

Explicit vs. Implicit Contracts: Evidence from CEO Employment Agreements*

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Abstract

Producers and their suppliers can rely on explicit (written) or implicit contracts to dictate the terms of their trade. We examine determinants of this contract choice for agreements between firms and their CEOs. Less than half of S&P 500 CEOs have explicit contracts. Evidence on the determinants of whether a CEO's contract is explicit or implicit is consistent with contracting theory. Proxies for the firm's concern for its labor market reputation, the required investment in human capital by the CEO, the expected loss to the CEO if the firm reneges on the agreement, and the degree of uncertainty surrounding the relationship are related to the likelihood that a CEO has an explicit employment agreement. Factors associated with an increased likelihood of an explicit contract are also generally associated with longer-lasting explicit agreements.

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When a firm hires a Chief Executive Officer (CEO), it enters into an important relationship that has significant long-term implications for its shareholders. This relationship is complex and there are many issues that the firm and CEO must address. These include the responsibilities of the CEO, elements of the CEO's compensation, the various perquisites that the CEO will receive, the term of the employment agreement, the conditions under which either party can sever the relationship, and restrictions on outside activities of the CEO, among others. Despite the complexity of these arrangements, many public companies, including some of the largest, choose not to put them in writing. As of 2000, less than half of the firms in the S&P 500 had a comprehensive written (or, explicit) employment agreement (EA) with their CEO. The other firms either had no written agreement at all, or had agreements that covered only limited aspects of their relationship with the CEO, such as a change of control agreement. These latter firms and their CEOs relied on implicit contracts through which the CEO is employed "at will."

We examine the choice between using an explicit or an implicit EA. In doing so, we report evidence on two related questions: 1) Under what circumstances is the contract between the firm and its CEO left implicit and allowed to be governed primarily by market forces? 2) More broadly, what factors motivate the choice to codify the terms of a supplier/producer relationship in an explicit agreement, a choice that provides structure and protection, but sacrifices flexibility?

These contract design questions are inextricably linked to issues in corporate finance; the firm itself can be viewed as a nexus of implicit and explicit contracts.¹ Among these contracts,

¹ See Zingales (2000) for a discussion of the implications of the theory of the firm as a nexus of explicit and implicit contracts.

the agreement with the CEO is arguably among the most important due to its role in controlling agency costs. A well-designed EA internalizes the costs and benefits of the CEO's decisions, thereby providing the CEO with stronger incentives to act in stockholders interests than those provided by, for example, third-party monitoring by boards or blockholders.

While many studies have examined observable outcomes related to CEO contracts, such as Coughlan and Schmidt (1985) on CEO turnover and Jensen and Murphy (1990) on executive pay, few have examined characteristics of these contracts in detail. With the notable exception of Kole's (1987) study of equity compensation plans, the empirical studies of contracts in finance examine financial, rather than employment contracts.²

An understanding of employment contract characteristics is important to finance. As MacLeod and Malcomson (1998) and Nosal (2001) point out, the observable outcomes from labor contracts are likely to be affected by whether the agreement between the CEO and firm is explicit or implicit. Since the factors that explain the choice between explicit and implicit agreements are likely to be correlated with factors that determine governance structures, a better understanding of this choice might lead to important insights regarding outcomes from corporate governance systems. For example, they might provide insights into the current debate over whether executive compensation levels reflect rent extraction (Bebchuk, Fried, and Walker, 2002) or the outcome from a bargaining process (Murphy, 2002).

The effectiveness of a contract depends not only on the provisions of the contract, but also on the choice of whether the contract is explicit and governed more directly by the legal system, or implicit and relies more on market forces for enforcement. In fact, considerable attention has been devoted to modeling the conditions under which explicit contracts are more or

² For example, see Brickley (1999) on franchise contracts, Nash, Netter, and Poulsen (2003) on debt contracts, and Kaplan and Stromberg (2003) on venture capital contracts. Agrawal and Knoeber (1998) also examine employment contracts and golden parachutes in their study of compensation and the threat of takeovers.

less likely to exist than implicit contracts.³ Such models often focus on situations where a supplier is required to make specific investments in order to fulfill a contractual obligation to a producer. In this environment, the contracting parties rely on implicit contracts only when there are sufficient incentives in place for both sides to adhere to the agreement. This is likely to occur when there is a low probability of either the producer renegeing on the agreement after the supplier has made the required investment, or the supplier holding up the producer in some way.⁴ Despite the well-developed theoretical implications, there is little empirical evidence on the circumstances under which explicit or implicit contracts are more likely to be observed. We provide such evidence from a study of CEO EAs at firms in the S&P 500. These agreements can provide important evidence on the above theory because CEOs supply labor to firms and the potential exists for both parties to make significant investments that are specific to one another.

The incentives of the contracting parties to adhere to an implicit agreement typically arise from future rewards or penalties, making implicit contracts feasible only if the relationship is expected to continue or there is some externally imposed cost to violating the agreement. Rewards for adhering to the contract include the potential for sharing future profits that arise from the relationship. In contrast, penalties from violating an agreement can include loss of future profits or the damage to one party's reputation from renegeing on the contract. Damage to one party's reputation can impede their ability to contract with other parties in the future.

The theory suggests that explicit CEO contracts will be more prevalent where reputation concerns are low, where a greater level of investment is required by one party to the agreement,

³ For example, see Telser (1980), Bull (1987), Hart and Holmström (1987), Klein (1996), and Baker, Gibbons and Murphy (2002).

⁴ The Fisher Body-General Motors example, described by Klein, Crawford, and Alchian (1978), illustrates how the supplier can hold up the producer.

and where the contracting parties have much to lose from a violation of an implicit agreement.⁵ In highly uncertain environments, the flexibility inherent in implicit agreements is more valuable in responding to changes in business conditions, suggesting that explicit agreements are less attractive in such environments. On the other hand, explicit contracts might be more attractive in uncertain environments if managers perceive them as a means of reducing the likelihood of opportunistic behavior by the firm, and firms see them as an efficient means of attracting good managers. Thus, the effect of uncertainty on the choice between implicit and explicit contracts is an empirical question.

The explicit agreements in our sample generally appear to be designed to limit opportunistic behavior on the part of the firm rather than on the part of the CEO. While non-compete and confidentiality provisions, which limit the CEO's actions, are commonly included in explicit contracts, they represent a relatively small fraction of the total provisions in the typical EA. Therefore, our tests are designed to measure the viability of an implicit contract where the firm is the party that is more likely to renege.

Consistent with predictions from general contracting theory, we find that explicit EAs are more likely to be used at firms with weak governance or that have poor reputations, where the investment in firm-specific human capital by the CEO is large, where the potential financial loss to the CEO from post-contractual opportunistic behavior on the part of the firm is higher, and where flexibility in contracting with the CEO is less important. Specifically, explicit EAs are significantly more likely to be used at firms with less independent boards, that have poor recent performance, or that have fired a CEO within the last five years. Notably, a CEO hired from

⁵ Baker, Gibbons and Murphy (2002) examine an additional factor in the viability of an implicit contract, asset ownership. They show that the ability to sustain an implicit (or relational, in their language) contract is affected by the decision to integrate, due to the changes in recourse and bargaining power that occur when a firm owns an asset rather than a supplier. Note that in our context of employment agreements, the relevant asset ownership is held fixed outside the firm due to the inalienability of human capital. Thus, we test for other influences on the choice of implicit or explicit contracts, while holding the primary issue of Baker, Gibbons and Murphy constant.

outside the firm is 23 percent more likely to have an explicit EA than a CEO who is promoted from within. This latter evidence is consistent with outsiders making larger firm-specific investments and facing greater uncertainty regarding their relationships with their new boards than insiders. We also find that firm reputation is significantly more important for outside CEOs. Eighty-nine percent of outsiders who are appointed CEO at a firm with a poor reputation have an explicit agreement, while only 56 percent of outsiders appointed CEO at a firm that does not have a poor reputation have such an agreement. The corresponding percentages for insiders are 38 and 35 percent, respectively.

We also find that a CEO in a heterogeneous industry, who will tend to make larger investments in firm-specific human capital than a CEO in a homogeneous industry, is 11 percent more likely to have an explicit contract. To the extent that their skills have a larger firm-specific component, CEOs in heterogeneous industries have more to lose from opportunistic behavior on the part of their employers. The likelihood of an explicit EA is also negatively related to CEO age and positively related to the proportion of CEO pay that is equity-based, further supporting the conclusion that explicit contracts are more likely to be used when the CEO has more to lose. Finally, we find that EAs are used less often in highly uncertain environments, as measured either by stock-market volatility or industry-wide survival rates.

We also examine contract duration in years and, in general, find that the factors associated with an increased likelihood of an explicit contract are also associated with longer duration contracts. For example, conditional on having an explicit agreement, the contract is predicted to be approximately 1.4 years longer for an outside CEO hired by a firm with a poor reputation than for an insider who is promoted from within the same firm. This difference is economically significant in our sample, which has explicit contracts with a median duration of

three years. The similarity in the determinants of both explicit contract adoption and duration is consistent with the idea that there is a continuum in the degree to which contracts are explicit - ranging from implicit agreements on one extreme to very long-term explicit agreements at the other.

The paper is organized as follows. Section I discusses factors that influence the choice between implicit and explicit contracts. Section II describes the data used in the empirical analysis and the empirical specification. Section III presents the evidence and Section IV concludes with a discussion of the implications of the evidence from this study.

I. Implicit vs. Explicit Contracts

Implicit CEO contracts can substitute for explicit multi-period contracts, allowing the CEO and firm to contract in ways that would be unenforceable in court (Bull, 1987). Both the CEO and the firm (i.e., its board) will honor an implicit contract as long as the benefits of continuing the agreement exceed the costs for both parties.

Telser (1980) emphasizes the role of future profits in sustaining implicit agreements. He argues that any implicit contract must involve a sequence of transactions in which there is always a positive probability of continuing the relationship. The benefits that the contracting parties anticipate from future transactions provide them with incentives to abide by the terms of the agreement. If the timing of the last transaction is known with certainty, Telser suggests that both of the contracting parties will have an incentive to violate the terms of the agreement because there are no benefits to lose by foregoing subsequent transactions.

Bull (1987) and Klein (1996), among others, note that, in addition to the loss of future business with the counterparty, a second cost of violating an implicit contract is the potential damage to one's reputation. Reputation concerns can provide incentives to abide by an

agreement even if the date of the last transaction is known with certainty. In contracting between a CEO and a firm, both parties have an incentive to abide by an implicit agreement in order to maintain their reputation in the labor market. Violating an implicit agreement could hurt a CEO's market value, while a firm that violates an implicit agreement might find it more difficult to recruit managers in the future.

Since damage to one's reputation reduces the expected gains from opportunistically breaking an implicit contract, explicit contracts are more likely to be observed where the cost of damage to one party's reputation is smaller, one party has little reputation capital, or the expected impact of opportunistic behavior by one party on its reputation is smaller. For example, because the economic consequences of lost wages arising from a damaged reputation are smaller for a manager nearing the end of his or her career, such a manager is likely to be less concerned about the impact of opportunistic behavior on his or her reputation than a younger manager. On the other side of the contract, a firm's board is likely to be less concerned about the firm's reputation when the board has incentives to behave myopically, such as where there is a higher probability of takeover, bankruptcy, or some other circumstance that increases the likelihood of board turnover (Knoeber, 1986). Reputation concerns also provide weaker incentives to abide by an implicit agreement where one party already has a poor reputation and therefore less to lose from reneging on the contract. Finally, in an environment where it is difficult for outsiders to attribute opportunistic behavior to one party, the impact of such behavior on the reputations of the contracting parties will be smaller and an implicit contract will be less sustainable.

Klein, Crawford, and Alchian (1978) and Williamson (1979) discuss the contracting implications of a situation in which a significant up-front investment by one party provides

incentives for post-contractual opportunistic behavior by the other. In the Fisher Body-General Motors example that Klein, Crawford, and Alchain discuss, an explicit contract is designed to alleviate the concerns of the supplier (Fisher Body) but ends up being very costly for the producer (General Motors). In the context of CEO contracting, it might be necessary for a CEO who is hired from outside the firm to invest heavily in firm- or industry-specific human capital in order to be successful. However, once such a manager has made this investment, the firm can have incentives to renege on an implicit agreement, perhaps by paying the manager less than promised (Hart and Holmström, 1987). Of course, a firm might face post-contractual opportunistic behavior by the manager if the firm has invested in developing the manager's abilities, and the cost of replacing the manager is high.

The choice between explicit and implicit contracts is also influenced by uncertainty on the part of one contracting party about the reliability of the other. With CEO contracts, this is likely to be especially important when a firm hires an outsider for the CEO position. Outside appointees tend to know less than inside managers about the firm, the nature of the CEO position, and the decision-making dynamics within the firm. To the extent that a risk-averse CEO is less certain about the reputation of the hiring board, he or she is more likely to favor an explicit agreement.

The general information environment also affects the efficacy of implicit and explicit contracts. Where benefits from future transactions are less certain, they are valued less by the contracting parties. Managers at firms that are especially susceptible to unpredictable economic shocks are likely to prefer explicit contracts to the extent that such shocks may cause the firm to alter the terms of an implicit agreement, and firms may offer explicit contracts in such circumstances in order to attract and retain good managers. On the other hand, Klein (1996)

notes that explicit contracts can be less desirable in uncertain environments. He argues that having an informal agreement makes it less expensive for the contracting parties to terminate the relationship if conditions change. Whether uncertainty increases or decreases the likelihood of explicit agreements for CEOs is an empirical question.

II. Data and Empirical Specification

A. Sample

We begin construction of our sample with a set of explicit CEO EAs provided to us by The Corporate Library. From this sample, we identify all agreements that were in force at S&P 500 firms as of January 1, 2000. Since we do not have explicit contracts for all firms that were in the S&P 500, we search the disclosures filed by S&P 500 firms that are not in the Corporate Library sample for any mention of an explicit EA with the individual who was CEO in 2000. Securities and Exchange Commission (SEC) Regulation S-K requires that firms disclose material EAs with their named officers and directors, and we assume that all such agreements are disclosed. Where SEC filings indicate that there is an explicit contract, we search for the actual agreements in the SEC filings database. We consider only written agreements that cover, in broad terms, the relationship between a firm and its CEO to be an explicit EA. Agreements that are only applicable upon a change in control or separation of service, or compensation plans that cover only one aspect of pay are not included in our sample of explicit EAs.

We limit our sample to the 494 U.S.-based firms that are in the S&P 500 on January 1, 2000 so that we are examining firms that are broadly subject to the same legal and regulatory environment and CEO labor market. Based on these criteria, we identify 237 CEOs with an explicit EA and 257 without one. We are unable to locate a copy of the agreement for 33 of the 237 CEOs at firms that disclose the existence of such an agreement. Thus, our final dataset

consists of 204 explicit EAs, 33 observations where there is an agreement that we cannot find, and 257 firms that have no written EA. The 33 firms with an agreement that we are unable to locate are classified as having an agreement that is “reported, but not found”. These firms are identified as having an explicit agreement in the indicator variable, *Contract*, which we use to reflect the existence of such an agreement in our analysis.

There is considerable variation in the duration of explicit EAs in our sample, as measured in years. To the extent that an implicit contract is equivalent to an explicit contract with a duration of zero years, the duration of a written contract can be viewed as a measure of the degree to which a written employment agreement is explicit. Therefore, in addition to the indicator variable *Contract*, we also define the duration of the each agreement, in years, *Contract Duration*. For CEOs with implicit contracts, we set *Contract Duration* equal to zero, but in the empirical analysis, we estimate the economic significance of the variables that explain *Contract Duration* as marginal effects that are conditional on the presence of an explicit agreement.

B. Characteristics of CEO Employment Agreements

Contracting theory does not provide a great deal of guidance concerning which party is more likely to renege in an agreement between a CEO and a firm. However, examination of the features of the contracts in our sample provides some insights on the relative concerns of the two parties. Although the written agreements in our sample contain protections for both the CEO and the firm, the strongest and most pervasive protections are for the manager. In general, the contract provisions indicate that managers are primarily concerned about the firm reducing their compensation and perquisites below promised amounts or terminating the relationship early. This section briefly describes the more common provisions we observe in the contracts in our sample. For more detail on the provisions in CEO contracts, see Schwab and Thomas (2004).

Cross-sectional variation in the length of CEO contracts in pages suggests that their complexity varies substantially. For example, the agreements in our sample range from relatively straightforward, one- or two-page letter agreements, to detailed 60-page documents. Although the specifics vary, a typical agreement includes provisions pertaining to employment duties and term, compensation, termination and resignation, and governing law and dispute resolution.

CEO employment contracts generally begin by specifying the CEO's responsibilities and additional titles, such as President or Chairman of the Board. The contract typically covers a fixed period of time and can allow for renewals under specified conditions. The duration of a contract is one measure of the degree of protection it provides. Longer contracts provide more structure, legal protection over a longer horizon, and greater guaranteed compensation for the CEO. Occasionally a contract explicitly specifies indefinite employment at will. Even in these latter cases, the contract still provides more structure than a purely implicit agreement, for example, by specifying payments that occur upon a separation of service. Contract renewal or extension features may also be beneficial to both parties in that they reduce the transactions costs of subsequent negotiations.

The compensation section of the contract specifies details on the CEO's salary, bonus (sometimes specifying target and maximum bonus amounts), option grants, stock grants, and any signing bonus (which in turn, can be composed of cash, options, and/or stock). In addition, many contracts describe the benefit plans and perquisites in detail. Benefit plan details include retirement coverage from supplemental employee retirement plans (SERPs), defined benefit

plans, and, in some cases, specify additional years of service credited for the calculation of retirement benefits.⁶

Perquisites for the CEO can include automobiles or automobile allowances, the use of company aircraft or air travel allowances, and country club memberships among others. These can be specified in great detail. For example, Annunziata's contract with Global Crossing specifies that, "the Company shall purchase, on behalf of Executive, a brand-new 1999 model Mercedes-Benz SL 500," and, "monthly first class airfare to Los Angeles for members of Executive's immediate family (spouse, mother and all children including the child of his wife, Patricia)."⁷

Provisions protecting the CEO against early termination are also common. These clauses specify the conditions under which a manager can be terminated by the firm for "good cause", such as following a felony conviction, or conditions under which the CEO can leave the firm for "good reason", such as in response to a change in duties or place of employment. These provisions also specify any payments the firm must make to the CEO when he or she leaves the firm. Such payments are typically larger when the CEO is terminated for a reason other than good cause or if the CEO leaves for good reason. For example, for his sample of voluntary CEO turnovers, Yermack (2005) finds an average severance payment due to the settlement of an employment agreement of about \$150 thousand. In contrast, the corresponding average for forced turnovers is over \$3 million in Yermack's sample. It is worth noting that we do not observe contract features compensating the firm for loss of the manager's services if he or she terminates the contract early without good reason. However, CEOs terminating the contract

⁶ See Bebchuk and Jackson (2005) for an analysis of CEO pension benefits.

⁷ See Rajan and Wulf (2004) and Yermack (2004b) for in-depth analyses of perquisites.

early typically forgo unvested stock and option grants and may be exposed to claw-back provisions covering signing bonuses and other up-front payments.

Although contractual provisions protecting the CEO dominate explicit agreements, there are often protections for the firm. These protections generally restrict the CEO's outside activities, prohibit disclosure of confidential information, or preclude the CEO from entering into competition with the firm. Restrictions on outside activities, such as limits on outside board memberships, help assure the firm that the CEO will focus on its business. The confidentiality and non-compete provisions provide for legal remedies to the firm if a departed CEO opportunistically uses information and knowledge acquired during the term of employment.

The final set of provisions that we commonly observe in explicit agreements specify the governing legal jurisdiction and require that both parties enter into arbitration in the event of a dispute. These provisions help reduce uncertainty over the legal interpretation of the contract and reduce enforcement costs in the event of a dispute.

C. Explanatory and Control Variables

When developing an empirical model to predict the presence and duration of explicit CEO contracts, we want to use explanatory variables that reflect the environment faced by the firm at a particular point in time. Thus, our study is cross-sectional, but in event time, where the event we focus on is the date the CEO and firm entered into a written contract. While the agreements all cover the person who is CEO as of the beginning of 2000, they were signed on various dates from 1986 to 2002. For firms with an explicit agreement, we identify the event date as the most recent of either 1) the date the agreement was initially signed or 2) the date of the most recent amendment. We use the latter of these two dates because the date of a written amendment is clearly a point in time when both parties revisited their decision to have an explicit

contract. Consistent with this choice, and in an effort to maximize the power of our tests, we include 10 contracts with 2001 dates, and two with 2002 dates in the sample. For firms with no explicit agreement, we use January 1, 2000 as the event date. Using the dates identified in this way, we merge the contract data with explanatory and control variables. We collect returns as of the month before the contract date, and financial and proxy-based data from the fiscal year that ended immediately prior to the contract date.

As discussed in Section I, the theory suggests that the use of explicit contracts will be affected by reputation concerns, the level of investment required of the contracting parties, the expected loss in the event of post-contractual opportunistic behavior, the degree of uncertainty about the other party, and, possibly, general environmental uncertainty. The proxies for these factors that we use in the empirical analysis are discussed next. As discussed in the introduction, we focus on factors that predict opportunistic behavior on the part of the firm because most of the contractual features in CEO contracts are designed to protect the CEO rather than the firm.

C.1. Measures of Reputation Concerns

We use several explanatory variables as proxies for the degree to which a given firm or, more accurately, its board is concerned with its reputation. The theory suggests that explicit contracts will be more prevalent when firms have poor reputations and are therefore less concerned about further loss of reputation capital. As proxies for a firm's reputation concerns, we use a measure of the quality of corporate governance, firm performance, and treatment of the firm's previous CEO.

Independent directors have a fiduciary responsibility to shareholders, and evidence from other studies suggests that they do protect stockholder interests (e.g., see Weisbach, 1988, and Borokhovich, Parrino, and Trapani, 1996). As such, more independent boards might be expected

to act less capriciously in their relationship with the CEO because such behavior harms stockholder interests. We use the fraction of independent directors on the board, *Board Independence*, as of the proxy date to examine this prediction. Independent directors are defined as directors who are not current or former employees of the firm, relatives of the CEO, consultants, investment or commercial bankers, or insurance executives.

We also expect firms that have recently performed poorly to have weaker reputations in the labor market and to face lower expected costs from opportunistic behavior in contracting with their CEOs. Consequently, we expect that explicit contracts will be observed more frequently and have longer durations at firms with poor recent performance. As a measure of market performance, we calculate *Market-Adjusted Return* as the difference between the six-month buy-and-hold return on the firm's stock, ending the month prior to the contract, and the return on the Center for Research in Security Prices (CRSP) value-weighted index over the same period. As a measure of operating performance, we calculate the firm's earnings before interest and taxes (EBIT) during the fiscal year ending immediately before the contract date and scale this value using total book assets at the beginning of that fiscal year. We adjust the EBIT/Assets ratio by subtracting the industry median value of this ratio in the contract year, where the industry for each firm is defined as in Fama and French (1997), and label this measure *Industry-Adjusted EBIT/Assets*.

Firms that recently fired a CEO have revealed a willingness to sever an implicit or explicit EA. We expect that, while many of these firings may be justified, on average firms that have recently fired a CEO are likely to be less concerned about the reputation effects of firing another one. To capture this effect, we identify all sample firms at which a CEO was forced from office within five years of the contract date, using the forced turnover classification scheme

described by Parrino (1997). With this information, we construct an indicator variable, *Prior CEO Fired*, which takes the value of one if a CEO was fired within the last five years.

C.2. Measures of Level of Investment

CEOs hired from outside are more likely to make larger investments in firm-specific human capital than CEOs promoted from within their firms, and thus have more to lose in the event of opportunistic behavior by the firm. Thus, we expect that outside CEOs will be more likely to have explicit contracts and, where present, these contracts will have longer durations. To test this prediction, we construct an indicator variable, *Outside CEO*, which takes a value of one if the CEO is appointed to that position within one year of joining the firm.⁸

A complicating factor in interpreting any observed effect of outside CEO hires is the likelihood that outsiders know less about the reputation concerns of the firm's board than insiders. If CEOs are risk averse, this increased uncertainty would also predict that outsiders are more likely to have an explicit (or longer) contract. In the empirical analysis we attempt to isolate this information effect from the effect of the level of investment by distinguishing between outside CEOs hired from within the industry and those hired from another industry, where industries are defined as in Fama and French (1997). A CEO from another industry is likely to have to invest more in human capital than a CEO from within the industry, while knowledge of the inner workings of a firm's board is less likely to depend on industry origin. We therefore construct an indicator variable for CEOs that were hired from different industries to capture the effect of the size of the CEO's investment on contract choice.

⁸ We obtain similar results with an alternative definition of an outside succession in which outside CEOs are defined as CEOs that join the firm as of the contract date.

C.3. Measures of Susceptibility to Opportunistic Behavior

We use two variables as measures of the susceptibility of the CEO to opportunistic behavior by the firm. The first is an indicator variable, *Founder*, that has a value of one if the CEO is the founder of the firm or a member of the founding family. We expect that a CEO who is a founder or founding family member exerts greater influence over the board than a non-founder and will therefore be more willing to maintain an implicit relationship with the firm. We also compute *CEO Ownership* as the fraction of shares outstanding owned by the CEO using the data in the proxy statement immediately preceding the contract date. We expect that, on average, a CEO who owns a larger fraction of the firm's stock will have more power in the boardroom and will also be more willing to maintain an implicit relationship.

C.4. Measures of Expected Loss in the Event of Opportunistic Behavior

The CEO's human capital is more likely to be transferable to other firms in industries where the firms tend to be similar. Therefore, CEOs in homogeneous industries will tend to have less firm-specific human capital at risk in the event of opportunistic actions by the firm. As a proxy for firm uniqueness, and therefore the level of firm-specific human capital at risk for its CEO, we compute a measure of the homogeneity of the industry in which each firm operates. This measure, denoted *Industry Homogeneity*, is computed as the mean cross-sectional standard deviation of the year-to-year percentage change in revenue. It is calculated for each year between 1960 and 1989 for each two-digit SIC group that has at least 10 observations in Compustat. The yearly estimates are then averaged to obtain an overall mean standard deviation

for the 30-year period.⁹ We expect that explicit agreements are less likely, and of shorter duration at firms in homogeneous industries.

The rationale for this industry homogeneity proxy is straightforward. If the firms in an industry operate in similar product markets, changes in the demand for their products will tend to affect their revenue in a similar manner, leading to a low cross-sectional variation in revenue changes. Where an industry is characterized by substantial product differentiation, on the other hand, the revenue of the member firms will tend to react differently to changes in demand, implying a higher cross-sectional variation in revenue changes.¹⁰

A CEO with a short horizon is less likely to face opportunistic behavior on the part of his or her employer than a CEO with a long horizon for several reasons. First, there is less time for changes in the business or relationship to occur that would lead the firm to break an implicit agreement. Second, the expected cost to the CEO, such as reduction in the value of the CEO's human capital, from opportunistic behavior by the firm will tend to be smaller if the CEO has a short horizon (e.g., is nearing retirement). Finally, the expected gain to the firm from opportunistic behavior is also likely to be smaller. To capture this horizon effect, we use the CEO's age as of the contract date, *CEO Age*.

The level of CEO pay and the proportion of compensation that is represented by stock and option grants also provide measures of the expected loss to the CEO in the event that the firm behaves opportunistically. As a measure of the level of compensation, we use the CEO's average cash salary, where the average is calculated over the life of the contract for CEOs with written agreements, and over the three years beginning January 1, 2000 for CEOs without written

⁹ The 1960 to 1989 period ends before all but one of the contract dates in our sample.

¹⁰ This idea can be illustrated by considering an industry that consists only of wheat farmers. Holding cultivated acreage and yields (production technology) constant, a change in the demand for wheat will have the same effect on the revenue of each firm and the standard deviation of the percent change in revenue will be zero.

agreements. We denote this variable as *Salary*. We also create the variable *Incentive to Total Pay* by computing the ratio of the value of stock and option grants to total pay (including salary, bonus, and stock and option grants) over the same period. Incentive compensation is inherently more flexible than salary and therefore, is more susceptible to opportunistic behavior on the part of the firm, especially to the extent that it is not vested. We expect the likelihood of an explicit contract and its duration to be positively related to *Salary* and *Incentive to Total Pay*.

C.5. Measures of Uncertainty

We also construct explanatory variables to capture the degree of uncertainty surrounding the future of the firm's business and, therefore, the contracting relationship. Recall that the theory provides conflicting predictions for the impact of uncertainty on the choice between implicit and explicit contracts. On the one hand, the flexibility afforded by implicit contracts might be viewed as more valuable in uncertain environments. On the other hand, an explicit contract may provide a greater measure of comfort regarding the potential for opportunistic behavior by the other party. Which of these effects dominates is an empirical question.

We use two proxies for the degree of uncertainty in the empirical analysis. The first proxy reflects the standard deviation of the firm's monthly stock returns over the twelve months ending in the month immediately prior to the contract date (or, January 1, 2000 if the firm has an implicit contract). In order to control for time series variation in market-wide volatility, we divide this firm-specific standard deviation by the standard deviation of the CRSP value-weighted index return over the same twelve months. Further, to mitigate the effects of outliers, we use the natural logarithm of this ratio, which we denote *Natural Log of Stock Volatility/Market Volatility*. We expect that uncertainty is increasing in this volatility measure.

The second proxy for uncertainty is an estimate of the survival rate among firms in the industry. Specifically, for each contract year and each Fama-French (1997) industry, we calculate *Industry Survival Rate* as one minus the percentage of firms in the industry that were de-listed during that year due to mergers and acquisitions. The number of de-listings and the total number of firms at the beginning of the year are obtained from the CRSP database. We posit that firms in industries with higher survival rates face less uncertainty about their futures.

III. Evidence

A. Sample Statistics and Univariate Evidence

Table I presents descriptive statistics for our sample of S&P 500 firms and statistics from univariate tests on differences in CEO, firm, and industry characteristics. Mean and median values are presented for each variable, for the full sample, and for the sub-samples of firms with and without explicit agreements. Univariate statistics are reported for tests of differences in both the mean and the median values across the two sub-samples.

The explicit EA characteristics reported in the upper panel of Table I are the dependent variables we examine in subsequent tests. Forty eight percent (237/494) of the CEOs in the sample have explicit agreements. In contrast, Agrawal and Knoeber (1998) report that in 1987 only 12 percent of the CEOs in a sample of 446 Forbes 800 firms had employment agreements. Among the agreements in our sample, the typical (median) duration is three years.

Variables representing CEO characteristics indicate that the average (median) age of the CEO, across the entire S&P 500 sample, is 54.7 (55.0) years and the CEO owns an average (median) of 1.85 percent (0.19 percent) of the firm's stock. Over 11 percent of the CEOs are founders or members of the founding family. Although not reported in the table, the mean (median) stock ownership among the founders is 8.6% (3.5%). Almost 31 percent of the CEOs

were hired from outside the firm and over 11 percent work for firms that experienced a forced CEO departure within the previous five years. Finally, for the entire sample of CEOs, the mean (median) salary and ratio of incentive to total pay are \$855.51 (\$829.08) thousand and 59.8 percent (63.7 percent), respectively. The univariate tests indicate that younger CEOs, CEOs hired from outside the firm, CEOs working at firms with recent forced CEO turnover, and CEOs that receive a higher proportion of their pay in the form of stock or options are significantly more likely to have an explicit EA.

The third set of variables in Table I reflect firm characteristics as of the event date (the date of the contract, or January 1, 2000 if no contract exists or can be found). The average (median) fraction of independent directors at sample firms is 65.5 percent (66.7 percent). Both the stock and operating performance measures for sample firms are above their respective benchmarks on average. The mean (median) market-adjusted return over the six months preceding the contract date is 8.9 percent (-5.7 percent), while the mean (median) industry-adjusted ratio of EBIT to assets is 0.112 (0.064). On average, sample firms have book assets of \$29.667 billion (median of \$7.835 billion). Univariate tests based on these firm characteristics indicate that the presence of an explicit EA is associated with a less independent board of directors, weaker operating performance, and lower stock-market volatility.

The final set of variables in Table I represent industry characteristics. Approximately 41.3 percent of the sample firms are in industries classified as homogeneous.¹¹ Furthermore, the mean (median) survival rate for industries in which the sample firms compete is 92.6 percent (93.1 percent), indicating that 7.4 percent (6.9 percent) of the firms' industry peers are de-listed

¹¹ An indicator variable is used throughout the analysis to distinguish between heterogeneous and homogeneous industries. This variable equals one if the standard deviation of the year-to-year percentage change in revenue for an industry is below the median standard deviation across all industries. Since a larger standard deviation implies greater heterogeneity, a value of one for this measure indicates a homogeneous industry. Therefore, the mean (median) value of 0.4130 (0.0000) reported at the bottom of Table I is the fraction of observations in homogeneous industries.

due to mergers and acquisitions in the year the agreement is signed, or in the year 2000 if no contract exists or can be found. Explicit EAs are significantly more likely to be observed at firms that operate in heterogeneous industries and industry survival rates are significantly higher for firms having explicit contracts with their CEO.

The univariate evidence in Table I is broadly consistent with the relations predicted by contract theory. Explicit contracts are more prevalent 1) Where the board is likely to be less concerned about the reputation effects of behaving opportunistically – at firms with weaker recent operating performance, and where a CEO was fired during the last five years, 2) At firms with less independent boards, 3) Where the CEO is an outsider and is therefore likely to be less certain of the firm’s inclination to behave opportunistically and also is likely to invest more heavily in human capital as part of the relationship, and 4) Where the potential loss to the CEO, conditional on opportunistic behavior by the firm is likely to be greater – in heterogeneous industries, where the CEO is younger and presumably has a longer horizon, and where incentive compensation represents a higher percentage of the CEO’s pay. Furthermore, while the effect of uncertainty on the choice of explicit versus implicit agreements is an empirical issue, the univariate evidence is consistent with the idea that explicit agreements are less likely when there is more uncertainty, as measured by stock-market volatility or industry survival rates.

Table II presents the correlations between the variables in Table I and p-values for two-tailed tests that differ significantly from zero. Two patterns are apparent in this table. First, most of the variables that are significantly related to the presence of an explicit EA are also significantly related to *Contract Duration*, with the correlations having the same sign. This is consistent with the notion that shorter explicit contracts are more similar to implicit contracts than longer ones. Second, none of the explanatory variables exhibit a great deal of pairwise

collinearity. Among the explanatory variables in Table II, the only correlation coefficient with an absolute value greater than 0.4 is the correlation between *Founder* and *CEO Ownership* (0.404).

B. Multivariate Evidence

In this section, we present multivariate tests of our hypotheses. We begin by analyzing the incidence of explicit contracts across classifications based on some of our explanatory variables. We follow this evidence with results from probit regression models predicting the presence of an explicit agreement. Finally, we present evidence from Tobit regression models explaining CEO contract duration.

B.1. Explicit vs. Implicit Contracts

The theory suggests that if explicit CEO EAs are used, at least in part, to protect CEOs from opportunistic behavior by their employers, the likelihood of observing an explicit EA should be decreasing in the reputation of the firm, and increasing in the required up-front investment by the CEO, the degree of information asymmetry, and the expected loss to the CEO in the event the firm behaves opportunistically. Further, we expect that the role of reputation is reduced where the CEO is less susceptible to opportunistic behavior, or is making a smaller up-front investment. The overall degree of uncertainty surrounding the relationship could also influence the choice between implicit and explicit contracts, although the direction of this influence is unclear.

Table III reports statistics for tests of differences in the proportion of CEOs with explicit contracts and the duration of these contracts across sub-samples based on key explanatory variables. One of the variables used to partition the observations in Table III is an indicator variable for the firm's reputation concerns, *Poor Firm Rep*. This variable combines the

information from the stock-market and operating performance measures and the *Prior CEO Fired* measure into a single variable. It takes a value of one if the firm's market-adjusted return over the six months prior to the contract data is less than negative 25 percent (22.7 percent of the sample), its industry-adjusted EBIT/assets is below zero (19.0 percent of sample), or if a CEO has been fired at that firm in the five years preceding the event date (11.3 percent of sample).

Panel A of Table III, which partitions the sample by the origin of the CEO (insider or outsider) and firm reputation concerns, reveals that outsiders are not only more likely to have an explicit contract than insiders (as indicated in Table I), but that this likelihood is especially high if the board has less concern for the firm's reputation. In fact, 89 percent of the outsiders at firms with low reputation concerns have EAs, compared with only 56 percent of outsiders at firms with higher reputation concerns. Just over one in three insiders have an explicit agreement and this proportion does not vary with reputation concerns.

Panel B of Table III shows that younger CEOs are not only more likely to have an explicit EA, but that the probability of an explicit contract is especially high at firms with low reputation concerns within this sub-sample. Sixty-five percent of CEOs whose age is below the median and who work at firms with low reputation concerns have explicit contracts. This compares with only 45 percent of young CEOs at firms with high reputation concerns. As with insiders in Panel A, among older CEOs, the proportion that has an explicit agreement is not sensitive to reputation concerns. The proportion of older CEOs with explicit agreements is also just over one in three. Finally, Panel B shows that contract duration is, on average, higher for older CEOs than for younger CEOs.

Panel C of Table III partitions the sample by the volatility of the firm's stock price and reputation concerns. As in Table I, the evidence here indicates that explicit agreements are less

prevalent at firms with high stock-price volatility. As in the previous panels and tables, Panel C also shows that the proportion of CEOs with explicit contracts increases as firm reputation concerns diminish. Notably, this increase is larger among CEOs at firms with high stock-price volatility. In other words, reputation concerns are an important factor in the decision to use an explicit contract in highly uncertain environments.

Table IV presents the results from probit regressions that predict the use of an explicit contract. Instead of coefficient estimates, the table presents partial derivatives with respect to each continuous independent variable, holding all other variables at their mean values. For indicator variables, the partial effect for a change in that variable from zero to one is reported.

Model 1 in Table IV includes the proxies for reputation concerns, whether the CEO is a founder or member of the founding family and whether the CEO was hired from outside the firm. The natural log of assets is included as a control variable. The evidence from the coefficient estimates for the *Board Independence*, *Industry-Adjusted EBIT/Assets*, and *Prior CEO Fired* variables is consistent with that from Tables I, II, and III. Explicit contracts are more likely to be used at firms with weak reputations and at firms with less independent boards.¹² While stock price performance in the six months preceding the event date is not a strong predictor of the use of explicit contracts, prior operating performance is both statistically and economically significant. For example, the likelihood that the CEO has an explicit agreement increases 5.0 percent with a decrease in *Industry-Adjusted EBIT/Assets* from 0.10 to 0.00 during the previous fiscal year. If a CEO has been fired at the firm during the previous five years, the CEO is 16.9 percent more likely to have an explicit agreement. The coefficient estimate for

¹² We also examined institutional ownership and the fraction of shares held by blockholders as proxies for reputation concerns related to governance quality. However, we exclude these variables from the results reported in this paper. Neither provides explanatory power beyond that provided by *Board Independence* and the results for all other explanatory variables are qualitatively unchanged when they are excluded. In addition, the number of observations available to estimate the regressions is larger when institutional ownership is excluded from the models because data is missing from the Spectrum database for 15 firms for which all other data are available.

Board Independence, 0.34, indicates that, for the typical 11-member board in our sample, replacing a single inside director with an independent director increases the likelihood of an explicit contract by 3.1 percent.

The insignificant coefficient estimate for *Founder* in Model 1 indicates that CEOs who are founders or members of the founding family are no more or less likely to have an explicit contract than other CEOs. The evidence is similar when we substitute *CEO Ownership* for *Founder* as a measure of susceptibility to opportunistic behavior. The likelihood of an explicit agreement is unrelated to *CEO Ownership*.

The highly significant coefficient estimate for *Outside CEO* in Model 1 is consistent with the previous evidence indicating that CEOs from outside the firm are significantly more likely to have an explicit EA. In fact, the coefficient estimate indicates that an outsider is 36.7 percent more likely to have such an agreement than an insider.

Recall that there are at least two reasons why outsiders might prefer explicit agreements more than insiders. First, outsiders tend to make greater investments in specific human capital than insiders. Second, outsiders are in a weaker position than insiders to assess the propensity of the board to behave opportunistically. In an effort to distinguish between these effects, in Model 2 of Table IV we include an interaction term between *Outside CEO* and the indicator variable *Poor Firm Rep.* used in Table III and a second interaction term between *Poor Firm Rep.* and an indicator that equals one if the CEO is an outsider from another industry, *Outsider From Diff. Ind.* Consistent with the evidence in Table III, the highly significant positive coefficient estimate for the interaction between *Outside CEO* and *Poor Firm Rep.* suggests that outsiders are especially sensitive to observable signals indicating that the board has low reputation concerns. The insignificant coefficient estimate for the interaction term with *Outside CEO From Diff. Ind.*,

on the other hand, suggests that the incremental investment required of an outsider who is hired from another industry does not affect the likelihood that the CEO's EA will be explicit. This evidence, combined with the still significant coefficient for *Outside CEO*, suggests that it is information asymmetry or possibly firm-specific rather than industry-specific investment, which influences the choice between an implicit and an explicit contract. This might also be consistent with the arguments of Murphy and Zábojník (2004), who assert that the relative importance of firm-specific human capital relative to general managerial ability has declined over time.

In Model 3 of Table IV we add the four proxies for the expected loss to the CEO, conditional on opportunistic behavior by the firm, to the explanatory variables in Model 1. The significant negative coefficient on *CEO Age* and the significant positive coefficient on *Incentive to Total Pay* are consistent with the magnitude of the expected loss influencing contract choice. Younger CEOs are more likely to have an explicit agreement and the relation is economically significant. For example, a 45-year-old CEO is 16 percent more likely to have an explicit EA than a 65-year-old CEO. To the extent that vesting requirements have not been met, a CEO who receives a greater proportion of his pay in the form of restricted stock or option grants faces a greater potential loss through opportunistic behavior by the firm. The coefficient estimate on *Incentive to Total Pay* indicates that this exposure also has an economically meaningful effect on the likelihood that the CEO will have an explicit contract. A ten-percentage-point increase in the fraction of pay from stock or option grants increases the probability that a CEO has an explicit agreement by 2.3 percent.

Model 4 adds the two variables for uncertainty about the environment to the variables in Model 1. The significant negative coefficient estimate on the *Natural Log of Stock/Market Volatility* and the significant positive coefficient estimate on the *Industry Survival Rate* both

suggest that implicit contracts are more likely where there is greater certainty. In uncertain environments it is difficult to specify possible future states and the rigidity associated with explicit contracts makes them less attractive in these situations. Furthermore, as Bull (1987) notes, implicit agreements allow contracting parties to contract over aspects of the relationship that the legal system could not observe or enforce. The ability to contract over such aspects of the relationship might be especially useful in highly uncertain environments. The significant positive coefficient estimate on *Industry Survival Rate* differs from the evidence reported by Agrawal and Knoeber (1998). They find no relation between the threat of takeover and the use of explicit employment agreements. However, the market for corporate control that existed in the 1987 sample period they examined was very different from the one that existed in 2000 and the incidence of explicit agreements in 1987 was much lower than in 2000.¹³

Finally, Model 5 in Table IV includes all of the variables in Models 1 through 4. The coefficient estimates and significance levels are consistent with our previous findings, with two notable exceptions. First, the coefficient for *Prior CEO Fired* is not significant in Model 5. Second, the coefficient estimate for *Industry Homogeneity* is negative and significant in Model 5. This latter result is consistent with explicit EAs being more likely in heterogeneous industries, where the expected loss to the CEO from opportunistic behavior on the part of the firm is greater. In fact the CEO is 11.4% more likely to have an explicit EA in a heterogeneous industry than in a homogeneous one. Also noteworthy in Model 5 is the Pseudo R-squared of 0.21, which suggests that, collectively, the independent variables have meaningful explanatory power.

¹³ Agrawal and Knoeber (1998) test for relations between the presence of an explicit contract and CEO ownership, firm size, the number of years the CEO was with the company prior to being appointed to that position, the level of the industry-wide takeover threat, and whether the firm was subsequently acquired. Among these variables, only the relation with the number of years the CEO had been with the company was statistically significant. Consistent with the evidence we report for outside CEO hires, this variable was negatively related to the presence of an explicit contract.

B.2. *Contract Duration*

Given this evidence on the incidence of explicit contracts, we now examine the duration of these agreements. As discussed in Section II.A., an extremely short explicit contract leaves much of the CEO-firm contracting relationship as implicit. In this sense, we view contract duration as a continuum, from implicit contracts at one extreme (with *Contract Duration* of zero), to very long, explicit contracts at the other. Table V presents estimates for Tobit models of the relations between *Contract Duration* and our explanatory variables. The Tobit specifications account for the fact that *Contract Duration* is bounded below at zero. The table is structured like Table IV, with each model having the same explanatory variables as the corresponding model in Table IV.

Instead of coefficient estimates, we present marginal effects conditional on the presence of an explicit contract; i.e., the expected infinitesimal change in contract duration for an infinitesimal change in the explanatory variable of interest, conditional on the presence of an explicit agreement, while holding the other variables at their means. In this way, these estimated effects are not just capturing the presence of an explicit contract, but are instead measuring changes in duration for CEOs with explicit agreements. The advantage of this approach is that it allows the information contained in the observations without explicit agreements to enter the estimation.

The evidence in Table V is broadly similar to the probit results in Table IV. *Contract Duration* is decreasing with *Board Independence* and *Industry-Adjusted EBIT/Assets*. The marginal effects for these two variables indicate that adding an independent director to an average 11-member board is associated with an almost two-month decrease in contract duration for those CEOs that have explicit agreements, or about 5 percent of the median contract duration.

Similarly, an increase in *Industry-Adjusted EBIT/Assets* from 0.00 to 0.10 is associated with a 1.5 month decrease in contract duration, or about 4 percent of the median duration.

The results in Table V also indicate that duration is significantly greater for outsiders, especially those at firms with low reputation concerns. These effects are economically significant. An outsider hired into a firm with a poor reputation receives, on average, a contract that is approximately 1.4 years longer than the contract received by a CEO who is promoted from within a firm that has a poor reputation. Furthermore, *Contract Duration* is greater for CEOs who we expect to have more to lose from opportunistic behavior. In particular, CEOs with a higher salary, those who receive a greater portion of their compensation from stock and option grants, and CEOs in heterogeneous industries tend to have contracts with longer durations. It is worth noting that *CEO Age* is not significantly related to *Contract Duration*, although the sign of the coefficient estimate is consistent with the estimates in Table IV.

Finally, the evidence in Table V is also strongly consistent with the evidence in Table IV for the proxies for uncertainty. Explicit contracts are significantly shorter in duration in environments with greater uncertainty (low survival rates or high stock-market volatility), an indication of the cost of long-term rigidity in these settings. All else equal, conditional on the CEO having an explicit agreement, a one-standard-deviation increase in stock-market volatility is associated with a decrease in contract duration of about 4.8 months. Similarly, a one-standard-deviation decrease in the industry survival rate is associated with a 4.1 month decrease in contract duration.

C. Other Analyses

In addition to analyzing the choice between an implicit and explicit contract, there are questions of exactly how comprehensive explicit CEO contracts are and what provisions they

contain. To obtain evidence on these questions, we examine determinants of contract length in pages, *Contract Length*, and the two common provisions designed to protect firms against opportunistic behavior by the CEO, *Non-Compete* and *Confidentiality* provisions. The results from these analyses are not presented in a table, but summary statistics for *Contract Length*, *Non-Compete*, and *Confidentiality* are reported in Table I.

Overall, we have only limited success in identifying determinants of these contract characteristics. When using proxies similar to those in the analyses described above, a Heckman model predicting the number of pages, conditional on observing an explicit contract, reveals that *Contract Length* is positively related to firm size. We also examined an additional measure of firm complexity, the number of geographic or business segments the firm operates, and found that *Contract Length* is significantly decreasing in this measure.

Two-stage Heckman models, where the selection equation models whether the CEO has an explicit EA and the second stage models whether an explicit EA contains a non-compete or a confidentiality provision, reveal evidence that, among the explanatory variables in Tables IV and V, the presence of either non-compete or confidentiality provisions is significantly related only to CEO age. Both of these provisions are less likely to be present in the contracts of younger CEOs, results that are consistent with the possibility that greater concern by younger CEOs over their labor market reputation acts as a substitute for these provisions. When we examine additional proxy variables, we find that non-compete provisions are less likely to appear in firms with high research and development expenditures.

The generally weak evidence in these other analyses is consistent with these variables being noisy proxies for contract completeness, or there being little significant variation in the costs and benefits of having complete contract, as represented by our explanatory variables. We

leave examination of other contract provisions and the completeness of these explicit contracts more generally as open questions for future study.

IV. Conclusion

The nature of the employment relationship between firms and their CEOs has long been the focus of scrutiny by academics, practitioners, and regulators alike. This study contributes to our understanding of this relationship, and the contracting process more generally, by providing evidence from a unique database of employment contracts for CEOs of S&P 500 firms at the beginning of 2000.

We find that about half of the S&P 500 CEOs are employed under explicit agreements – agreements that specify terms of the employment relationship – rather than implicit arrangements. The evidence supports theoretical arguments regarding when we might expect to observe explicit rather than implicit contracts. Specifically, explicit agreements are more likely to exist where the potential for post-contractual opportunistic behavior on the part of a firm is greater, larger firm-specific human capital investment by the CEO is likely, and information asymmetries are greater. In particular, we find that explicit agreements are more likely at firms with poor reputations, as indicated by poor recent performance or the recent firing of a CEO. As predicted by the theory, this is consistent with an important role for reputation in making implicit contracts feasible.

We also find that explicit arrangements are more likely for CEOs appointed from outside the firm, for whom information asymmetries and firm-specific investments in human capital are likely higher. In addition, general uncertainty in the firm's operating environment decreases the likelihood of observing an explicit agreement, suggesting that both of the contracting parties value the flexibility of implicit arrangements in uncertain environments.

We also examine the length of time that the CEO contract is covered by an explicit contract. These results are generally consistent with factors that also explain where explicit contracts are more or less likely to be used. We find that explicit contracts have shorter durations, indicating a greater reliance on implicit contracting, when the propensity for opportunistic behavior by firms is lower. Similarly, CEOs have longer contracts if they come from outside the firm, or if a predecessor CEO was recently dismissed. Interestingly, firms with more independent boards and firms in more uncertain environments tend to use shorter, or less explicit contracts.

On balance, the evidence supports the theoretical literature on the choice between explicit and implicit agreements. The degree to which contracts explicitly specify terms of the employment relationship varies with the nature of the contracting environment. Given the significant variation we find in the use and duration of explicit agreements, the evidence we report suggests that a more detailed examination of the variation in employment agreement features will provide a rich area for future research. Appreciation of these fundamental differences in the nature of CEO contracts may also shed light on interpretations of the observed outcomes of various corporate governance mechanisms, including CEO compensation and turnover.

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Table I
Descriptive Statistics

CEO employment agreement (EA), CEO, firm, and industry characteristics for domestic firms in the S&P 500. The event date is the date of the explicit EA or January 1, 2000 for firms that have an implicit agreement. *Contract* is an indicator variable that equals 1 if the firm has an explicit EA with the CEO at the beginning of 2000, *Confidentiality* is an indicator variable that equals 1 if an explicit EA has a confidentiality or non-disclosure clause, *Non-Compete* is an indicator variable that equals 1 if an explicit EA has a non-compete clause, *CEO Age* is the age of the CEO on the event date, *Founder* is an indicator variable that equals 1 if the CEO founded the firm or is a member of the founding family, *Outside CEO* is an indicator variable that equals 1 if the CEO was appointed to that position within one year of joining the firm, *Prior CEO Fired* is an indicator variable that equals 1 if a previous CEO is fired in the last five years where a firing is defined using the criteria outlined in Parrino (1997), *Salary* is the average salary of the CEO in thousands of dollars, *Incentive to Total Pay* is the ratio of incentive-based pay (the value of stock and option grants) to total pay (compensation is averaged over the life of the contract for firms with an explicit EA and for the three year period from 2000-02 for firms with an implicit EA), *Board Independence* is the fraction of independent directors on the board on the event date, *Market-Adjusted Return* is the return on the firm's stock, adjusted using the CRSP value-weighted Index, over the six months preceding the event date, *Industry-Adjusted EBIT/Assets* is firm's EBIT/Assets in the fiscal year preceding the event date, less the median value of that ratio for the primary industry in which the firm competes, *Natural Log of Stock/Market Volatility* is the natural log of the ratio of the standard deviation of the firm's stock price to the standard deviation of the CRSP value-weighted Index over the 12 months immediately preceding the event date, *Assets* is book assets at the end of the fiscal year ending immediately before the event date, *Industry Homogeneity* is an indicator variable that equals 1 if the industry is classified as homogeneous based on the cross-sectional standard deviation of the year-to-year percentage change in revenue in the industry from 1960 to 1989, and *Industry Survival Rate* equals one minus the fraction of firms in the industry that were delisted due to mergers and acquisitions in the year that includes the event date. Industries are defined using the classification system proposed by Fama and French (1997). Standard deviations are reported in parentheses below the mean values. Two-tailed p-values for tests of differences in mean and median values are reported in parentheses below the t-value and Wilcoxon Z statistics.

Variable	Total Sample			Firms With Explicit Employment Agreements			Firms With Implicit Employment Agreements			Statistics for Tests of Differences Between Mean and Median Values for Firms With Explicit and Implicit Agreements	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-value	Wilcoxon Z
Employment agreement characteristics:											
Contract	494	0.4798 (0.5001)	0.0000	237	1.0000 (0.0000)	1.0000	257	0.0000 (0.0000)	0.0000		
Contract duration (years)	461	1.5811 (2.3140)	0.0000	204	3.5729 (2.2321)	3.0000	257	0.0000 (0.0000)	0.0000		
Contract length (pages)	461	6.2061 (9.2871)	0.0000	204	14.0245 (9.2334)	13.0000	257	0.0000 (0.0000)	0.0000		
Confidentiality	461	0.3427 (0.4751)	0.0000	204	0.7745 (0.4189)	1.0000	257	0.0000 (0.0000)	0.0000		
Non-compete	461	0.2538 (0.4357)	0.0000	204	0.5735 (0.4958)	1.0000	257	0.0000 (0.0000)	0.0000		
CEO characteristics:											
CEO age	491	54.7291 (6.8176)	55.0000	234	53.7265 (7.0548)	54.0000	257	55.6420 (6.4738)	56.0000	3.1374 (0.0018)	3.479 (0.0005)
CEO ownership (%)	494	1.8476 (6.0093)	0.1900	237	1.6987 (7.0045)	0.2100	257	1.9849 (4.9268)	0.1700	0.5284 (0.5975)	1.285 (0.1988)
Founder	494	0.1134 (0.3174)	0.0000	237	0.0928 (0.2908)	0.0000	257	0.1323 (0.3395)	0.0000	1.3823 (0.1675)	1.3810 (0.1673)
Outside CEO	494	0.3077 (0.4620)	0.0000	237	0.4430 (0.4978)	0.0000	257	0.1829 (0.3873)	0.0000	-6.5098 (0.0000)	-6.253 (0.0000)
Prior CEO fired	494	0.1134 (0.3174)	0.0000	237	0.1603 (0.3677)	0.0000	257	0.0700 (0.2557)	0.0000	-3.1887 (0.0015)	-3.159 (0.0016)
Salary	475	855.51 (389.39)	829.08	227	856.32 (407.17)	795.30	248	854.77 (373.21)	854.91	-0.0434 (0.9654)	0.8780 (0.3801)
Incentive to total pay	475	0.5979 (0.2491)	0.6366	227	0.6249 (0.2232)	0.6394	248	0.5732 (0.2687)	0.6334	-2.2714 (0.0236)	-1.6880 (0.0913)
Firm characteristics:											
Board independence	494	0.6549 (0.1691)	0.6667	237	0.6349 (0.1835)	0.6667	257	0.6734 (0.1527)	0.6923	2.5445 (0.0112)	2.055 (0.0399)
Market-adjusted return	471	8.91% (67.15%)	-5.74%	219	3.67% (61.51%)	-6.30%	252	13.46% (71.50%)	-5.38%	1.5805 (0.1147)	1.239 (0.2155)
Industry-adjusted EBIT/assets	451	0.1117 (0.1574)	0.0644	207	0.0919 (0.1474)	0.0527	244	0.1285 (0.1637)	0.0771	2.4790 (0.0135)	2.504 (0.0123)
Natural log of stock/market volatility	471	0.8962 (0.4499)	0.8625	219	0.8267 (0.5038)	0.8060	252	0.9566 (0.3882)	0.9196	3.1541 (0.0017)	3.278 (0.0010)
Assets (millions)	472	\$29,666.80 (85,528.62)	\$7,835.40	220	\$25,300.49 (84,276.10)	\$6,891.81	252	\$33,478.66 (86,594.22)	\$8,270.70	1.0364 (0.3006)	1.464 (0.1432)
Industry characteristics:											
Industry homogeneity	494	0.4130 (0.4929)	0.0000	237	0.3629 (0.4818)	0.0000	257	0.4591 (0.4993)	0.0000	2.1772 (0.0299)	2.169 (0.0301)
Industry survival rate	468	0.9260 (0.0337)	0.9309	215	0.9311 (0.0319)	0.9342	253	0.9218 (0.0347)	0.9306	-2.9936 (0.0029)	-2.553 (0.0107)

Table II
Correlation Matrix

Correlations between CEO employment agreement (EA), CEO, firm, and industry characteristics for domestic firms in the S&P 500. The event date is the date of the explicit EA or January 1, 2000 for firms that have only an implicit agreement. *Contract* is an indicator variable that equals 1 if the firm has an explicit EA with the CEO at the beginning of 2000, *Confidentiality* is an indicator variable that equals 1 if an explicit EA has a confidentiality or non-disclosure clause, *Non-Compete* is an indicator variable that equals 1 if an explicit EA has a non-compete clause, *CEO Age* is the age of the CEO on the event date, *Founder* is an indicator variable that equals 1 if the CEO founded the firm or is a member of the founding family, *Outside CEO* is an indicator variable that equals 1 if the CEO was appointed to that position within one year of joining the firm, *Prior CEO Fired* is an indicator variable that equals 1 if a previous CEO is fired in the last five years where a firing is defined using the criteria outlined in Parrino (1997), *Natural Log of Salary* is the natural log of the average salary of the CEO in thousands of dollars, *Incentive to Total Pay* is the ratio of incentive-based pay (the value of stock and option grants) to total pay (compensation is averaged over the life of the contract for firms with an explicit EA and for the three year period from 2000-02 for firms with an implicit EA), *Board Independence* is the fraction of independent directors on the board on the event date, *Market-Adjusted Return* is the return on the firm's stock, adjusted using the CRSP value-weighted Index, over the six months preceding the event date, *Industry-Adjusted EBIT/Assets* is firm's EBIT/Assets in the fiscal year preceding the event date, less the median value of that ratio for the primary industry in which the firm competes, *Natural Log of Stock/Market Volatility* is the natural log of the ratio of the standard deviation of the firm's stock price to the standard deviation of the CRSP value-weighted Index over the 12 months immediately preceding the event date, *Natural Log of Assets* is the natural log of book assets at the end of the fiscal year ending immediately before the event date, *Industry Homogeneity* is an indicator variable that equals 1 if the industry is classified as homogeneous based on the cross-sectional standard deviation of the year-to-year percentage change in revenue in the industry from 1960 to 1989, and *Industry Survival Rate* equals one minus the fraction of firms in the industry that were delisted due to mergers and acquisitions in the year that includes the event date. Industries are defined using the classification system proposed by Fama and French (1997). Two-tailed p-values for tests that the correlations equal zero are reported in parentheses.

	Contract	Contract Duration (Years)	Contract Length (Pages)	Confidentiality	Non-Compete	CEO Age	CEO Ownership (%)	Founder	Outside CEO	Prior CEO Fired
Employment agreement features										
Contract	1.000									
Contract duration (years)	0.768 (0.000)	1.000								
Contract length (pages)	0.751 (0.000)	0.605 (0.000)	1.000							
Confidentiality	0.811 (0.000)	0.655 (0.000)	0.775 (0.000)	1.000						
Non-compete	0.655 (0.000)	0.507 (0.000)	0.655 (0.000)	0.745 (0.000)	1.000					
Explanatory variables										
CEO age	-0.141 (0.002)	-0.048 (0.306)	-0.101 (0.032)	-0.158 (0.001)	-0.176 (0.0002)	1.000				
CEO ownership (%)	-0.024 (0.598)	0.036 (0.442)	0.058 (0.215)	0.003 (0.950)	0.028 (0.545)	0.153 (0.001)	1.000			
Founder	-0.062 (0.168)	-0.039 (0.399)	-0.084 (0.073)	-0.046 (0.323)	-0.059 (0.205)	0.071 (0.118)	0.404 (0.000)	1.000		
Outside CEO	0.306 (0.000)	0.284 (0.000)	0.306 (0.000)	0.325 (0.000)	0.301 (0.000)	-0.126 (0.005)	-0.046 (0.309)	-0.203 (0.000)	1.000	
Prior CEO fired	0.142 (0.002)	0.118 (0.012)	0.162 (0.001)	0.137 (0.003)	0.149 (0.001)	-0.151 (0.001)	-0.067 (0.137)	-0.108 (0.017)	0.229 (0.000)	1.000
Natural log of salary	0.018 (0.695)	0.046 (0.331)	0.054 (0.257)	0.002 (0.961)	0.000 (0.999)	0.141 (0.002)	-0.034 (0.464)	-0.110 (0.017)	0.026 (0.569)	-0.223 (0.000)
Incentive to total pay	0.104 (0.024)	0.049 (0.302)	0.071 (0.135)	0.064 (0.182)	0.042 (0.383)	-0.179 (0.000)	-0.086 (0.062)	-0.029 (0.533)	0.128 (0.005)	0.153 (0.001)
Board independence	-0.114 (0.011)	-0.173 (0.000)	-0.005 (0.918)	-0.103 (0.028)	-0.014 (0.763)	0.016 (0.723)	-0.218 (0.000)	-0.210 (0.000)	-0.032 (0.480)	0.038 (0.395)
Market-adjusted return	-0.073 (0.115)	-0.080 (0.095)	-0.091 (0.055)	-0.063 (0.188)	-0.069 (0.150)	-0.092 (0.046)	0.059 (0.200)	0.177 (0.000)	-0.024 (0.603)	-0.043 (0.352)
Industry-adjusted EBIT/assets	-0.116 (0.014)	-0.119 (0.014)	-0.146 (0.003)	-0.124 (0.011)	-0.123 (0.011)	-0.134 (0.004)	0.004 (0.940)	0.135 (0.004)	0.015 (0.747)	-0.025 (0.593)
Natural log of stock/market volatility	-0.144 (0.002)	-0.064 (0.181)	-0.153 (0.001)	-0.130 (0.006)	-0.045 (0.342)	-0.129 (0.005)	0.119 (0.010)	0.172 (0.000)	0.119 (0.010)	0.121 (0.009)
Natural log of assets	-0.077 (0.096)	-0.031 (0.513)	0.022 (0.647)	-0.051 (0.285)	-0.068 (0.154)	0.225 (0.000)	-0.102 (0.027)	-0.174 (0.000)	-0.113 (0.014)	0.003 (0.950)
Industry homogeneity	-0.098 (0.030)	-0.083 (0.076)	-0.073 (0.116)	-0.103 (0.027)	-0.071 (0.130)	0.100 (0.026)	-0.059 (0.189)	-0.079 (0.078)	-0.053 (0.237)	-0.054 (0.235)
Industry survival rate	0.137 (0.003)	0.181 (0.000)	0.112 (0.020)	0.154 (0.001)	0.152 (0.002)	-0.004 (0.931)	0.038 (0.416)	0.068 (0.140)	0.048 (0.298)	0.041 (0.381)

Table II (continued)
Correlation Matrix

	Natural Log of Salary	Incentive to Total Pay	Board Independence	Market-Adjusted Return	Industry-Adjusted EBIT/Assets	Natural Log of Stock/Market Volatility	Natural Log of Assets	Industry Homogeneity	Industry Survival Rate
<u>Employment agreement features</u>									
Contract									
Contract duration (years)									
Contract length (pages)									
Confidentiality									
Non-compete									
<u>Explanatory variables</u>									
CEO age									
CEO ownership (%)									
Founder									
Outside CEO									
Prior CEO fired									
Natural log of salary	1.000								
Incentive to total pay	0.014 (0.761)	1.000							
Board independence	0.043 (0.348)	-0.072 (0.118)	1.000						
Market-adjusted return	-0.034 (0.474)	0.265 (0.000)	-0.102 (0.028)	1.000					
Industry-adjusted EBIT/ assets	-0.079 (0.097)	0.218 (0.000)	-0.116 (0.014)	0.324 (0.000)	1.000				
Natural log of stock/ market volatility	-0.141 (0.003)	0.201 (0.000)	-0.152 (0.001)	0.274 (0.000)	0.220 (0.000)	1.000			
Natural log of assets	0.159 (0.001)	-0.047 (0.318)	0.153 (0.001)	-0.169 (0.000)	-0.312 (0.000)	-0.318 (0.000)	1.000		
Industry homogeneity	0.085 (0.065)	-0.062 (0.178)	0.065 (0.148)	-0.147 (0.001)	-0.059 (0.214)	-0.165 (0.000)	0.110 (0.016)	1.000	
Industry survival rate	-0.028 (0.546)	0.010 (0.839)	-0.104 (0.024)	0.026 (0.583)	0.008 (0.861)	0.162 (0.001)	-0.162 (0.001)	0.015 (0.745)	1.000

Table III
Contract Incidence and Duration for Explicit CEO Employment Agreements

Incidence and duration of comprehensive explicit employment agreements (EAs) for CEOs of S&P 500 firms as of the beginning of the year 2000. Each panel presents the number of observations in each respective subsample, the proportion of firms that have such an agreement, and the average duration (in years) of the explicit agreements. Panel A divides the sample based on *Outside CEO* and *Poor Firm Rep.* Panel B divides the sample based on *CEO Age* (by its median) and *Poor Firm Rep.*, while Panel C divides the sample based on *Natural Log of Stock/Market Volatility* (by its median) and *Poor Firm Rep.* Each panel also presents tests for differences in contract incidence and duration across each group, holding the other variable constant, and overall tests of differences across the four subsets. For differences in contract incidence, Chi-squared statistics for the null hypothesis of no difference across groups are presented, based on probit models with respective group effects. Also for differences in contract incidence, F-statistics for the null hypothesis of no differences across groups are presented. P-values for each of these tests are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests. *Poor Firm Rep.* is an indicator variable that equals one if the firm has a poor reputation, where poor reputation is defined as a firm with industry-adjusted EBIT divided by assets less than zero, which recently fired its CEO, or which has experienced a market-adjusted decline in its stock price of 25 percent or more during the last six months. *Outside CEO* is an indicator variable that equals 1 if the CEO was appointed to that position within one year of joining the firm, *CEO Age* is the age of the CEO on the event date, and *Natural Log of Stock/Market Volatility* is the natural log of the ratio of the standard deviation of the firm's stock price to the standard deviation of the CRSP value-weighted Index over the 12 months immediately preceding the event date. Industries are defined using the classification system proposed by Fama and French (1997).

Panel A: Reputation and Outside CEOs

		Reputation		Tests for Differences Across Reputations	
		Poor Firm Rep. = 0	Poor Firm Rep. = 1		
Outside CEO	Outside=0	Number of obs.	203	134	X ² : 0.33 (0.565) F: 1.89 (0.172)
		Proportion with explicit EA	0.35	0.38	
		Average duration explicit EA	3.19	3.79	
	Outside=1	Number of obs.	50	57	X ² : 16.06*** (0.000) F: 0.82 (0.368)
		Proportion with explicit EA	0.56	0.89	
		Average duration explicit EA	3.36	3.92	
Tests for Differences Across Outside CEO				Tests for Differences Across Four Groups	
Proportion with explicit EA (X ²):		7.29*** (0.007)	47.49*** (0.000)	54.32*** (0.000)	
Average duration explicit EA (F):		(0.0900) (0.761)	(0.0700) (0.798)	(0.9500) (0.416)	

Panel B: Reputation and CEO Age

		Reputation		Tests for Differences Across Reputations	
		Poor Firm Rep. = 0	Poor Firm Rep. = 1		
CEO Age	≤ Median	Number of obs.	132	104	χ ² : 10.12*** (0.002) F: 2.64 (0.107)
		Proportion with explicit EA	0.45	0.65	
		Average duration explicit EA	2.93	3.70	
	> Median	Number of obs.	119	86	χ ² : 0.50 (0.482) F: 0.46 (0.499)
		Proportion with explicit EA	0.32	0.38	
		Average duration explicit EA	3.88	4.23	
Tests for Differences Across CEO Age				Tests for Differences Across Four Groups	
Proportion with explicit EA (X ²):		4.32** (0.038)	13.94*** (0.000)	30.44*** (0.000)	
Average duration explicit EA (F):		3.25* (0.075)	1.03 (0.314)	2.25* (0.083)	

Panel C: Reputation and Stock-Market Volatility

		Reputation		Tests for Differences Across Reputations	
		Poor Firm Rep. = 0	Poor Firm Rep. = 1		
Natural Log of Stock/Market Volatility	≤ Median	Number of obs.	116	105	X ² : 1.42 (0.234) F: 0.53 (0.467)
		Proportion with explicit EA	0.49	0.57	
		Average duration explicit EA	3.23	3.55	
	> Median	Number of obs.	137	86	X ² : 7.39*** (0.007) F: 3.05* (0.085)
		Proportion with explicit EA	0.31	0.49	
		Average duration explicit EA	3.27	4.32	
Tests for Differences Across Stock- Market Volatility				Tests for Differences Across Four Groups	
Proportion with explicit EA (X ²):		9.03*** (0.003)	1.31 (0.252)	24.85*** (0.000)	
Average duration explicit EA (F):		0.01 (0.936)	2.36 (0.128)	1.86 (0.138)	

Table IV
Probit Models Predicting Use of Explicit CEO Employment Agreement

Probit models predicting whether firms in the S&P 500 have comprehensive explicit employment agreements (EAs) with their CEOs as of the beginning of the year 2000. The dependent variable, *Contract*, equals one if the firm has such an agreement and zero otherwise. The partial derivative with respect to the independent variable and the t-statistic for the model coefficient (in parentheses) are reported. The partial derivative is computed holding other variables at their mean values. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests. *Board Independence* is the fraction of independent directors on the board on the event date (the date of the explicit EA or January 1, 2000 for firms that have an implicit agreement), *Market-Adjusted Return* is the return on the firm's stock, adjusted using the CRSP value-weighted Index, over the six months preceding the event date, *Industry-Adjusted EBIT/Assets* is firm's EBIT/Assets in the fiscal year preceding the event date, less the median value of that ratio for the primary industry in which the firm competes, *Prior CEO Fired* is an indicator variable that equals 1 if a previous CEO is fired in the last five years where a firing is defined using the criteria outlined in Parrino (1997), *Outside CEO* is an indicator variable that equals 1 if the CEO was appointed to that position within one year of joining the firm, *Founder* is an indicator variable that equals one of the CEO founded the firm or is a member of the founding family, *Poor Firm Rep.* is an indicator variable that equals one if the firm has a poor reputation where poor reputation is defined as a firm with industry-adjusted EBIT less than zero, which recently fired the CEO, or which has experienced a market-adjusted decline in its stock price of 25 percent or more during the last year, *CEO Age* is the age of the CEO on the event date, *Natural Log of Salary* is the natural log of the average salary of the CEO in thousands of dollars, *Incentive to Total Pay* is the ratio of incentive-based pay (the value of stock and option grants) to total pay (compensation is averaged over the life of the contract for firms with an explicit EA and for the three year period from 2000-02 for firms without an explicit EA), *Industry Homogeneity* is an indicator variable that equals 1 if the industry is classified as homogeneous based on the cross-sectional standard deviation of the year-to-year percentage change in revenue in the industry from 1960 to 1989, *Natural Log of Stock/Market Volatility* is the natural log of the ratio of the standard deviation of the firm's stock price to the standard deviation of the CRSP value-weighted Index over the 12 months immediately preceding the event date, *Industry Survival Rate* equals one minus the fraction of firms in the industry that were delisted due to mergers and acquisitions in the year that includes the event date, and *Natural Log of Assets* is the natural log of book assets at the end of the fiscal year ending immediately before the event date. Industries are defined using the classification system proposed by Fama and French (1997).

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.403 (2.02)**	0.399 (1.95)*	0.396 (1.21)	-1.009 (-1.26)	-1.057 (-1.21)
Board independence	-0.340 (-2.21)**	-0.350 (-2.27)**	-0.377 (-2.38)**	-0.399 (-2.50)**	-0.430 (-2.59)**
Market-adjusted return	-0.040 (-0.97)	-0.007 (0.17)	-0.078 (-1.74)*	0.002 (0.04)	-0.005 (-0.10)
Industry-adjusted EBIT/assets	-0.504 (-2.86)***	-0.468 (-2.46)**	-0.552 (-3.02)***	-0.426 (-2.35)**	-0.469 (-2.29)**
Prior CEO fired	0.169 (2.06)**	0.820 (0.85)	0.150 (1.71)*	0.215 (2.59)***	0.112 (1.08)
Founder	0.006 (0.07)	-0.053 (-0.55)	0.058 (0.67)	0.046 (0.54)	0.014 (0.13)
Founder * poor firm rep.		0.160 (0.87)			0.273 (1.43)
Outside CEO	0.367 (5.79)***	0.206 (2.47)**	0.351 (5.40)***	0.417 (6.24)***	0.234 (2.60)***
Outside CEO * poor firm rep.		0.377 (2.95)***			0.372 (2.69)***
Outside CEO from diff. ind. * poor firm rep.		-0.022 (-0.33)			-0.039 (-0.56)
CEO age			-0.008 (-2.01)**		-0.009 (-2.06)**
Natural log of salary			0.046 (1.52)		0.044 (1.44)
Incentive to total pay			0.232 (2.04)**		0.318 (2.56)**
Industry homogeneity			-0.065 (-1.24)		-0.114 (-2.01)**
Natural log of stock/market volatility				-0.341 (-5.13)***	-0.396 (-5.50)***
Industry survival rate				1.993 (2.47)**	2.168 (2.54)**
Natural log of assets	-0.031 (-1.63)	-0.028 (-1.48)	-0.024 (-1.20)	-0.045 (-2.22)**	-0.041 (-1.90)*
Total observations	444	444	428	441	426
Observations with explicit employment agreement	201	201	193	198	191
Log likelihood	-271	-267	-253	-253	-230
Pseudo R-squared	0.11	0.13	0.14	0.17	0.21

Table V
Tobit Models Predicting Explicit Agreement Duration in Years

Tobit models predicting the duration of comprehensive explicit employment agreements (EAs), *Contract Duration*, between firms in the S&P 500 and their CEOs as of the beginning of the year 2000. The dependent variable is the duration of the EA explicit in years. The partial derivative with respect to the independent variable and the t-statistic for the model coefficient (in parentheses) are reported. The partial derivative is computed holding other variables at their mean values and are conditional on an the existence of an explicit EA. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests. *Board Independence* is the fraction of independent directors on the board on the event date (the date of the explicit EA or January 1, 2000 for all firms with an implicit agreement), *Market-Adjusted Return* is the return on the firm's stock, adjusted using the CRSP value-weighted Index, over the six months preceding the event date, *Industry-Adjusted EBIT/Assets* is firm's EBIT/Assets in the fiscal year preceding the event date, less the median value of that ratio for the primary industry in which the firm competes, *Prior CEO Fired* is an indicator variable that equals 1 if a previous CEO is fired in the last five years where a firing is defined using the criteria outlined in Parrino (1997), *Outside CEO* is an indicator variable that equals 1 if the CEO was appointed to that position within one year of joining the firm, *Founder* is an indicator variable that equals one of the CEO founded the firm or is a member of the founding family, *Poor Firm Rep.* is an indicator variable that equals one if the firm has a poor reputation where poor reputation is defined as a firm with industry-adjusted EBIT less than zero, which recently fired the CEO, or which has experienced a market-adjusted decline in its stock price of 25 percent or more during the last year, *Natural Log of Salary* is the natural log of the average salary of the CEO in thousands of dollars, *Incentive to Total Pay* is the ratio of incentive-based pay (the value of stock and option grants) to total pay (compensation is averaged over the life of the contract for firms with an explicit EA and for the three year period from 2000-02 for firms with an implicit EA), *Industry Homogeneity* is an indicator variable that equals 1 if the industry is classified as homogeneous based on the cross-sectional standard deviation of the year-to-year percentage change in revenue in the industry from 1960 to 1989, *Natural Log of Stock/Market Volatility* is the natural log of the ratio of the standard deviation of the firm's stock price to the standard deviation of the CRSP value-weighted Index over the 12 months immediately preceding the event date, *Industry Survival Rate* equals one minus the fraction of firms in the industry that were delisted due to mergers and acquisitions in the year that includes the event date, and *Natural Log of Assets* is the natural log of book assets at the end of the fiscal year ending immediately before the event date. Industries are defined using the classification system proposed by Fama and French (1997).

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.861 (1.36)	0.781 (1.22)	-0.266 (-0.23)	-7.636 (-2.77)***	-8.849 (-3.04)***
Board independence	-1.581 (-3.24)***	-1.593 (-3.30)***	-1.696 (-3.41)***	-1.699 (-3.58)***	-1.758 (-3.71)***
Market-adjusted return	-0.107 (-0.79)	-0.001 (-0.01)	-0.169 (-1.18)	-0.024 (-0.18)	-0.013 (-0.09)
Industry-adjusted EBIT/assets	-1.797 (-2.91)***	-1.504 (-2.35)**	-1.831 (-2.90)***	-1.399 (-2.32)**	-1.261 (-1.97)**
Prior CEO fired	0.285 (1.13)	-0.017 (-0.06)	0.269 (1.03)	0.482 (1.92)*	0.190 (0.68)
Founder	0.09 (0.30)	-0.13 (-0.38)	0.24 (0.74)	0.16 (0.57)	0.04 (0.10)
Founder * poor firm rep.		0.700 (1.01)			1.014 (1.40)
Outside CEO	1.217 (5.52)***	0.766 (2.64)***	1.163 (5.21)***	1.263 (5.82)***	0.789 (2.78)***
Outside CEO * poor firm rep.		0.838** (2.10)			0.647 (1.71)*
Outside CEO from diff. ind. * poor firm rep.		0.082 (0.39)			0.029 (0.14)
CEO age			-0.007 (-0.51)		-0.008 (-0.67)
Natural log of salary			0.207 (1.60)		0.191 (1.66)*
Incentive to total pay			0.458 (1.20)		0.734 (1.93)*
Industry homogeneity			-0.210 (-1.22)		-0.321 (-1.92)*
Natural log of stock/market volatility				-0.805 (-4.18)***	-0.884 (-4.46)***
Industry survival rate				9.889 (3.57)***	10.170 (3.63)***
Natural log of assets	-0.041 (-0.67)	-0.034 (-0.56)	-0.042 (-0.63)	-0.041 (-0.65)	-0.044 (-0.67)
Total observations	417	417	401	414	399
Observations with explicit EA	201	201	193	198	191
Observations with explicit EA and well defined duration	152	152	144	149	142
Observations with at will EA	22	22	22	22	22
Log likelihood	-589	-586	-559	-566	-534
Pseudo R-squared	0.05	0.05	0.06	0.07	0.09