel C*, and Columns 3, 6, and 8 of *Panel D* include all firms with fixed-term contracts; and in Column 3 of *Panels A* include only firms with five-year contracts. Column 5 of *Panel A*, Columns 2 and 4 in *Panel C* and *Panel D*, Column 7 are regressions in which the at-will indicator is instrumented with the regression reported in Column 6 of Table IV. In Column 2 of *Panel A*, *Panel B*, Columns 1 and 3 of *Panel C*, Columns 3, 6, and 8 of *Panel D*, the Heckman's lambda is computed with the regression reported in Table IV, Column 5; in Column 3 of *Panel A*, with a regression using the same regressors where the dependent variable is an indicator for five-year contracts. Column 1 of *Panel B* adds indicator variables for the number of remaining years to the independent variables described above. Column 2 of *Panel B* includes only the indicator variables for the number of remaining years and the Heckman's lambda as independent variables. *Panel D*, Column 1 reports a regression including all COMPUSTAT firms between 1992 and 2008, where all CEOs without a fixed-term contract are labeled at-will. *Panel D*, Columns 2 and 3 report regressions that include only contracts of firms that offer at least one at-will and one fixed-term contract. *Panel D*, Column 4 reports an IV regression in which at-will is estimated with the industry-year average fraction of at-will contracts. *Panel D*, Columns 5 and 6 report regressions that include CEO fixed effects. All non-discrete variables are winsorized at the 1% level, except for R&D expenses and Q, which are winsorized at the 5% level. Standard errors are heteroskedasticity robust and clustered by year for all specifications but the one reported in Column 1 of *Panels A*. This table shows coefficients, the *t*-statistics (in parentheses), and the *F*-statistic for the instrumented regressions.

| | | Panel A: Dependent variable = CAPEX/Sales (industry adj.) | | | | |
|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) |
| | | Terminated | Fixed-term | | All | |
| | | Expected horizon | All fixed-term | 5-year contracts | OLS | IV |
| **Horizon** | Expected horizon | 0.374** | | | | |
| | | (2.518) | | | | |
| | Remaining years | | 0.021** | 0.039** | | |
| | | | (2.125) | (2.446) | | |
| | At-will | | | | -0.033 | -0.647* |
| | | | | | (-1.414) | (-1.974) |
| | Tenure | 0.009 | -0.002 | -0.001 | -0.004** | -0.003 |
| | | (1.385) | (-0.708) | (-0.23) | (-2.449) | (-1.71) |
| | Age | -0.004 | -0.001 | -0.001 | 0.001 | 0.000 |
| | | (-0.634) | (-0.741) | (-0.339) | (0.63) | (0.208) |
| | Log firm age | -0.021 | -0.029 | -0.073 | -0.037*** | -0.038** |
| | | (-0.469) | (-1.597) | (-1.396) | (-2.984) | (-2.596) |
| Control variables | *Q* (lag 1) | 0.032** | 0.043*** | 0.061** | 0.019*** | 0.020** |
| **(Investment)** | | (1.992) | (3.875) | (2.791) | (3.076) | (2.693) |
| | *Q* (lag 2) | 0.002 | -0.011 | 0.026 | 0.003 | 0.01 |
| | | (0.148) | (-0.707) | (1.453) | (0.514) | (0.914) |
| | Accrual | -0.001*** | -0.001*** | -0.001* | -0.001*** | -0.001*** |
| | | (-3.705) | (-3.981) | (-1.926) | (-4.867) | (-4.734) |
| | ROA | -0.415* | 0.159 | 0.748** | 0.385 | 0.127 |
| | | (-1.799) | (0.568) | (2.201) | (1.563) | (0.632) |
| | Size | -0.131*** | -0.133*** | -0.122** | -0.140*** | -0.119*** |
| | | (-3.458) | (-6.58) | (-2.701) | (-9.395) | (-7.992) |
| Control variables | Leverage | 0.009 | -0.080* | -0.045 | 0.005 | -0.086*** |
| **(Finance)** | | (0.102) | (-2.075) | (-0.4) | (0.156) | (-2.976) |
| | Cash flow | 0.456 | 0.051 | -0.072 | 0.327** | 0.287 |
| | | (1.076) | (0.22) | (-0.131) | (2.758) | (1.376) |
| | Tangibility | 0.960*** | 0.622*** | 0.881*** | 0.591*** | 0.506*** |
| | | (5.238) | (11.829) | (6.323) | (11.4) | (8.319) |
| | Cash flow x tangibility | -0.721 | -0.131 | -0.235 | -0.642*** | -0.375 |
| | | (-1.585) | (-0.348) | (-0.405) | (-3.762) | (-1.215) |
| | KZ | 0.007 | 0.001 | -0.004 | -0.002 | 0.001 |
| | | (1.339) | (0.172) | (-0.809) | (-0.47) | (0.156) |
| Control variables | Idiosyncratic risk | -1.121 | -3.632*** | -4.792** | -3.553*** | -3.346*** |
| **(Risk)** | | (-0.701) | (-6.307) | (-2.809) | (-4.321) | (-6.104) |
| | Industry sales volatility | -0.29 | -0.641** | -0.414 | -0.726*** | -0.529** |
| | | (-0.554) | (-2.397) | (-0.93) | (-4.509) | (-2.429) |
| Control variables | Governance index | -0.001 | 0.012 | 0.019 | 0.001 | -0.002 |
| **(Governance)** | | (-0.025) | (1.39) | (1.055) | (0.064) | (-0.262) |
| | Chairman and CEO | 0.128 | 0.045 | -0.001 | 0.03 | 0.039 |
| | | (1.415) | (0.93) | (-0.019) | (1.477) | (1.309) |
| | Institutional ownership | 0.101 | 0.178*** | 0.023 | 0.217*** | 0.180*** |
| | | (0.829) | (4.363) | (0.237) | (9.196) | (5.548) |
| **Heckman** | Lambda | | -0.054** | 0.068*** | | |
| | | | (-2.709) | (5.266) | | |
| **Constant** | | | -0.751*** | -0.492 | -0.241* | -0.102 |
| | | | (-5.592) | (-1.355) | (-1.802) | (-0.95) |
| **Year fixed** | | Yes | Yes | Yes | Yes | Yes |
| **Data availability** | RiskMetrics data available | Yes | Yes | Yes | Yes | Yes |
| $\mathbf{R}^2$ | | | 10% | 10% | 10% | |
| ***F*** | | 20.95 | | | | 79.04 |
| ***N*** | | 3,374 | 4,460 | 934 | 7,749 | 6,885 |

| Panel B: Dependent variable = Capex/Sales (industry adjusted) | | |
|---|---|---|
| | (1) | (2) |
| **# Remaining years** | **With control variables** | **Without control variables** |
| 0 | -0.092** | -0.269*** |
| | (-2.28) | (-11.11) |
| 1 | -0.075* | -0.221*** |
| | (-1.97) | (-11.49) |
| 2 | -0.063 | -0.199*** |
| | (-1.5) | (-7.27) |
| 3 | -0.012 | -0.177*** |
| | (-0.28) | (-4.72) |
| 4 | 0.03 | -0.196*** |
| | (0.46) | (-3.63) |
| 5 | -0.016 | -0.255*** |
| | (-0.29) | (-5.89) |
| 6 | -0.098 | -0.390*** |
| | (-1.11) | (-6.9) |
| 7 | -0.106 | -0.294 |
| | (-0.33) | (-1.05) |
| 8 | -0.134 | -0.550*** |
| | (-1.11) | (-3.89) |
| 9 | 0.11 | -0.385 |
| | (0.39) | (-1.48) |
| 10 | 0.121 | -0.469** |
| | (0.51) | (-2.55) |
| >10 | Yes | Yes |
| **Heckman's Lambda** | -0.629*** | -0.006 |
| | (-4.91) | (-0.04) |
| **Control variables** | Yes | No |
| $\mathbf{R^2}$ | 10.8% | 0.1% |
| *N* | 4,460 | 6,990 |

| Dependent variable | | Panel C: Other measures of investment | | | |
|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) |
| | | R&D expenses | | # Acquisitions | |
| | | Fixed-term | All (IV) | Fixed-term | All (IV) |
| **Horizon** | Remaining years | 0.017** | | -0.001 | |
| | | (2.2) | | (-0.074) | |
| | At-will | | -1.929*** | | -0.464** |
| | | | (-7.079) | | (-2.807) |
| | Tenure | -0.004 | -0.002 | -0.001 | -0.002 |
| | | (-1.187) | (-0.607) | (-0.319) | (-0.893) |
| | Age | -0.002 | -0.004 | 0.002 | 0.005* |
| | | (-0.887) | (-1.587) | (0.606) | (1.815) |
| | Log firm age | -0.059*** | -0.080*** | 0.004 | -0.015 |
| | | (-4.407) | (-4.952) | (0.18) | (-0.544) |
| Control variables | *Q* (lag 1) | 0.014 | 0.013 | 0.019** | 0.019** |
| **(Investment)** | | (1.194) | (0.894) | (2.756) | (2.555) |
| | *Q* (lag 2) | -0.004 | 0.013 | 0.005 | 0.012** |
| | | (-0.353) | (0.985) | (0.757) | (2.729) |
| | Accrual | 0.000 | 0.000 | 0.001*** | 0.001*** |
| | | (1.196) | (0.094) | (5.515) | (5.399) |
| | ROA | -0.213 | -0.528** | -0.042 | -0.076 |
| | | (-0.777) | (-2.492) | (-0.614) | (-1.156) |
| | Size | -0.168*** | -0.137*** | 0.077*** | 0.092*** |
| | | (-6.899) | (-6.42) | (4.996) | (6.004) |
| Control variables | Leverage | -0.063 | -0.236** | -0.093* | -0.134*** |
| **(Finance)** | | (-0.845) | (-2.542) | (-2.081) | (-3.372) |
| | Cash flow | 0.361 | 0.561** | 0.983*** | 1.049*** |
| | | (1.317) | (2.14) | (4.504) | (5.295) |
| | Tangibility | 0.029 | -0.072 | -0.919*** | -1.002*** |
| | | (0.238) | (-0.654) | (-7.103) | (-9.473) |
| | Cash flow x tangibility | -0.515 | -0.518** | -1.096*** | -1.173*** |
| | | (-1.734) | (-2.116) | (-4.863) | (-5.985) |
| | KZ | 0.003 | 0.005 | -0.001 | 0.000 |
| | | (0.703) | (1.211) | (-0.509) | (-0.085) |
| Control variables | Idiosyncratic risk | -2.048 | -0.938 | -2.883*** | -2.874*** |
| **(Risk)** | | (-1.456) | (-0.658) | (-6.029) | (-5.343) |
| | Industry sales volatility | -0.142 | 0.089 | 0.456 | 0.427 |
| | | (-0.601) | (0.249) | (1.237) | (1.158) |
| Control variables | Governance index | 0.004 | 0.002 | 0.001 | 0.003 |
| **(Governance)** | | (0.87) | (0.268) | (0.051) | (0.306) |
| | Chairman and CEO | 0.039 | 0.008 | 0.016 | 0.023 |
| | | (1.312) | (0.206) | (0.338) | (0.535) |
| | Institutional ownership | 0.096*** | 0.080** | 0.241*** | 0.242*** |
| | | (3.739) | (2.094) | (4.201) | (3.521) |
| **Heckman** | Lambda | -0.207*** | 0.268*** | | |
| | | (-6.367) | (5.987) | | |
| **Constant** | | 0.064 | -0.07 | 0.722 | 0.807** |
| | | (0.407) | (-0.186) | (0.779) | (2.599) |
| **Year fixed** | | Yes | Yes | Yes | Yes |
| **Data availability** | RiskMetrics data available | Yes | Yes | Yes | Yes |
| $\mathbf{R^2}$ | | 9% | | 11% | |
| ***F*** | | | 79.04 | | 79.04 |
| ***N*** | | 3,310 | 6,036 | 5,629 | 6,036 |

| | | Panel D: Robustness. Dependent variable = CAPEX/Sales (industry-adjusted) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | | All firms | Sample | Fixed | Sample | Sample | Fixed | Sample | Fixed |
| | | COMPU-STAT | Switchers | Switchers | Alternative instrument | Executive fixed effects | Executive fixed effects | Compen-sation | Compen-sation |
| **Horizon** | Remaining years | | | 0.034** | | | 0.017* | | 0.015** |
| | | | | (2.8) | | | (1.74) | | (2.39) |
| | At-will | -0.160*** | -0.647* | | -0.850*** | -0.108* | | -0.676** | |
| | | (-3.24) | (-1.97) | | (-5.163) | (-1.83) | | (-2.14) | |
| | Tenure | | -0.003 | -0.001 | -0.004* | | | -0.004* | -0.004** |
| | | | (-1.71) | (-0.13) | (-2) | | | (-2) | (-2.21) |
| | Age | | 0.000 | 0.005 | -0.001 | | | -0.001 | -0.001 |
| | | | (0.21) | (1.74) | (-0.39) | | | (-0.39) | (-0.99) |
| | Log firm age | | -0.038** | -0.009 | -0.046*** | 0.152** | 0.226*** | -0.046*** | -0.029* |
| | | | (-2.6) | (-0.33) | (-3.325) | (2.29) | (2.96) | (-3.33) | (-1.77) |
| **Compensation** | Incentive to total compensation | | | | | | | -0.059 | -0.082** |
| | | | | | | | | (-1.69) | (-2.74) |
| | CEO voting | | | | | | | 0.001 | -0.001 |
| | | | | | | | | (0.6) | (-0.87) |
| | Log compensation | | | | | | | 0.140*** | 0.175*** |
| | | | | | | | | (5.83) | (8.07) |
| | Percent unexercisable | | | | | | | -0.031 | 0.013 |
| | | | | | | | | (-0.51) | (0.23) |
| Control variables | *Q* (lag 1) | 0.024*** | 0.020** | 0.014 | 0.017** | 0.026*** | 0.025*** | 0.017** | 0.023*** |
| **(Investment)** | | (10.86) | (2.69) | (0.46) | (2.418) | (4.57) | (3.93) | (2.42) | (3.36) |
| | *Q* (lag 2) | 0.008*** | 0.01 | -0.01 | 0.009 | 0.013** | 0.016*** | 0.009 | -0.003 |
| | | (3.29) | (0.91) | (-0.39) | (0.805) | (2.44) | (2.65) | (0.81) | (-0.26) |
| | Accrual | -0.000*** | -0.001*** | -0.001*** | -0.001*** | 0.000 | 0.000 | -0.001*** | -0.001*** |
| | | (-3.65) | (-4.73) | (-3.7) | (-5.3) | (0.59) | (0.22) | (-5.3) | (-5.61) |
| | ROA | -0.307*** | 0.127 | 0.712*** | 0.149 | 0.196** | 0.277*** | 0.149 | 0.215 |
| | | (-10.69) | (0.63) | (3) | (0.762) | (2.18) | (2.8) | (0.76) | (1.01) |
| | Size | -0.096*** | -0.119*** | -0.184*** | -0.149*** | -0.426*** | -0.460*** | -0.149*** | -0.164*** |
| | | (-32.57) | (-7.99) | (-4.58) | (-8.152) | (-23.18) | (-22.45) | (-8.15) | (-8.72) |
| Control variables | Leverage | -0.192*** | -0.086*** | 0.079 | -0.055* | -0.027 | 0.01 | -0.055* | 0.03 |
| **(Finance)** | | (-12.06) | (-2.98) | (0.77) | (-1.734) | (-0.56) | (0.19) | (-1.73) | (1.07) |
| | Cash flow | 0.381*** | 0.287 | 0.796** | 0.31 | -0.115 | -0.278 | 0.31 | 0.255 |
| | | (7.77) | (1.38) | (2.29) | (1.468) | (-0.74) | (-1.59) | (1.47) | (1.24) |
| | Tangibility | 0.460*** | 0.506*** | 1.324*** | 0.489*** | 0.097 | 0.107 | 0.489*** | 0.513*** |
| | | (10.36) | (8.32) | (8.16) | (8.546) | (0.88) | (0.86) | (8.55) | (11.88) |
| | Cash flow x tangibility | -0.289*** | -0.375 | -0.896 | -0.36 | 0.078 | 0.348* | -0.36 | -0.348 |
| | | (-5.52) | (-1.22) | (-1.7) | (-1.163) | (0.45) | (1.76) | (-1.16) | (-1.01) |
| | KZ | -0.004*** | 0.001 | 0.001 | 0.001 | -0.001 | 0.003 | 0.001 | 0.000 |
| | | (-4.4) | (0.16) | (0.18) | (0.203) | (-0.3) | (1.14) | (0.2) | (0) |
| Control variables | Idiosyncratic risk | -1.009*** | -3.346*** | 0.933 | -2.939*** | 0.625 | 1.419 | -2.939*** | -3.496*** |
| **(Risk)** | | (-3.39) | (-6.1) | (0.44) | (-5.352) | (0.69) | (1.43) | (-5.35) | (-6.71) |
| | Industry sales volatility | -0.315*** | -0.529** | -1.118*** | -0.567** | -0.052 | -0.041 | -0.567** | -0.605*** |
| | | (-3) | (-2.43) | (-4.81) | (-2.841) | (-0.26) | (-0.19) | (-2.84) | (-3.6) |
| Control variables | Governance index | | -0.002 | -0.054*** | -0.002 | -0.035** | -0.033** | -0.002 | -0.004 |
| **(Governance)** | | | (-0.26) | (-3.52) | (-0.201) | (-2.53) | (-2.1) | (-0.2) | (-0.61) |
| | Chairman and CEO | | 0.039 | 0.026 | 0.029 | -0.094 | -0.115 | 0.029 | 0.022 |
| | | | (1.31) | (0.29) | (0.998) | (-1.16) | (-1.28) | (1) | (0.71) |
| | Institutional ownership | 0.113** | 0.180*** | 0.303*** | 0.153*** | 0.043 | 0.033 | 0.153*** | 0.126*** |
| | | (2.01) | (5.55) | (2.95) | (5.174) | (0.73) | (0.51) | (5.17) | (4.51) |
| **Heckman** | Lambda | | | 0.025 | | | 0.579 | | -0.060** |
| | | | | (0.38) | | | (1.21) | | (-2.62) |
| **Constant** | | -0.180*** | -1.602*** | -0.787** | 1.238*** | 1.907 | 0.054 | 0.107 | -0.430*** |
| | | (-2.61) | (-3.76) | (-2.91) | (5.414) | (1.43) | (0.07) | (0.87) | (-2.94) |
| **Year fixed** | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Executive fixed** | | | | | | Yes | Yes | | |
| **Data availability** | ExecuComp data available | | | | | | | Yes | Ues |
| | RiskMetrics data available | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | | 7% | 5% | 11% | | 63% | 61% | | 9% |
| *F* | | | | | 55.01 | | | 78.79 | |
| *N* | | 55,908 | 1,451 | 739 | 6,469 | 5,568 | 4,460 | 5,568 | 4,460 |

## TABLE VI: PROPENSITY SCORE RESULTS

This table presents the covariate means for the at-will and fixed-term samples, where the at-will sample includes all firms of the COMPUSTAT population between 1992 and 2008 without contract data. *Panel A* is un-matched (the original sample). *Panels B* to *D* include all firm-years under fixed-term contracts and the 10 at-will firm-years with the closest propensity scores. Propensity scores are computed as fitted values of regressions with CAPEX/sales (*Panel B*), R&D/sales (*Panel C*), and market-to-book as the dependent variable (*Panel D*). Independent variables are the firm and industry related control variables listed in Tables V and X as well as industry indicator variables.

| | **Panel A: Un-matched sample** | | | | **Panel B: Sample matched with CAPEX controls** | | | |
|---|---|---|---|---|---|---|---|---|
| | **At-will** | **Fixed-term** | **Difference** | **t-stat** | **At-will** | **Fixed-term** | **Difference** | **t-stat** |
| Capex/sales | 16% | 7% | 9% | 9.37 *** | 16% | 29% | -13% | -7.47 *** |
| Assets | 1,133 | 2,536 | (1,402) | -22.59 *** | 1,133 | 1,080 | 53 | 0.14 |
| Market-to-book | 1.92 | 2.43 | (0.51) | -4.08 *** | 1.92 | 1.38 | 0.54 | 1.53 |
| N | 53,803 | 1,436 | | | 14,360 | 1,436 | | |
| | | | | | **Panel C: Sample matched with R&D controls** | | | |
| R&D/sales | 24% | 7% | 17% | 10.92 *** | 24% | 35% | -10% | -3.65 *** |
| Assets | | | | | 1,039 | 830 | 209 | 0.57 |
| Market-to-book | | | | | 2.22 | 2.84 | (0.62) | -1.65 |
| N | 27,987 | 761 | | | 7,610 | 761 | | |
| | | | | | **Panel D: Sample matched with Market-to-book controls** | | | |
| Market-to-book | | | | | 2.28 | 2.59 | (0.31) | -2.37 ** |
| N | 78,767 | 1,830 | | | 18,300 | 1,830 | | |

## TABLE VII: SUMMARY STATISTICS - ACQUISITIONS

This table presents summary statistics for the acquisition sample. Panel A presents acquirer firm and CEO characteristics, Panel B target firm characteristics, and Panel C transaction characteristics. All non-discrete variables variables are winsorized at the 1% level, except for market-to-book, which is winsorized at the 5% level.

| Variable | *N* | Mean | | | t-statistic of differences |
|---|---|---|---|---|---|
| | | All | Fixed-term | At-will | |
| **Panel A: Acquirer characteristics** | | | | | |
| Assets ($ millions) | 585 | 2,517 | 2,797 | 1,920 | 3.22 *** |
| Market-to-book | 586 | 2.74 | 2.65 | 2.94 | (1.74) * |
| ROA | 586 | 4% | 4% | 4% | (0.75) |
| CAPEX/Sales | 542 | 14% | 12% | 17% | (1.91) * |
| At-will | 586 | 32% | 0 | 1 | |
| Chairman & CEO | 507 | 56% | 58% | 53% | 1.02 |
| Tenure | 586 | 5.93 | 5.15 | 7.59 | (3.99) *** |
| Age | 586 | 52.78 | 52.21 | 53.99 | (2.39) ** |
| **Panel B: Target characteristics** | | | | | |
| Assets ($ millions) | 255 | 2,868.17 | 3,229.42 | 2,119.57 | 2.15 ** |
| Market-to-book | 169 | 4.54 | 4.77 | 4.05 | 0.91 |
| ROA | 249 | 7% | 7% | 6% | 1.04 |
| **Panel C: Transaction characteristics** | | | | | |
| Transaction value ($ millions) | 586 | 322 | 360 | 240 | 2.13 ** |
| Public target | 586 | 36% | 35% | 39% | (0.80) |
| Tender offer | 586 | 4% | 5% | 4% | 0.43 |
| Relative size | 585 | 33% | 33% | 32% | 0.12 |
| Hostility | 586 | 1% | 1% | 0% | 1.19 |
| Same industry | 586 | 61% | 57% | 68% | (2.27) ** |
| Success | 586 | 87% | 85% | 89% | (1.09) |
| Stock payment | 586 | 16% | 13% | 20% | (2.20) ** |

## TABLE VIII: ANNOUNCEMENT RETURNS

Panel A reports results of regressions of the cumulative abnormal returns (CAR) for acquirers three days around the announcement day and Panel B (C) monthly returns of equally (value) weighted calendar-time portfolios. Acquirers that announced an acquisition in the past 12 (24) calendar months form the basis of the calendar-month portfolio. The regression reported is run with the excess return of the portfolio as the dependent variable. Standard errors are heteroskedasticity robust and clustered by year. All non-discrete variables are winsorized at the 1% level. This table shows coefficients and *t*-statistics (in parentheses).

| | | **Panel A: Dependent variable = Acquirer announcement returns** | | | | |
|---|---|---|---|---|---|---|
| | | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** |
| | | **All** | **Fixed-term** | **Compensation** | **Low cash** | **High cash** |
| **Horizon** | At-will | 0.017* | | 0.018* | 0.001 | 0.050*** |
| | | (2.02) | | (2.06) | (0.12) | (3.68) |
| | Remaining years | | 0.000 | | | |
| | | | (-0.21) | | | |
| | Tenure | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 |
| | | (0.26) | (-0.13) | 0.49 | (-0.23) | (1.3) |
| | Age | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | | (-0.61) | (-0.22) | (-0.74) | (-0.18) | (-0.24) |
| | Log firmage | 0.001 | -0.001 | 0.002 | 0.000 | 0.004 |
| | | (0.37) | (-0.25) | (0.69) | (-0.11) | (0.41) |
| Control variables | Public target | -0.024** | -0.019 | -0.026** | -0.01 | -0.041*** |
| **(Transaction )** | | (-2.16) | (-1.7) | (-2.28) | (-1.1) | (-3.47) |
| | Stock payment | -0.006 | -0.018 | -0.003 | 0.025 | -0.029 |
| | | (-0.44) | (-0.87) | (-0.22) | (1.35) | (-1.22) |
| | Cash payment | 0.002 | 0.008 | 0.000 | 0.016 | 0.001 |
| | | (0.24) | (0.61) | (-0.01) | (1.69) | (0.04) |
| | Relative size | 0.01 | 0.014 | 0.01 | 0.026*** | 0.002 |
| | | (0.91) | (1.2) | (0.88) | (9.63) | (0.18) |
| | Hostility | -0.054* | -0.072*** | -0.044 | -0.067 | |
| | | (-1.99) | (-2.92) | (-1.57) | (-1.53) | |
| | Multiple bidder | -0.023 | -0.016 | -0.015 | -0.057 | 0.039 |
| | | (-1.47) | (-0.65) | (-0.78) | (-1.48) | (1.33) |
| | Tender offer | 0.011 | -0.009 | 0.014 | -0.003 | 0.002 |
| | | (0.49) | (-0.3) | (0.61) | (-0.13) | (0.04) |
| | Toehold | -0.015 | -0.013 | -0.015 | -0.012 | -0.001 |
| | | (-0.88) | (-0.56) | (-0.8) | (-0.67) | (-0.04) |
| | Lockup | -0.019 | -0.018 | -0.017 | -0.017 | 0.005 |
| | | (-0.83) | (-0.59) | (-0.85) | (-0.82) | (0.05) |
| | Termination fees | -0.026*** | -0.031** | -0.029*** | -0.029*** | -0.017 |
| | | (-2.92) | (-2.72) | (-3.16) | (-3.45) | (-0.78) |
| Control variables | Market-to-book | -0.005* | -0.008*** | -0.005* | -0.009** | -0.004 |
| **(Firm/industry** | | (-1.88) | (-3.33) | (-1.8) | (-2.78) | (-1.53) |
| **characteristics)** | Leverage | 0.051** | 0.049* | 0.047** | 0.06 | 0.021 |
| | | (2.19) | (2.06) | (2.1) | (1.48) | (0.74) |
| | ROA | -0.065 | -0.035 | -0.055 | -0.255 | -0.075 |
| | | (-1.51) | (-0.6) | (-1.27) | (-1.62) | (-1.7) |
| | Cash/Assets | 0.038 | -0.023 | 0.034 | -0.002 | 0.045 |
| | | (0.8) | (-0.41) | (0.71) | (-0.01) | (0.78) |
| Control variables | Incentive to total compensation | | | -0.017 | | |
| **(Governance)** | | | | (-0.58) | | |
| | CEO voting | | | -0.002 | | |
| | | | | (-1.01) | | |
| | Log compensation | | | 0.008 | | |
| | | | | (1.27) | | |
| | Percent unexercisable | | | 0.014 | | |
| | | | | (0.77) | | |
| **Constant** | | 0.024 | -0.003 | 0.032 | -0.094** | -0.068 |
| | | (0.39) | (-0.05) | (0.5) | (-2.23) | (-1.34) |
| **Year fixed** | | Yes | Yes | Yes | Yes | Yes |
| **Industry fixed** | | Yes | Yes | Yes | Yes | Yes |
| **Data availability** | | | | Yes | | |
| $\mathbf{R^2}$ | | 7% | 19% | 8% | 30% | 7% |
| ***N*** | | 585 | 398 | 585 | 312 | 273 |

| Panel B: Equally weighted long-term returns | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1,12) | | | | | (1,24) | | | | |
| **Portfolio** | **Alpha** | **RMRF** | **SMB** | **HML** | **UMD** | **Alpha** | **RMRF** | **SMB** | **HML** | **UMD** |
| At-will | -0.002 | 0.952*** | 0.285** | 0.02 | -0.058 | -0.001 | 0.921*** | 0.255* | 0.096 | -0.056 |
| | (-0.63) | (10.746) | (2.631) | (0.171) | (-0.823) | (-0.133) | (10.113) | (2.2) | (0.771) | (-0.74) |
| Fixed-term | -0.005 | 0.912*** | 0.549*** | 0.117 | -0.061 | -0.003 | 0.932*** | 0.504*** | 0.126 | -0.117* |
| | (-1.486) | (11.227) | (5.547) | (1.086) | (-0.952) | (-1.064) | (14.432) | (6.124) | (1.419) | (-2.171) |
| At-will minus fixed-term | 0.003 | 0.042 | -0.135 | -0.012 | 0.028 | 0.002 | -0.022 | -0.24 | -0.024 | 0.057 |
| | (0.683) | (0.463) | (-1.209) | (-0.103) | (0.385) | (0.427) | (-0.201) | (-1.748) | (-0.159) | (0.631) |
| **Panel C: Value-weighted long-term returns** | | | | | | | | | | |
| At-will | 0.005 | 0.934*** | -0.035 | -0.221 | -0.127 | 0.005 | 0.956*** | -0.067 | -0.151 | -0.078 |
| | (1.254) | (9.041) | (-0.276) | (-1.607) | (-1.533) | (1.074) | (9.307) | (-0.515) | (-1.072) | (-0.911) |
| Fixed-term | -0.001 | 1.004*** | 0.094 | 0.094 | 0.027 | -0.001 | 1.032*** | -0.014 | -0.026 | -0.068 |
| | (-0.257) | (11.506) | (0.884) | (0.813) | (0.4) | (-0.363) | (15.261) | (-0.167) | (-0.285) | (-1.199) |
| At-will minus fixed-term | 0.006 | -0.057 | -0.007 | -0.247 | -0.128 | 0.005 | -0.086 | -0.046 | -0.119 | -0.014 |
| | (1.231) | (-0.457) | (-0.045) | (-1.5) | (-1.304) | (0.965) | (-0.659) | (-0.276) | (-0.672) | (-0.13) |

## TABLE IX: CONTRACT HORIZON AND COMPENSATION

The dependent variables are the year-on-year change in base salary in Column 1-2 and other compensation in Column 3-6. Column 1, 3 and 5 are regressions on the subsample of fixed-term contracts. Column 2, 4 and 6 are results of two-stage least-squares regressions in which the at-will indicator is instrumented with the regression reported in Column 6 of Table IV. Standard errors are heteroskedasticity robust and clustered by year. All non-discrete variables are winsorized at the 1% level. This table shows coefficients, the *t*-statistics (in parentheses), and the *F*-statistic for the instrumented regressions.

| | | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|---|
| **Dependent variable** | | **Change in base salary** | | **Other compensation** | | **Other compensation (without termination year)** | |
| | | **Fixed-term** | **All (IV)** | **Fixed-term** | **All (IV)** | **Fixed-term** | **All (IV)** |
| **Horizon** | Remaining years | 1.760* | | 20.656** | | 22.672** | |
| | | (2.09) | | (2.398) | | (2.565) | |
| | At-will | | -295.202 | | 519.571 | | 150.885 |
| | | | (-0.658) | | (0.486) | | (0.112) |
| | Tenure | -0.447 | 0.184 | 4.239* | 3.006 | 4.248 | 3.63 |
| | | (-1.175) | (0.169) | (1.857) | (1.133) | (1.686) | (0.977) |
| | Age | -1.456*** | -0.164 | -0.162 | -2.633 | 0.437 | -0.054 |
| | | (-4.511) | (-0.114) | (-0.068) | (-0.604) | (0.157) | (-0.016) |
| | Log firm age | 0.787 | 0.071 | 18.667 | 12.575 | 17.857 | 13.033 |
| | | (0.321) | (0.016) | (1.192) | (0.712) | (1.263) | (0.796) |
| **Compensation** | Log compensation | 1.317 | -1.37 | 132.690*** | 144.494*** | 132.869*** | 143.555*** |
| | | (0.404) | (-0.192) | (6.349) | (5.844) | (5.665) | (5.125) |
| | Incentive to total compensation | 5.959 | 5.555 | -192.995*** | -219.969** | -192.391*** | -211.565** |
| | | (0.488) | (0.21) | (-3.858) | (-2.207) | (-3.23) | (-2.278) |
| **Firm** | Log sales | -1.609 | -13.022 | 23.245 | 42.505 | 20.045 | 24.95 |
| | | (-0.661) | (-0.702) | (1.417) | (0.911) | (1.372) | (0.42) |
| | Returns | 0.111 | 8.771 | -171.588*** | -209.821* | -117.922** | -150.108 |
| | | (0.005) | (0.257) | (-3.466) | (-1.764) | (-2.23) | (-1.459) |
| **Governance** | Governance index | 0.175 | 1.262 | 1.667 | -0.065 | 1.298 | 0.348 |
| | | (0.237) | (0.636) | (0.503) | (-0.012) | (0.396) | (0.054) |
| | Chairman and CEO | -7.819* | -17.485 | -62.599** | -52.412 | -58.993** | -57.070* |
| | | (-1.931) | (-1.174) | (-2.714) | (-1.564) | (-2.685) | (-1.773) |
| | Stock award | -26.325** | -21.002 | 259.397*** | 250.024*** | 208.370** | 202.222** |
| | | (-2.847) | (-1) | (3.052) | (3.349) | (2.666) | (2.496) |
| | CEO voting | -0.116 | -0.068 | 4.06 | 3.386 | 4.782 | 3.851* |
| | | (-0.613) | (-0.106) | (0.725) | (1.348) | (0.867) | (1.779) |
| | Directors voting | 0.055 | -0.343 | 0.167 | 2.639 | -0.816 | 1.461 |
| | | (0.275) | (-0.502) | (0.114) | (1.366) | (-0.673) | (0.616) |
| | Board size | -0.055 | 0.943 | -0.109 | -2.903 | 0.771 | -0.658 |
| | | (-0.097) | (0.554) | (-0.03) | (-0.54) | (0.253) | (-0.13) |
| | Insider board | -13.634** | -45.179 | -107.045 | -84.266 | -132.472 | -133.044 |
| | | (-2.312) | (-0.896) | (-0.982) | (-0.743) | (-1.353) | (-0.91) |
| | Institutional ownership | -11.276** | 10.099 | -40.638 | -66.741 | -63.193** | -63.446 |
| | | (-2.223) | (0.32) | (-1.471) | (-0.869) | (-2.235) | (-0.717) |
| **Heckman** | Lambda | -32.058 | | 187.898 | | 85.252 | |
| | | (-1.33) | | (1.012) | | (0.585) | |
| **Constant** | | 1.526 | -19.469 | -334.815 | -529.668 | 88.894 | 2.687 |
| | | (0.04) | (-0.103) | (-1.165) | (-0.458) | (0.097) | (0.004) |
| **Year fixed** | | Yes | Yes | Yes | Yes | Yes | Yes |
| **Industry fixed** | | Yes | Yes | Yes | Yes | Yes | Yes |
| **Data availability** | | Yes | Yes | Yes | Yes | Yes | Yes |
| $\mathbf{R^2}$ | | 2% | | 13% | | 14% | |
| ***F*** | | | 38.87 | | 38.87 | | 38.87 |
| ***N*** | | 1,941 | 2,132 | 2,078 | 2,281 | 1,923 | 2,120 |

## TABLE X: CONTRACT HORIZON AND FIRM VALUE

The dependent variable is the market-to-book ratio. Column descriptions are as in Table V, Panel A, for Panel A, and as in Table V, Panel D for Panel B. All non-discrete variables are winsorized at the 1% level, except for market-to-book, which is winsorized at the 5% level. Standard errors are heteroskedasticity robust and clustered by year. This table shows coefficients, the *t*-statistics (in parentheses), and the *F*-statistic for the instrumented regressions.

| | | Panel A: Dependent variable = Market-to-book | | | | |
|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) |
| | | Terminated | Fixed-term | | All contracts | |
| | | Expected horizon | All fixed-term | 5-year contracts | OLS | IV |
| **Horizon** | Expected horizon | 0.129 | | | | |
| | | (1.015) | | | | |
| | Remaining years | | 0.012 | -0.046 | | |
| | | | (0.591) | (-1.161) | | |
| | At-will | | | | 0.053 | 0.246 |
| | | | | | (0.971) | (0.478) |
| | Tenure | -0.010* | -0.010** | -0.006 | -0.006* | -0.006** |
| | | (-1.957) | (-2.537) | (-0.751) | (-2.064) | (-2.053) |
| | Age | 0.001 | -0.009*** | -0.049** | -0.004* | -0.006 |
| | | (0.107) | (-2.914) | (-2.353) | (-1.816) | (-1.456) |
| | Log firm age | -0.107** | -0.04 | -0.130* | -0.057* | -0.062** |
| | | (-2.564) | (-1.125) | (-1.983) | (-1.987) | (-2.343) |
| **Investment** | CAPEX/sales | 0.199*** | 0.201*** | 0.190** | 0.161*** | 0.167*** |
| | | (7.505) | (5.744) | (2.831) | (7.388) | (8.338) |
| **Control variables (Firm/industry)** | Leverage | -0.618*** | -0.915*** | -1.388*** | -0.831*** | -0.796*** |
| | | (-5.946) | (-7.621) | (-8.612) | (-7.589) | (-10.968) |
| | Delaware | 0.121* | 0.170** | 0.148 | 0.143*** | 0.165*** |
| | | (1.747) | (2.609) | (1.604) | (5.007) | (3.173) |
| | Herfindahl | 0.885** | 0.659** | 1.314* | 1.264*** | 1.092*** |
| | | (2.499) | (2.452) | (1.967) | (4.531) | (4.424) |
| **Control variables (Governance)** | Governance index | -0.047** | -0.040* | -0.026 | -0.043** | -0.038** |
| | | (-2.098) | (-2.05) | (-1.23) | (-2.844) | (-2.235) |
| | Chairman and CEO | 0.047 | 0.143** | 0.29 | 0.090** | 0.087* |
| | | (0.566) | (2.481) | (1.724) | (2.296) | (1.746) |
| **Heckman** | Lambda | | 0.17 | 0.986 | | |
| | | | (0.589) | (0.304) | | |
| **Constant** | | | 3.190*** | 0.434 | 7.341*** | 8.334*** |
| | | | (3.192) | (0.02) | (13.07) | (3.863) |
| **Year fixed effects** | | Yes | Yes | Yes | Yes | Yes |
| **Industry fixed effects** | | Yes | Yes | Yes | Yes | Yes |
| **Data availability** | RiskMetrics data available | Yes | Yes | Yes | Yes | Yes |
| $\mathbf{R^2}$ | | | 17% | 23% | 20% | |
| ***F*** | | 22.04 | | | | 77.95 |
| ***N*** | | 4,420 | 5,316 | 1,079 | 10,109 | 8,327 |

| | | Panel B: Robustness. Dependent variable = Market-to-book | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | | All firms | Sample | Fixed | Sample | Sample | Fixed | Sample | Fixed |
| | | COMPU-STAT | Switchers | Switchers | Alternative Instrument | Executive fixed effects | Executive fixed effects | Compen-sation | Compen-sation |
| **Horizon** | Remaining years | | | -0.003 | | | 0.039* | | -0.022 |
| | | | | (-0.108) | | | (1.92) | | (-1.33) |
| | At-will | -0.334** | -0.016 | | -0.808 | -0.051 | | 0.261 | |
| | | (-3.203) | (-0.111) | | (-1.393) | (-0.446) | | (0.403) | |
| | Tenure | | -0.002 | 0.005 | -0.007** | | | -0.009*** | -0.010*** |
| | | | (-0.154) | (0.478) | (-2.438) | | | (-3.272) | (-3.08) |
| | Age | | -0.017 | -0.002 | -0.003 | | | -0.007*** | -0.003 |
| | | | (-1.201) | (-0.323) | (-0.869) | | | (-2.888) | (-1.546) |
| | Log firm age | | 0.068 | 0.031 | -0.077*** | -0.276*** | -0.141 | -0.092** | -0.064* |
| | | | (0.646) | (0.535) | (-3.05) | (-2.662) | (-0.92) | (-2.758) | (-2.02) |
| **Investment** | CAPEX/sales | 0.034** | 0.082 | 0.117 | 0.161*** | 0.038 | 0.065** | 0.170*** | 0.167*** |
| | | (2.536) | (1.593) | (1.596) | (8.55) | (1.637) | (2.351) | (6.342) | (5.326) |
| | Incentive to total pay | | | | | | | -0.127 | -0.117 |
| | | | | | | | | (-0.737) | (-0.641) |
| | CEO voting | | | | | | | 0.008** | 0.009 |
| | | | | | | | | (2.131) | (1.453) |
| | Log compensation | | | | | | | 0.152** | 0.111* |
| | | | | | | | | (2.51) | (1.94) |
| | Percent unexercisable | | | | | | | 0.103 | 0.093 |
| | | | | | | | | (1.079) | (0.701) |
| **Control variables (Firm/industry)** | Leverage | -2.987*** | -0.208 | -0.201 | -0.903*** | -1.159*** | -1.104*** | -0.766*** | -0.830*** |
| | | (-19.418) | (-0.62) | (-1.045) | (-12.042) | (-12.781) | (-10.731) | (-6.014) | (-8.59) |
| | Delaware | 0.236** | 0.458*** | 0.357*** | 0.157*** | 0.046 | -0.95 | 0.111 | 0.092 |
| | | (2.805) | (2.707) | (3.757) | (3.482) | (0.129) | (-1.332) | (1.709) | (1.44) |
| | Herfindahl | 8.478** | 1.381 | 1.137 | 1.197*** | 0.814 | -0.245 | 1.121*** | 1.097*** |
| | | (2.832) | (1.339) | (1.597) | (5.016) | (1.582) | (-0.405) | (3.843) | (3.568) |
| **Control variables (Governance)** | Governance index | | -0.053 | -0.024 | -0.044*** | -0.073*** | -0.043 | -0.042** | -0.042** |
| | | | (-0.886) | (-0.602) | (-2.747) | (-2.643) | (-1.356) | (-2.597) | (-2.761) |
| | Chairman and CEO | | -0.707*** | -0.864*** | 0.056 | -0.052 | -0.106 | 0.088* | 0.087* |
| | | | (-3.821) | (-5.074) | (1.185) | (-0.362) | (-0.614) | (1.772) | (1.81) |
| **Heckman** | Lambda | | | | 0.166 | | -0.32 | | |
| | | | | | (0.582) | | (-0.169) | | |
| **Constant** | | 3.810*** | 1.624 | 21.945*** | 3.811 | 2.895* | 6.412** | 8.070*** | 1.441*** |
| | | (4.444) | (1.489) | (4.905) | (1.569) | (1.7) | (2.241) | (29.925) | (3.557) |
| **Year fixed effects** | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Industry fixed effects** | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Executive fixed effects** | | | | | | Yes | Yes | | |
| **Data availability** | ExecuComp data available | | | | | | | Yes | Yes |
| | RiskMetrics data available | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | | 16% | 20% | 20% | | 54% | 54% | 16% | 16% |
| ***F*** | | | | | 73.03 | | | | |
| ***N*** | | 75,916 | 1,406 | 1,288 | 9,661 | 10,314 | 7,637 | 8,327 | 7,484 |

## APPENDIX: STATE INDICES

This table presents the at-will exceptions, anti-takeover regulations, the Garmaise (2009) index, and the number of patents issued between 1977 and 2004 by state.

| | | At-will exceptions | | | | | |
|---|---|---|---|---|---|---|---|
| Code | State | Public policy | Implied contract | Good faith and fair dealing | Garmaise | Anti-takeover | Patents |
| AL | Alabama | 0 | 1 | 1 | 5 | 0 | 9,017 |
| AK | Alaska | 1 | 1 | 1 | 3 | 0 | 1,075 |
| AZ | Arizona | 1 | 1 | 1 | 3 | 1 | 27,065 |
| AR | Arkansas | 1 | 1 | 0 | 5 | 0 | 3,867 |
| CA | California | 1 | 1 | 1 | 0 | 0 | 303,592 |
| CO | Colorado | 1 | 1 | 0 | 2 | 0 | 31,339 |
| CT | Connecticut | 1 | 1 | 0 | 3 | 1 | 45,008 |
| DC | District of Columbia | 1 | 1 | 0 | 6 | 0 | 1,576 |
| DE | Delaware | 1 | 0 | 1 | 7 | 1 | 10,827 |
| FL | Florida | 0 | 0 | 0 | 9 | 0 | 55,303 |
| GA | Georgia | 0 | 0 | 0 | 5 | 1 | 23,774 |
| HI | Hawaii | 1 | 1 | 0 | 3 | 0 | 1,946 |
| ID | Idaho | 1 | 1 | 1 | 6 | 1 | 14,903 |
| IL | Illinois | 1 | 1 | 0 | 5 | 1 | 92,974 |
| IN | Indiana | 1 | 0 | 0 | 5 | 1 | 33,766 |
| IA | Iowa | 1 | 1 | 0 | 6 | 0 | 13,330 |
| KS | Kansas | 1 | 1 | 0 | 6 | 1 | 9,086 |
| KY | Kentucky | 0 | 1 | 0 | 6 | 1 | 9,738 |
| LA | Louisiana | 0 | 0 | 0 | 4 | 0 | 11,803 |
| ME | Maine | 0 | 1 | 0 | 4 | 1 | 3,099 |
| MD | Maryland | 1 | 1 | 0 | 5 | 1 | 29,470 |
| MA | Massachusetts | 1 | 0 | 1 | 6 | 1 | 69,616 |
| MI | Michigan | 1 | 1 | 0 | 5 | 1 | 82,589 |
| MN | Minnesota | 1 | 1 | 0 | 5 | 1 | 48,550 |
| MS | Mississippi | 1 | 1 | 0 | 4 | 0 | 3,597 |
| MO | Missouri | 1 | 0 | 0 | 7 | 1 | 20,864 |
| MT | Montana | 1 | 0 | 1 | 2 | 0 | 2,623 |
| NE | Nebraska | 0 | 1 | 0 | 4 | 1 | 4,697 |
| NV | Nevada | 1 | 1 | 1 | 5 | 0 | 5,591 |
| NH | New Hampshire | 1 | 1 | 0 | 2 | 0 | 10,766 |
| NJ | New Jersey | 1 | 1 | 0 | 4 | 1 | 95,136 |
| NM | New Mexico | 1 | 1 | 0 | 2 | 0 | 6,345 |
| NY | New York | 0 | 1 | 0 | 3 | 1 | 139,544 |
| NC | North Carolina | 1 | 0 | 0 | 4 | 0 | 31,587 |
| ND | North Dakota | 1 | 1 | 0 | 0 | 0 | 1,603 |
| OH | Ohio | 1 | 1 | 0 | 5 | 1 | 83,265 |
| OK | Oklahoma | 1 | 1 | 0 | 1 | 0 | 16,955 |
| OR | Oregon | 1 | 1 | 0 | 6 | 0 | 23,386 |
| PA | Pennsylvania | 1 | 0 | 0 | 6 | 1 | 84,618 |
| RI | Rhode Island | 0 | 0 | 0 | 3 | 1 | 6,413 |
| SC | South Carolina | 1 | 1 | 0 | 5 | 1 | 12,229 |
| SD | South Dakota | 1 | 1 | 0 | 5 | 1 | 1,385 |
| TN | Tennessee | 1 | 1 | 0 | 7 | 1 | 17,301 |
| TX | Texas | 0 | 0 | 0 | 3 | 0 | 106,463 |
| UT | Utah | 1 | 1 | 1 | 6 | 0 | 12,413 |
| VT | Vermont | 1 | 1 | 0 | 5 | 0 | 5,613 |
| VA | Virginia | 1 | 0 | 0 | 3 | 1 | 23,797 |
| WA | Washington | 1 | 1 | 0 | 5 | 1 | 32,901 |
| WV | West Virginia | 1 | 1 | 0 | 2 | 0 | 4,321 |
| WI | Wisconsin | 1 | 1 | 0 | 3 | 1 | 36,818 |
| WY | Wyoming | 1 | 1 | 1 | 4 | 1 | 1,282 |