

CEO Compensation Contracts of Family Firms

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ABSTRACT

Compared to non-family firms, family firms with professional CEOs face less severe agency problems arising from the separation of ownership and management. This study examines how this characteristic affects family firms' CEO compensation contracts. Using a sample of S&P 500 firms, I show that U.S. family firms are less likely to grant equity-based compensation to their professional CEOs and pay lower levels of total CEO compensation. Also, the description of annual bonus plans in the proxy statements reveals that family firms use fewer performance measures, are less likely to use non-financial performance measures, and use more discretion in determining CEOs' annual bonuses. Further, family firms exhibit higher pay-earnings sensitivity in the actual CEO annual bonuses. Finally, family firms exhibit greater sensitivity of future profitability to CEO's equity compensation. .

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1. Introduction

Family capitalism is the most popular system of corporate governance in the world (La Porta, Lopez-De-Sillanes and Shleifer, 1999), and families control a substantial portion of corporate sectors in many countries (Claessens, Djankov and Lang, 2000; Morck, Wolfenzon and Yeung, 2004). In the U.S., founding family members manage or control about one-third of the S&P 500 firms.¹ Shleifer and Vishny (1997) emphasize the importance of studying the characteristics of family firms to better understand the economic efficiency of different corporate governance mechanisms.

Compared to non-family firms, family firms with professional CEOs face less severe agency problems that arise from the separation of ownership and management, because of the strong monitoring by founding family members. This characteristic of family firms raises interesting issues about their CEO compensation contracts. In this study, I consider the following four aspects of CEO compensation contracts: the proportion of compensation that is equity-based, the level of total compensation, the pay-earnings sensitivity of annual bonus payments, and the sensitivity of future economic benefits to CEO's equity compensation. I also examine the structure of equity-based compensation and CEO annual bonus plans, as reported in the proxy statements.

First, I predict that family firms are less likely to rely on equity-based compensation to align the interests of CEOs with the shareholders because compared to non-family firms, they face less severe agency problems (Holmstrom, 1979). Empirical

¹ Following prior studies, I classify a company as a family firm if the founders or descendants continue to hold positions in the top management or on the board, or are among the company's largest shareholders.

results support this prediction. I find that, compared to non-family firms, family firms are less likely to grant stock options and restricted stocks to their CEOs. Further, they are less likely to require the CEO to hold a minimum level of stock ownership through the adoption of target ownership plans. Moreover, an analysis of the estimated value of the equity-based compensation reveals that the proportion of equity-based compensation to CEO's total pay is lower for family firms than for non-family firms.

Second, I predict that professional CEOs of family firms receive lower levels of total pay compared to professional CEOs of non-family firms. As mentioned above, due to more severe agency problems, professional CEOs of non-family firms receive larger proportions of their compensation in the form of incentive-based compensation. Thus, CEOs of non-family firms would receive higher levels of pay to compensate for the higher risks embedded in their compensation contracts. The strong monitoring by founding family members may also prevent hired CEOs from getting excessive compensation (Core, Holthausen and Larcker, 1999; Hartzell and Starks, 2003). Consistent with this prediction, I find that the total CEO compensation is greater for non-family firms.

Next, I predict that the structure of CEO annual bonus plans differs across family and non-family firms, consistent with the difference in the severity of agency problems. The description of the annual bonus plans in the proxy statements reveals the following points. Compared to non-family firms, family firms use fewer financial performance measures and are less likely to use non-financial performance measures in CEO annual bonus plans. Also, family firms use more discretion in determining the CEO bonus. These results are consistent with the argument that founding family members are

effective monitors, and therefore they are better able to use discretion in rewarding managers consistent with their observed effort.

Next, I examine the sensitivity of actual CEO bonus payments to accounting earnings. The use of greater discretion by family firms in setting bonuses suggests a weaker relation between their annual bonus payments and reported earnings. On the other hand, better monitoring by family firms leads to higher quality earnings (Ali, Chen and Radhakrishnan 2005), suggesting higher pay-earnings sensitivity (Milgrom and Roberts, 1992). My results show that the latter argument dominates. I find that compared to non-family firms, family firms exhibit greater sensitivity of CEO annual bonus payments to accounting earnings.

Finally, following Hanlon, Rajgopal and Shevlin (2003), I estimate the relation between future economic benefits and stock options granted to CEOs and compare this relation across family and non-family firms. I find that the sensitivity of future economic benefits to CEO's equity compensation is significantly greater for family firms. This result is consistent with the notion that family firms are subject to less severe agency problems and therefore are less likely to give excessive equity compensation to their managers.

This study makes the following contributions. First, it documents the effect of the agency problem due to the separation of ownership and control on the various aspects of CEO compensation contracts. There is only limited evidence on this issue in the literature. Core, Holthausen and Larcker (1999) use the effectiveness of corporate governance mechanisms to proxy for the severity of agency problems. Their analyses focus on total CEO compensation. Hartzell and Starks (2003) use the level of institutional ownership to

proxy for the severity of agency problems. However, as they point out, the relation between institutional ownership and executive compensation is subject to endogeneity problem, it could be that institutional investors are attracted by firms with efficient compensation contracts. This problem makes it difficult to draw unambiguous conclusions. Family firm as a proxy for the severity of agency problems is less susceptible to endogeneity problem. Moreover, my study is more comprehensive than prior studies in that it considers the effect of agency problems on various aspects of CEO compensation contracts.

My study is the first in the literature to provide direct evidence as to how the severity of agency problems affects the structure of CEO annual bonus contracts. I examine performance measures, performance standards, and pay-performance relation of CEO annual bonus plans, as reported in proxy statements. The difference in the structure of CEO annual bonus plans across family and non-family firms is consistent with the predictions of the classic agency framework (Holmstrom, 1979). Specifically, I show that firms with less severe agency problems are less likely to use non-financial measures and are more likely to use discretion in determining CEO bonus. There are some prior studies that provide evidence on non-agency problem related determinants of certain aspects of the structure of bonus plans.²

Finally, the study complements the extant family firm literature. Prior studies have shown that compared to non-family firms, U.S. family firms in the S&P 500 are

² Ittner, Larcker and Rajan (1997) and Davila and Venkatachalam (2004) show that the choices of non-financial performance measures is associated with business strategies and the quality of financial measures, but find mixed evidence on the influence of CEOs' power on the use of non-financial measures. Murphy and Oyer (2003) and Gibbs, Merchant, Van der Stede and Vargus (2004) find that the use of subjective performance evaluation is associated with the ranks of executives, organizational forms, and the completeness of objective performance measures.

more profitable (Anderson and Reeb, 2003a), have lower cost of debt financing (Anderson, Mansi and Reeb, 2003), are less diversified, have similar levels of debt (Anderson and Reeb, 2003b), and provide better quality financial disclosures (Ali, Chen and Radhakrishnan, 2005). My study contributes by examining family firms' compensation contracts of professional CEOs.

The rest of the paper is organized as follows. Section 2 discusses the difference in the severity of the agency problems across family and non-family firms, and predicts its effect on different aspects of compensation practices. Section 3 discusses the sample and Section 4 presents the results. Section 5 concludes the paper.

2. Hypotheses development

The objective of this study is to explore how agency problems that arise from the separation of management and ownership affect CEO compensation practices. To accomplish this, I compare the compensation contracts of professional CEOs across family and non-family firms. I do not consider family firms whose CEO is a member of the founding family. These family management firms are subject to a different type of agency problem, which arises from the conflicts between controlling and non-controlling shareholders (Shleifer and Vishny, 1997). In family firms with professional CEOs, the impact of the second type of agency problem on CEO compensation contracts is not relevant because the concern of excessive CEO compensation paid to founding family members does not exist.

2.1 Agency problems in family firms with professional CEOs

There are several characteristics of family firms that mitigate the agency problem associated with the separation of ownership and management. First, founding family ownership represents a distinct class of large shareholders with incentives to monitor managers (Demsetz and Lehn, 1985). Because founding family members tend to hold undiversified and concentrated equity positions in their firms, the free rider problem that is inherent with small atomistic shareholders or outside blockholders (a bank or an investment fund), is less severe. Second, founding family members possess good knowledge and understanding of their firms' activities, so they have a better ability to ratify the decisions made by executives (Anderson and Reeb, 2003a). Third, founding family members tend to have long investment horizons. Thus, they have stronger incentive to invest in long-term projects. This helps mitigate myopic investment decisions by managers (James, 1999; Kwak, 2003; Stein, 1988, 1989). Fourth, founding family members have reputation concerns arising from the desire to maintain the long-term survival of their firms (Demsetz and Lehn, 1985), providing further incentive to monitor the activities of managers. In summary, compared to non-family firms, family firms face less severe agency problem that arises from the separation of management and ownership.³

2.2 The economics of CEO compensation contracts

According to Murphy (1999), the economics of compensation can be divided into three parts: the composition of compensation packages, the level of pay, and the pay-performance relation. Thus, I develop hypotheses for these three dimensions of

³ Although corporate governance mechanisms can alleviate the difference in agency problems between family and non-family firms, the argument that U.S. family firms face less severe agency problems is supported by the evidence that U.S. family firms outperform non-family firms (Anderson and Reeb, 2003a).

compensation contracts for examining how CEO compensation practices differ across family and non-family firms. Following prior studies (see Shleifer and Vishny, 1997; Core, Holthausen and Larcker, 1999; Core, Guay and Larcker, 2003), I take the view that both family and non-family firms are efficient within contracting costs in designing CEO compensation contracts.

2.2.1 Equity-based CEO compensation

The escalation of employee stock options since the early 1990s is the most pronounced change in compensation practices (Hall and Murphy, 2003), and equity-based compensation together with stock ownership has become the major component of incentives provided to CEOs (Murphy, 1999, 2003; Hall and Murphy, 2002, 2003). Equity-based compensation is motivated by firms' desire to motivate managers to act in the best interests of shareholders given that managers' actions are not perfectly observable. Holmstrom (1979) posits that monitoring and incentive compensation serve as substitutes.

As discussed in section 2.1, family firms face less severe agency problems because of the direct and close monitoring by founding family members. Thus, according to Holmstrom (1979), family firms would use less equity-based compensation to motivate their CEOs. In addition, family firms have less severe myopia problem because founding family members possess long-term investment horizons (Stein, 1988, 1989; James, 1999; Kwak, 2003). These two reasons suggest that compared to non-family firms, family firms are less likely to grant equity-based compensation to motivate professional CEOs. Moreover, the proportion of equity-based compensation to total compensation is likely to be smaller for family firms. Accordingly, I predict the following.

H1a: Compared to non-family firms, family firms grant less equity-based compensation to professional CEOs.

H1b: Equity-based compensation as a proportion of total compensation is lower for family firms.

2.2.2 The level of CEO compensation

As discussed in the development of hypothesis H1, non-family firms are likely to grant more equity-based compensation to motivate their professional CEOs. Thus, professional CEOs of non-family firms would bear greater risk and therefore demand a greater risk premium (Hall and Murphy, 2002). Accordingly, I predict that professional CEOs of non-family firms would receive higher levels of pay than professional CEOs of family firms.

Severity of agency problems has also been shown to be related to excessive CEO compensation (Core, Holthausen and Larcker, 1999; Hartzell and Starks, 2003; Bertrand and Mullainathan, 2001). Bertrand and Mullainathan (2001) also show that poorly governed firms are more likely to reward their CEOs for luck instead of performance, and the presence of a large shareholder on the board can significantly mitigate the pay for luck. Given that family firms are subject to less severe agency problems, they are less likely to pay excessive compensation to their CEOs.

The above discussion leads to the following hypothesis:

H2: Compared to non-family firms, family firms, pay lower levels of compensation to professional CEOs.

2.2.3 CEO annual bonus plans

2.2.3.1 Performance measures in CEO annual bonus plans

Non-financial performance measures, such as customer satisfaction, productivity, and strategic objectives, are increasingly being used by firms for evaluating CEO performance (Ittner, Larcker and Rajan, 1997; Murphy, 2001). The use of non-financial performance measures is found to be associated with company strategies, industry membership, and the quality of financial performance measures (Ittner, Larcker and Rajan, 1997; Davila and Venkatachalam, 2004). Milgrom and Roberts (1992) posit that direct monitoring would increase the quality of financial performance measures. Consistent with this argument, Ali, Chen and Radhakrishnan (2005) find that family firms, which are characterized by strong monitoring, report higher quality accounting earnings. Thus, for family firms, there is less need to use non-financial indicators in CEO annual bonus plans (Ittner, Larcker and Rajan, 1997; and Davila and Venkatachalam, 2004). Hypothesis H3a summarizes my expectation:

H3a: Compared to non-family firms, family firms use less non-financial measures in determining CEO annual bonuses.

Subjective performance standards and subjective pay-performance structures are often used in CEO incentive contracts (Prendergast, 1999; Murphy and Oyer, 2003). Baker, Gibbons and Murphy (1994) show that subjective performance evaluation contracts (relational contracts) can reduce the distortionary incentives that may result from objective performance evaluation contracts (formal contracts). Thus, the combined use of objective and subjective performance evaluation in executive compensation contracts provides economic benefits (Baker, Gibbons and Murphy, 1994). Murphy and

Oyer (2003) and Gibbs, Merchant, Van der Stede and Vargus (2004) show that firms use more subjectivity when the trust between supervisor and subordinate is greater.

Compared to non-family firms, family firms enjoy greater employee loyalty (Demsetz and Lehn, 1985; Kwak, 2003) and the founding family is better able to monitor and observe CEOs' actions. Thus, family firms is more likely to apply more subjectivity in the determination of CEO annual bonuses. Hypothesis H3b summarizes my expectation.

H3b: Compared to non-family firms, family firms use more subjective standards and pay-performance structures for determining CEO annual bonus.

2.2.3.2 The sensitivity of CEO annual bonus to accounting earnings

CEO annual bonus is related to accounting earnings (Ittner, Larcker and Rajan, 1997; Murphy, 2001; Baber, Kang and Kumar, 1998). As discussed earlier, compared to non-family firms, family firms are more likely to use subjective performance standards and pay-performance relations for determining CEO annual bonus plans. This argument suggests that the sensitivity of CEO annual bonus to accounting earnings is likely to be lower for family firms compared to non-family firms.

On the other hand, Milgrom and Roberts (1992) argue that direct monitoring reduces the measurement error of objective performance measures, and this in turn leads to higher pay-performance sensitivity. As per this argument, accounting earnings of family firms are expected to be of higher quality and would convey more precise information about CEOs' actions because of the stronger monitoring by founding family members.⁴ Thus, the annual bonus of CEOs would be more sensitive to accounting earnings for family firms compared to non-family firms.

⁴ Ali, Chen and Radhakrishnan (2005) argue that family firms face less severe agency problems compared to non-family firms, so their reported earnings are subject to less opportunistic manipulation. Their study

To summarize, the two arguments provided above lead to opposite predictions. I do not have a priori expectation on which of the two effects would dominate. Hypothesis H4 summarizes the two alternatives.

H4a: *Ceteris paribus*, the relation between CEO annual bonus and accounting earnings is weaker for family firms, consistent with family firms using more subjective standards and pay-performance structure in determining CEO bonus.

H4b: *Ceteris paribus*, the relations between CEO annual bonus and accounting earnings is stronger for family firms, consistent with family firms reporting higher quality accounting earnings.

2.2.4 *The sensitivity of economic benefits to stock options granted to CEOs*

As discussed earlier, stock option pay has become the largest component of CEO compensation packages (Hall and Murphy 2002, 2003). The efficient contracting perspective suggests that stock option grants align the managers' interests with those of shareholders, so the grants of stock options bring positive economic benefits (Demsetz and Lehn, 1985; Core and Guay, 1999). However, severity of agency problems have been shown to be related to excessive CEO compensation (Core, Holthausen and Larcker, 1999; Bertrand and Mullainathan, 2001; Hartzell and Starks, 2003). If non-family firms are granted excess equity compensation, its sensitivity to future economic benefits is likely to be lower. Hypothesis H5 summarizes my expectations:

H5: *Ceteris paribus*, the marginal future economic benefits from granting stock options are for greater family firms than for non-family firms.

uses several measures, the level of discretionary accruals in earnings, the ability of earnings' components to predict future cash flows, the persistence of earnings, and the earnings response coefficient to compare the earnings quality of family and non-family firms. Their findings support the argument that compared to non-family firms, family firms reported accounting earnings are less subject to opportunistic manipulation.

3. Sample

For my analyses, I use the Standard and Poor's 500 firms for the year 2002, because *BusinessWeek* classifies these companies into family and non-family firms: 177 are family firms and the remaining are non-family firms. A firm is considered as a family firm if the founders and/or their descendants hold positions in the top management or on the board or are among the companies' largest shareholders.⁵ The focus of this study are family firms where the CEO is a professional executive and is not related to the founding family members. Of the 177 family firms in the S&P 500, 90 (51%) are family firms whose CEOs are professional executives not related to the founding family. Panel A of table 1 provides descriptive statistics on the salient characteristics of family firms. I obtain this data from the 2002 proxy statements. For family firms with professional CEOs, family members and/or descendants own 9% of cash flow rights and 15% of voting rights, family members and/or descendants are non-CEO top level managers in 20% of the firms and sit on the board of directors of 98% of the firms. This information indicates that founding family members have sufficient influence and power to monitor the professional CEOs. Panel B of table 1 provides the difference in certain firm characteristics between family and non-family firms. Compared to non-family firms, family firms have smaller market capitalization (*SIZE*), greater growth opportunities (*MB*), and better profitability (*ROA*, *ROE*). These results are consistent with those reported by Anderson and Reeb (2003a).

Using only S&P 500 firms as the sample has the benefit of making the sample homogeneous with respect to size. However, there are some disadvantages in using only

⁵ *BusinessWeek* adopts this definition of family firms from Anderson and Reeb (2003a). This definition of family firm has been used by several recent academic studies on family firms (Anderson and Reeb, 2003a, 2003b, 2004; Anderson, Mansi, and Reeb, 2003).

the S&P 500 firms for the analyses. First, it is likely to reduce the generalizability of the findings. However, family firms operate in a broad array of industries (Anderson and Reeb 2003), which, to some extent, should help alleviate concerns about the generalizability of the results.

Finally, the tests of each of my hypotheses require data for different sets of variables. For tests of the level of CEO compensation, the weight on accounting earnings in CEO annual bonuses, the grant of equity-based compensation to CEOs, and the economic benefits of stock options, I include in the sample all firm-year observations spanning from 1997 to 2002 for which required data are available on Compustat, CRSP, or ExecuComp. For the information about the structure of equity-based plans and annual bonus plans, I manually collect data from year 2002 proxy statements, so the sample period is only year 2002.

4. Results

4.1 Equity-based compensation

4.1.1 Likelihood of receiving equity-based compensation

In table 2, I present the percentage of family and non-family firms with professional CEOs that granted stock options, restricted stock, and target ownership plans during the years 1997 to 2002. I select 79 pairs of family and non-family firms (158 firms). Each pair is matched on two-digit SIC codes, size (sales), and growth opportunities (market-to-book ratio).

In panel A of table 2, I present information about option grants to CEOs of family and non-family firms during 1997 to 2002. Compared to CEOs of non-family firms,

CEOs of family firms are significantly less likely to receive stock options during the years 1997 to 1999. The average term of newly granted options is 9.68 and 9.55, respectively for family and non-family firms, and the difference is significant at the 10% level ($t=1.67$).

Panel B of table 2 reports percentages of firms that grant restricted stocks to the CEOs of family and non-family firms during the years 1997 to 2002. Compared to non-family firms, family firms are less likely to grant restricted stocks to their CEOs, and the difference is significant for each of the six sample years.

Firms can require CEOs to maintain a certain amount of stock ownership through target ownership plans. Panel C of table 2 indicates that 25% of family firms and 50 % of non-family firms have such a requirement, and the difference is significant ($t = -3.88$).

To summarize, the results presented in table 2 indicate that compared to non-family firms, family firms are less likely to grant stock options and restricted stocks to the CEOs, and are less likely to require their CEOs to have a minimum level of stock ownership. These results support hypothesis H1a.

4.1.2 Proportion of equity-based compensation to total compensation

To examine whether the proportion of equity-based compensation to total compensation is less for family firms, I estimate the following model:

$$\begin{aligned} \%EQUITYCOMP_{i,t} = & \alpha + \beta_1FAMILYFIRM + \beta_2CEOOWN_{i,t} + \beta_3EMPLOYEE_{i,t-1} \\ & + \beta_4INVEST_{i,t-1} + \beta_5CASHFLOW_{i,t-1} + \beta_6ROA_{i,t-1} + \beta_7RETURN_{i,t-1} \\ & + \beta_8LEVERAGE_{i,t-1} + \beta_9VOLATILITY_{i,t-1} + Industry Dummy \\ & + YearDummy + error \end{aligned} \quad (1)$$

where the dependent variable, *% EQUITYCOMP*, is the sum of the Black-Scholes value of annual grants of stock options and the value of restricted stocks divided by total CEO compensation. *FAMILYFIRM* is a binary variable that equals 1 if the firm is a family-firm and 0 otherwise. *CEOOWN* is the percentage of a firm's stocks held by the CEO. *EMPLOYEE* is the natural logarithm of the number of employees. *INVEST* is defined as the firm's year-end market-to-book ratio averaged over the five years prior to the year in which the compensation is awarded. *CASHFLOW* is the level of cash flow divided by the number of employees. *ROA* is the ratio of earnings before tax and interest to total assets. *RET* is stock returns. *LEVERAGE* is the ratio of total debt to total assets. *VOLATILITY* is the standard deviation of annual operating income scaled by contemporaneous sales over the prior five years. I also include dummy variables for industry membership and year. I use 12 industry groups as in Fama and French (1997). I predict that β_1 will be negative, indicating that compared to non-family firms, family firms rely less on equity-based compensation. Other control variables are based on prior studies (see Yermack, 1995; Ittner, Lambert and Larcker, 2003).

Panel A of table 3 provides descriptive statistics of the variables in equation (1). Most of the control variables are systematically different across family and non-family firms. Thus, it is important to control for these variables before drawing any inferences. Panel B of table 3 presents the regression results of equation (1). As expected, β_1 is negative and significant ($t = -2.01$), indicating that CEO compensation packages of family firms have proportionately less equity-based compensation. The coefficients on the control variables, when significant, have the predicted signs.

To summarize, results in table 3 indicate that the proportion of equity-based compensation to total compensation is smaller for family firms than for non-family firms.

These results are consistent with H1b.

4.2 The level of compensation

To examine differences in the levels of CEO pay between family and non-family firms, I estimate the following model.

$$\begin{aligned} \text{Log}(\text{COMPENSATION})_{i,t} = & \alpha + \beta_1 \text{FAMILYFIRM} + \beta_2 \text{SIZE}_{i,t-1} + \beta_3 \text{INVEST}_{i,t-1} \\ & + \beta_4 \text{ROA}_{i,t-1} + \beta_5 \text{RET}_{i,t-1} + \beta_6 \text{STD_ROA}_{i,t} + \beta_7 \text{STD_RET}_{i,t} \\ & + \beta_8 \text{MEETINGS}_{i,t} + \beta_9 \text{INSTITUTION}_{i,t} + \beta_{10} \text{CEOOWN}_{i,t} \\ & + \beta_{11} \text{CEO_CHAIR}_{i,t} + \text{Industry Dummy} + \text{Year Dummy} \\ & + \text{error} \end{aligned} \quad (2)$$

where the dependent variable, $\text{Log}(\text{COMPENSATION})$, in equation (2) represents three different measures, *TOTAL*, *CASH*, and *SALARY*. *TOTAL* represents total compensation and is the sum of salary, bonus, the value of stock options and restricted tocks, long-term performance plans, and other compensation. *CASH* is the sum of salary and annual bonus. *SALARY* is the annual basic salary of the CEO. *SIZE* is the natural logarithm of sales. *INVEST* is defined as the firm's year end market-to-book ratio averaged over the prior five years. *ROA* is the ratio of earnings before tax and interest to total assets of. *RET* is stock returns. *STD_ROA* is the standard deviation of the percentage return on assets for the prior five years. *STD_RET* is the standard deviation of stock return for the prior five years. *MEETINGS* is the number of board meetings held. *INSTITUTION* is the percentage of the company's stock owned by institutional investors. *CEOOWN* is the percentage of firm's stocks held by the CEO. *CEO_CHAIR* is a dummy variable that equals one if the CEO also serves as the chairperson of the board. I predict that β_1 is negative, indicating

that the CEO's total pay is lower for family firms than for non-family firms. Other variables in equation (2) control for previously identified economic and governance determinants of the level of compensation (see Core, Holthausen and Larcker, 1999; Hartzell and Starks, 2003).

Descriptive statistics for the variables in equation (2) are presented in panel A of table 4. All of the control variables are significantly different across family and non-family firms. Thus, it is important to control for these variables. The regression results are presented in panel B of table 4. As predicted, the coefficients on *FAMILYFIRM* are negative and significant for all three measures of compensation. These results indicate that compared to non-family firms, family firms pay lower levels of compensation in terms of salary, cash compensation, and total compensation to their CEOs. The coefficients on the control variables, when significant, have the predicted signs. The results in panel B of table 4 support hypothesis H2.

4.3 Annual bonus plan

4.3.1 The design of CEO annual bonus plans

A standard annual plan specifies the bonus as a function of the performance measures used to evaluate the CEO (Murphy, 2001). A target bonus is paid to the CEO if the pre-specified performance standard is achieved, and the bonus is adjusted if the actual performance is greater or less than the pre-specified target. Thus, a bonus plan typically contains three components: performance measures, performance standards, and the pay-performance relation (Murphy, 2001). I obtain data from the 2002 proxy statements to compare these components of bonus plans across family and non-family firms.⁶ I select

⁶ As Ittner, Larcker and Rajan (1997) and Murphy (1999) point out, using information obtained from proxy statements has a limitation, since the information is voluntarily disclosed by firms, it may be subject to

79 pairs of family and non-family firms. Each pair is matched on two-digit SIC code, size (sales), and growth opportunities (market-to-book ratio). This approach will provide evidence as to how the differences in severity of agency problems across family and non-family firms affect the choice of performance measures, performance standards, and pay-performance relation in CEO annual bonus plans.

Performance measures

In panel A of table 5, I compare the performance measures used by family and non-family firms. The first and second rows of panel A show that 25% (75%) of family firms use single (multiple) performance measure(s) in annual bonus plans, while 8% (92%) of non-family firms use single (multiple) performance measure(s) in annual bonus plans, and the difference is statistically significant ($t = 2.52$). The third row of panel A shows that the average number of performance measures used by family firms is 1.78, while non-family firms use on average 3.92 performance measures to evaluate their CEOs, and the difference is statistically significant ($t = -1.99$). These results are consistent with hypothesis H3a.

I also describe performance measures used by family and non-family firms in panel A. 80% (79%) of family (non-family) firms use accounting earnings in annual bonus plan, and 39% (58%) of family (non-family) firms use other kinds of financial accounting numbers including operating income, EBITDA, and other cash flow measures.

discretion. Firms that don't disclose required information are not included in the analysis. Compared to non-family firms, family firms are less likely to provide specific details about CEO annual bonus plans. 75% (92%) of family (non-family) firms disclose specific information about the performance measures used in CEO annual bonus plans. 53% (80%) of family (non-family) firms disclose specific information about performance standards, and 66% (82%) of family (non-family) firms disclose specific information about pay-performance relation in the CEO annual bonus plans. Panel A of appendix A provides two examples of company proxy statements with specific information about CEO annual bonus plans, and panel B provides two examples of company proxy statements with only general information about CEO annual bonus plans.

In total, 100 % (98%) of family (non-family) firms use at least one financial accounting number, such as earnings, EBIT, cash flow measures, and sales, in the CEO annual bonus plans.⁷ Compared to non-family firms, family firms are less likely to use economic value added (EVA) and are not significantly different in their use of stock price and sales.

Compared to non-family firms, family firms use significantly fewer strategic objective measures and other non-financial measures, which includes customer satisfaction, employee related targets, quality, process improvement, new products, market share, innovation, operational performance, and productivity or efficiency.⁸ Generally, family firms are less likely to use non-financial measures than non-family firms, so hypothesis H3a is supported.

Performance standards

Performance standards are set with the desire to provide incentives while simultaneously paying a competitive level of compensation (Murphy, 2001). Following Murphy (2001), I categorize the performance standard into six groups. “Budget standards” measures CEO performance against the firm’s annual budget targets (e.g., budgeted return on assets). “Prior-Year standards” measures CEO’s performance based on year-to-year growth (e.g., growth in EPS). “Discretionary standards” are performance targets set subjectively by the board of directors based on the firm’s operating plan and following a subjective evaluation of the difficulty in achieving the performance targets. “Peer group standards” are performance goals set relative to other companies in the same market or industry (e.g., EPS of peer group in the same industry). “Timeless standards” are performance standards that are fixed across years (e.g., 10% ROA across years).

⁷ The distribution statistic is consistent with that reported in Ittner, Larcker and Rajan (1997) and Murphy (2001).

⁸ The definition of non-financial measures follows Ittner, Larcker and Rajan (1997) and Murphy (2001).

“Cost of capital standards” are performance standards based on the company’s cost of capital (e.g., plans based on EVA).

Panel B of table 5 reports performance standards used by family and non-family firms.⁹ Compared to non-family firms, family firms are significantly less likely to adopt “Budget” and “Prior-Year” standards ($t = -2.98$, and -3.07 , respectively). Family firms are also less likely to use “Cost of capital” standards ($t = -1.66$). For “Peer group” and “Timeless” standards, family firms are not statistically different from non-family firms. Finally, 43% of family firms use “Discretionary” standards, while only 11% of non-family firms do so, and the difference is statistically significant ($t = 4.22$). The result that family firms, compared to non-family firms, use more subjective performance standards is consistent with hypothesis H3b.

Pay-performance relations

Pay-performance structures define the amount of annual bonus paid to CEO, given a certain level of performance. Consistent with Murphy (2001), I classify the pay-performance structures into four groups. Under a typical “80/120” plan, no bonus is paid unless the actual performance exceeds 80% of the performance standards, and the bonus is capped if actual performance exceeds 120% of the performance standards. A “Formula-based” plan pays, for example, 5% of net income when it exceeds 12% of ROE, and the bonus pool is allocated to individuals based on formulas. Under a modified “Sum-of-targets”, the bonus pool equals the sum of each participant’s target bonus, modified up or down depending on the company’s performance. Under the “Discretionary” plan, the board meets at the year-end and evaluates the company’s

⁹ For panel B, I do not separate firms with single performance standard from firms with multiple performance standards, as in Murphy (2001).

performance subjectively and then decides the amounts of bonuses. Panel C of table 5 compares the pay-performance structures for family and non-family firms. The most popular method is “80/120” plans. Family firms and non-family firms use this method roughly equally. 27% (20%) of family (non-family) firms use formula-based plans. 12% of family firms use modified “Sum-of-targets” plans, while 34% of non-family firms do so. The difference is statistically significant ($t = -3.21$). Finally, 21% (3%) of family (non-family) firms use a “discretionary” approach to decide the bonus amount, and the difference is significant ($t = 2.55$). These results are consistent with hypothesis H3b.

4.3.2 The sensitivity of CEO annual bonus plan to accounting earnings

To assess the sensitivity of CEO annual bonus to accounting earnings, I estimate that the following model.

$$\begin{aligned} \Delta \text{Log} (CASH_{i,t}) = & \alpha + \beta_1 SIZE_{i,t} + \beta_2 \Delta ROA_{i,t} + \beta_3 RETURN_{i,t} + \beta_4 FAMILYFIRM \\ & + \beta_5 FAMILYFIRM * \Delta ROA_{i,t} + \beta_6 FAMILYFIRM * RETURN_{i,t} \\ & + \beta_7 CEOOWN_{i,t} * RETURN_{i,t} + \beta_8 FAMILYFIRM * RETURN_{i,t} * CEOOWN_{i,t-1} \\ & + error \end{aligned} \quad (3)$$

where the dependent variable, $\Delta \text{Log} (CASH)$, is the change in the natural logarithm of CEO salary and bonus compensation. $FAMILYFIRM$ is a binary variable which equals 1 if the firm is a family-firm and 0 otherwise. $SIZE$ is the natural logarithm of market capitalization. ΔROA is the change of the ratio of earnings before tax and interest to total assets in year t . $RETURN$ is stock return. $CEOOWN$ is the percentage of firm’s stocks held by the CEO. Other control variables are based on prior studies (see Baber, Janakiraman and Kang, 1996; Baber, Kang and Kumar, 1998).

In panel A of table 6, I provide descriptive statistics of the variables in equation (3). Most of the variables are significantly different across family and non-family firms.

Thus, it is important to control for the effect of these variables. The results from estimating equation (3) are presented in panel B of table 6. In column (2), the coefficient on the interaction item, $FAMILYFIRM*\Delta ROA$, is 0.99 ($t = 3.45$). The result indicates that family firms, compared to non-family firms, place more weight on accounting earnings in rewarding CEOs. Thus, the result supports hypothesis H4b, which is consistent with the notion that the better monitoring of family firms leads to a higher quality output measures (accounting earnings), so family firms make their CEO annual bonuses more sensitive to accounting earnings (Milgrom and Roberts, 1992).

4.4 The sensitivity of future profitability to the CEO stock option grants

Consistent with Hanlon, Rajgopal and Shevlin (2003), I estimate the following model to evaluate the economic benefits from stock options granted to CEOs of family and non-family firms.¹⁰

$$\begin{aligned}
 (OI / SALES)_{I,t} = & \alpha_0 + \alpha_1 (ASSET / SALES)_{i,t-1} + \sum_{k=0}^5 \alpha_{2,k} (ESO / SALES)_{i,t-k} + \sum_{k=0}^5 \alpha_{3,k} (ESO / SALES)_{i,t-k}^2 \\
 & + \sum_{k=0}^5 \alpha_{4,t-k} FAMILYFIRM^* (ESO / SALES)_{i,t-k} \\
 & + \sum_{k=0}^5 \alpha_{5,t-k} FAMILYFIRM^* (ESO / SALES)_{i,t-k}^2 + \alpha_6 VOLITILITY_{i,t-1} \\
 & + \alpha_7 IndustryDummy + \alpha_8 YearDummy + \varepsilon_{i,t}
 \end{aligned} \tag{4}$$

where the dependent variable, OI is the annual operating income, before R&D expense and after SGA expense. $FAMILYFIRM$ is a binary variable that equals 1 if the firm is a family firm and 0 otherwise. $ASSET$ is the book value of total assets. $VOLATILITY$ is the

¹⁰ Hanlon, Rajgopal and Shevlin (2002) use five lags to catch the future economic benefits of the grant of stock options. However I use only three lags due to data constraints.

standard deviation of $(OI/SALES)$ estimated over the last five years. ESO is the Black-Scholes value of new stock option grants for CEOs. All variables are scaled by $SALES$, which is annual sales.¹¹

The sum of coefficients, $\sum_{k=0}^5 \alpha_{2,k}$, represents the first-order payoff to a dollar of stock options. The sum of coefficient, $\sum_{k=0}^5 \alpha_{3,k}$, reflects the concave function of the payoff of stock option grants. The sum of the coefficients of interactions of $FAMILYFIRM$ and ESO , $\sum_{k=0}^5 \alpha_{4,k}$, captures the incremental first-order economic benefits brought by the stock options granted by family firms. In panel A of table 7, I provide descriptive statistics for the variables in equation (4).

I present the regression results in panel B of table 7. The estimated value of, $\sum_{k=0}^5 \alpha_{2,k}$ is 10.02 and is significantly greater than zero ($F = 6.99$), and that of $\sum_{k=0}^5 \alpha_{3,k}$ is -102.78 and is significant ($F = 9.56$). The results are consistent with Hanlon, Rajgopal, and Shevlin (2003) that stock option grants bring future economic benefits, and that the relationship is concave. The estimated value of $\sum_{k=0}^5 \alpha_{4,k}$ is 8.04 and is significant ($F = 3.61$), and that of $\sum_{k=0}^5 \alpha_{5,k}$ is -116.31 and is significant ($F = 6.77$). The results suggest that stock option grants of family firms, compared to those of non-family firms, bring greater future benefits per unit value of option grant, and the relationship is more concave. In order to further understand the economic benefits of stock options, I follow Hanlon,

¹¹ I do not include R&D in the estimation because Hanlon, Rajgopal and Shevlin (2003) indicate that the inclusion of R&D may underestimate the effects of ESO.

Rajgopal and Shevlin (2003) and estimate economic benefits at the different quartiles of stock options (panel C of table 7). The implied sensitivity of benefits to stock options is the change in *OI/S* divided by the change in *ESO/Sales*. For family firms (non-family), when *ESO/Sales* changes from first quartile, 0.0002 (0.0002), to median, 0.0004 (0.0005), the *OI/Sales* increases from 0.0036 (0.0020) to 0.0072 (0.0050), so the sensitivity is 18.00 (10.00). When *ESO/S* moves from median to the third quartile, family (non-family) firms have a sensitivity of 17.50 (9.80). In sum, the results presented in panel C of table 7 show that the sensitivity of future profitability to equity compensation is greater for family firms. This finding is consistent with hypothesis H5.

5. Conclusion

In this study, I compare the compensation contracts of professional CEOs across family and non-family firms in the S&P 500. Compared to non-family firms, family firms with professional CEOs face less severe agency problems arising from the separation of ownership and management, and this characteristic influences family firms' CEO compensation practices. I consider four aspects of CEO compensation contracts: the proportion of compensation that is equity-based, the level of total pay, the pay-earnings sensitivity of annual bonus plans, and the sensitivity of future economic benefits to CEOs' equity compensation.

First, I find that compared to non-family firms, family firms are less likely to grant stock options and restricted stocks to their CEOs, and are less likely to require their CEOs to have a minimum level of stock ownership. I also find that the proportion of equity-based compensation to CEOs' total compensation is lower for family firms than

non-family firms. These findings are consistent with family firms facing less severe agency problems because of more direct monitoring of CEOs by the family.

Second, I find that professional CEOs of family firms receive lower levels of salary, cash compensation (salary and annual bonus), and total compensation (salary, bonus, equity-based compensation, and other compensation) than professional CEOs of non-family firms. This result is consistent with the notion that professional CEOs of non-family firms receive higher pay to compensate for the higher risks embedded in their CEO compensation contracts. This result is also consistent with the argument that stronger monitoring by founding family members reduces the likelihood that their CEOs receive excessive compensation (Core, Holthausen and Larcker, 1999; Bertrand and Mullainathan, 2001; Hartzell and Starks 2003).

Third, using the data from proxy statements, I find that the design of CEO annual bonus plans is very different across family and non-family firms. Compared to non-family firms, family firms use fewer performance measures and are less likely to use non-financial performance measures in their annual bonus plans. Further, family firms use more subjective performance standards and pay-performance relations for determining CEO annual bonuses. Finally, the sensitivity of CEO annual bonus payments to accounting earnings is greater for family firms than for non-family firms. These results are consistent with the argument that family firms are better able to directly monitor their CEOs, thereby reducing the need to adopt objective methods for determining annual bonuses. Moreover, better monitoring leads to higher quality reported earnings, and consequently higher sensitivity of CEO annual bonus payments to accounting earnings.

Finally, I find that the sensitivity of a firm's future profitability to CEO's equity compensation is significantly greater for family firms as compared to non-family firms.

The above findings contribute towards understanding the effect of the severity of agency problems due to the separation of ownership and management on compensation contracts. This study is the first in the literature to provide evidence on the effect of direct monitoring on the structure of CEO annual bonus contracts. Finally, the study complements the growing literature on family firms by documenting how the professional CEOs' compensation contracts across family and non-family firms.

Appendix A: Examples of excerpts from proxy statements

Panel A: Proxy statements with specific information about performance measures

(1) KLA-TENCOR Corporation (Family firm)

REPORT OF THE COMPENSATION COMMITTEE ON EXECUTIVE COMPENSATION

Chief Executive Officer Compensation

For fiscal year 2002, Kenneth L. Schroeder served as Chief Executive Officer. In setting Mr. Schroeder's compensation for fiscal year 2002, the Compensation Committee considered the Company's revenue and profit in the prior fiscal year, the Company's market capitalization and data from comparable companies supplied by the Company's compensation consultants, in addition to Mr. Schroeder's performance and continuing contributions to the Company. For fiscal year 2002, a bonus of \$218,040 was paid to Mr. Schroeder, based on the **Company's performance as measured against a formula**, which is based on meeting **financial and strategic objectives** as well as the Company's **revenue growth objectives as compared to a peer group**. This bonus formula was approved by the Compensation Committee and the independent members of the Board of Directors last year.

Annual Incentive Plan

Each year since fiscal 1979, the Company has adopted a management incentive plan (the "Incentive Plan") which provides for payments to officers and key employees based on the financial performance of the Company or the relevant business unit, and on the achievement of key strategic objectives which are set by senior management and approved by the Board of Directors. The Incentive Plan is approved by the Compensation Committee and submitted to the Board of Directors for ratification. For fiscal year 2002, the Incentive Plan set goals for profitability, achievement of measurable objectives aimed at strategic corporate goals and achievement of objectives **relating to managing the ratio of assets to sales**. The target goals for fiscal year 2002 were not achieved as to 100% of the goals, and as a result 65% of the incentive plan amounts were paid. In the aggregate, \$23,366,000 was distributed under the 2002 incentive plan to officers and key employees.

(2) SYMANTEC Corporation (Non-family firm)

REPORT OF THE COMPENSATION COMMITTEE ON EXECUTIVE
COMPENSATION

Fiscal Year 2002 CEO Compensation

Compensation for the CEO is determined through a process generally similar to that discussed above for Management Committee members.

Symantec establishes its financial objectives in connection with its **normal financial budgeting process**. Each year, a budget is established for the following four fiscal quarters.

Under the CEO's annual Incentive Plan for fiscal year 2002, and his six-month incentive plan in effect during the last six months of the fiscal year, Mr. Thompson was eligible to receive an annual bonus following the end of the fiscal year with a target payout of 100% of his annual base salary.

During the first six months of the 2002 fiscal year, the following metrics and weightings were considered in calculating the amount of Mr. Thompson's bonus: **(a) achievement of targeted annual revenue growth of the company (50% weighting); and (b) achievement of targeted annual earnings per share growth of the company (50% weighting)**. During the final six months of the fiscal year, the six-month incentive plan became effective and modified the targets related to the financial metrics. Specific thresholds for each metric had to be exceeded before the portion of the bonus associated with the respective metric was paid. The bonus target payment for a particular metric was calculated on a **linear basis** in relation to the percent of the metric achieved up to 100% of the target amount. An additional bonus was payable for achieving more than 100% of a metric. Overall, Mr. Thompson earned an aggregate bonus of \$481,250 for the 2002 fiscal year.

The Compensation Committee believes that the CEO's performance bonuses should be paid **solely in relation to the success and strength of Symantec**, and although achieving personal objectives is important, the success and strength of Symantec is the ultimate measure of the CEO's effectiveness.

Panel B: Proxy statements with general information about performance measures

(1) AUTOMATIC DATA PROCESSING (Family firm)

REPORT OF THE COMPENSATION COMMITTEE ON EXECUTIVE
COMPENSATION

CEO Compensation

The Committee meets annually to evaluate the performance of the Chief Executive Officer and to determine his compensation.

Mr. Weinbach received a base salary of \$735,000 and a bonus of \$173,500 during fiscal 2002. Mr. Weinbach's compensation is based on the satisfaction of **specific performance objectives** and the terms of his employment agreement. Mr. Weinbach's compensation is below the median base salary and bonus compensation of chief executive officers at companies in the S&P 500 with annual revenues between \$3 and \$12 billion, as surveyed by the Company.

Annual Compensation

Total annual compensation consists of base salary, cash bonus and yearly vesting of restricted stock. The base salaries for executives for fiscal 2002 were determined based upon the job grade of the position, the salary range of the job grade and the performance of the executive.

Key executives earned cash bonuses in fiscal 2002 based upon individual annual accomplishments versus individual pre-established goals.

(2) JC PENNEY (Non-family firm)

REPORT OF THE COMPENSATION COMMITTEE ON EXECUTIVE
COMPENSATION

Fiscal Year 2002 CEO Compensation

JCP entered into an employment agreement with Mr. Questrom, effective September 13, 2000 ("Questrom Agreement"), pursuant to which Mr. Questrom serves as JCP's and the Company's Chairman of the Board and CEO. The Questrom Agreement calls for a five-year employment term and an initial annual base salary of \$1,250,000. Effective July 2001, Mr. Questrom's annual base salary was increased to \$1,350,000. The annual base salary will be reviewed by the Committee for possible increase at least annually. For fiscal 2002, Mr. Questrom's bonus award was \$1,957,500. The Questrom **Agreement also required Mr. Questrom to purchase for his own account a number of shares of Common Stock**

Annual profit incentive compensation can be earned under the J. C. Penney Corporation, Inc. 1989 Management Incentive Compensation Program ("Incentive Program"). The Incentive Program ties incentive compensation to **Company performance**, with no incentive payment for performance well below plan and up to 200% of incentive targets for superior results. The goals for the Incentive Program are set at the beginning of each fiscal year consistent with the Company's business plan.

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Table 1
Descriptive statistics of family and non-family firms

Panel A: Ownership and control characteristics of the family firms in S&P 500

	All Family firms	Family firms with professional CEOs
Percentage of cash flow rights controlled by the founding family members or descendents	11%	9%
Percentage of voting rights controlled by the founding family members or descendents	18%	15%
Founding family member or descendent serve as the CEO	49%	0%
Founding family member or descendent serve as the top executive (including CEO)	63%	20%
Founding family member or descendent serve as the chair person of the board of directors	67%	39%
Founding family member or descendent serve as the directors (including chair person)	99%	98%
Number of firms	177	90

Panel B: Characteristics of family and non-family firms

	Mean			Median		
	Family firms with professional CEOs	Non-family firms	Difference t-statistics	Family firms with professional CEOs	Non-family firms	Difference t-statistics
<i>SIZE</i>	8.51	8.83	-2.68***	8.37	8.84	-3.01***
<i>MB</i>	5.52	3.35	4.21***	4.49	3.44	3.96***
<i>ROA</i>	0.05	0.03	1.99**	0.06	0.04	1.98**
<i>ROE</i>	0.18	0.16	0.81	0.17	0.15	1.89*

Variable Definitions: *FAMILY FIRM* with professional CEOs is a family firm where the firm's CEO is a professional CEO and is not related to the firm's founding family. *SIZE* is the log of market value of equity at the beginning of the fiscal period. *MB* is a firms' market-to-book ratio defined as the market value of equity divided by book value of equity. *ROA* is earnings before extraordinary item divided by total assets. *ROE* is earnings before extraordinary item divided by book value of common equity.

Table 2
Equity-based compensation

Panel A: Stock option grants to CEOs

	All firms	Family firms	Non-family firms	Difference t-statistics
Percent of firms in which CEO received options in 1997	0.82	0.75	0.85	-1.98**
Percent of firms in which CEO received options in 1998	0.81	0.74	0.86	-2.21**
Percent of firms in which CEO received options in 1999	0.80	0.71	0.86	-2.97***
Percent of firms in which CEO received options in 2000	0.87	0.85	0.88	-0.67
Percent of firms in which CEO received options in 2001	0.92	0.91	0.88	0.88
Percent of firms in which CEO received options in 2002	0.84	0.82	0.86	-0.85
Average option terms	9.60	9.68	9.55	1.67*

Panel B: Restricted stock grants to CEOs

	All firms	Family firms	Non-family firms	Difference t-statistics
Percent of firms in which CEO received restricted stocks in 1997	0.22	0.16	0.26	-4.86***
Percent of firms in which CEO received restricted stocks in 1998	0.23	0.19	0.25	-2.32***
Percent of firms in which CEO received restricted stocks in 1999	0.19	0.13	0.23	-4.81***
Percent of firms in which CEO received restricted stocks in 2000	0.24	0.20	0.24	-2.65**
Percent of firms in which CEO received restricted stocks in 2001	0.26	0.20	0.30	-4.77***
Percent of firms in which CEO received restricted stocks in 2002	0.28	0.22	0.32	-4.96***

Panel C: Target ownership plans

	All firms	Family firms	Non-family firms	Difference t-statistics
Percent of firms which adopt target ownership plan in 2002	0.46	0.25	0.50	-3.88***

The sample contains 79 pairs of family and non-family firms (158 firms) with 79 observations pertaining to family firms and 79 observations pertaining to non-family firms in the S&P 500. The sample period is 1997 to 2002. Each pair is matched on two digit SIC codes, size (sales), and growth opportunities (market-to-book ratio). Firms in financial industries (SIC code 6000-6999) or in utility industries (SIC code 4900-4999) are excluded. In each cell, the denominator is the total number of family and non-family firms and the numerator is the number of firms that respond to the given question. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Table 3

The ratio of CEO's equity-based compensation to total compensation

Panel A: Descriptive statistics

	Mean			Median		
	Family firm	Non-family firm	t-stat.	Family firm	Non-family firm	z-stat.
<i>% EQUITYCOMP</i>	0.54	0.58	-2.04**	0.60	0.64	-1.67*
<i>CEOOWN (%)</i>	0.24	0.18	2.21**	0.07	0.07	0.99
<i>EMPLOYEE</i>	3.09	3.36	-3.89***	3.09	3.51	-3.71***
<i>INVEST</i>	5.52	3.35	4.21***	4.49	3.44	3.96***
<i>CASHFLOW</i>	30.87	34.31	-0.89	46.21	48.71	-0.91
<i>ROA</i>	0.05	0.03	1.99**	0.06	0.04	1.98**
<i>RET</i>	0.13	0.06	2.58***	0.06	0.03	2.61***
<i>LEVERAGE</i>	0.56	0.66	-5.71***	0.54	0.67	-5.72***
<i>VOLATILITY</i>	0.04	0.03	3.21***	0.02	0.02	1.33
	396	1309		396	1309	

Panel B: Regression results

	Dependent var. = % <i>EQUITYCOMP</i> _{<i>i,t</i>}		
	Predicted Sign	Coefficient	t-statistics
Intercept	?	0.80	9.88***
<i>FAMILYFIRM</i>	-	-0.04	-2.01**
<i>CEOOWN</i> _{<i>i,t-1</i>}	-	-0.03	-3.42***
<i>EMPLOYEE</i> _{<i>i,t-1</i>}	+	0.02	2.11**
<i>INVEST</i> _{<i>i,t-1</i>}	+	0.05	1.79*
<i>CASHFLOW</i> _{<i>i,t-1</i>}	-	-0.01	-0.95
<i>ROA</i> _{<i>i,t-1</i>}	+	0.01	0.55
<i>RET</i> _{<i>i,t-1</i>}	+	0.01	2.84***
<i>LEVERAGE</i> _{<i>i,t-1</i>}	-	-0.12	-3.45***
<i>VOLATILITY</i> _{<i>i,t-1</i>}	+/-	0.75	3.55***
<i>Adjusted R</i> ²		0.09	
<i>N</i>		1705	

Variable Definitions: % *EQUITYCOMP* denotes the ratio of sum of Black-Scholes value of annual grants of stock options and the value of restricted stocks to the CEO total compensation. *FAMILYFIRM* is a binary variable that equals 1 if the firm is a family firm and 0 otherwise. *CEOOWN* is the percentage of firm's stocks held by the CEO. *EMPLOYEE* is the natural logarithm of the number of employees. *INVEST* is defined as the firm's year end market-to-book ratio averaged over the five years. *CASHFLOW* is the level of cash flow divided by the number of employees. *ROA* is the ratio of earnings before tax and interest to total assets. *RET* is stock returns of year. *LEVERAGE* is the ratio of total debt to total assets. *VOLATILITY* is the standard deviation of annual operating income scaled by contemporaneous sales over the prior five years.

The regression model includes dummy variables for industry membership and year. I use the Fama-French definition of industry. For brevity, I do not report the industry and year dummy coefficients. The t-statistics are corrected using the Huber-White procedure. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Table 4
The level of CEO compensation

Panel A: Descriptive statistics

	Mean			Median		
	Family firm	Non-family firm	t-stat.	Family firm	Non-family firm	z-stat.
<i>TOTAL(\$,000)</i>	7,792	8,534	-1.54	4,458	5,068	-2.22**
<i>CASH(\$,000)</i>	1,705	2,073	-3.51***	1,471	1,715	-4.53***
<i>SALARY(\$,000)</i>	682	921	-5.75***	675	883	-6.48***
<i>SIZE</i>	8.51	8.83	-2.68***	8.37	8.84	-3.01***
<i>INVEST</i>	5.52	3.35	4.21***	4.49	3.44	3.96***
<i>ROA</i>	0.05	0.03	1.99**	0.06	0.04	1.98**
<i>RET</i>	0.19	0.13	1.86**	0.11	0.08	1.99**
<i>STD_ROA</i>	0.03	0.03	-1.88**	0.02	0.02	-1.92**
<i>STD_RET</i>	0.46	0.36	3.59***	0.35	0.29	3.66***
<i>MEETING</i>	6.95	8.00	-6.51***	6.00	7.00	-7.44***
<i>CEOOWN (%)</i>	0.25	0.18	2.28**	0.07	0.07	0.99
<i>INSTITUTION (%)</i>	61.66	68.32	-4.51***	60.06	69.71	-4.31***
<i>CEO_CHAIR</i>	0.60	0.78	-3.55***	1.00	1.00	-3.03***
<i>N</i>	398	1337		398	1337	

Panel B: Regression results

	Predicted Sign	(1) Log (<i>SALARY</i>)	(2) Log (<i>CASH</i>)	(3) Log (<i>TOTAL</i>)
Intercept	?	0.02* (1.82)	0.05 (0.96)	0.13 (0.71)
<i>FAMILYFIRM</i>	?	-0.08*** (-3.67)	-0.16*** (-3.48)	-0.18** (-2.05)
<i>SIZE</i>	+	0.15*** (13.41)	0.21*** (10.45)	0.25*** (9.97)
<i>INVEST</i>	+	0.01 (0.01)	-0.01 (-0.33)	0.03*** (4.48)
<i>ROA</i>	+	0.01 (0.33)	0.01 (0.36)	0.01** (2.15)
<i>RET</i>	+	0.01*** (3.33)	0.01*** (7.70)	0.01*** (4.44)
<i>STD_ROA</i>	?	-0.01* (-1.78)	-0.01 (-1.14)	0.03*** (3.09)
<i>STD_RET</i>	?	-0.04 (-1.62)	-0.06 (-1.01)	0.19** (2.04)
<i>MEETINGS</i>	-	-0.02*** (-4.33)	-0.02* (-1.76)	0.01 (0.23)
<i>INSTITUTION</i>	-	0.01 (0.65)	-0.02 (-0.77)	-0.05 (-0.66)
<i>CEOOWN</i>	-	-0.02*** (-4.44)	-0.02 (-1.47)	-0.05 (-1.60)
<i>CEO_CHAIR</i>	+	0.02* (1.85)	0.03 (0.77)	0.09 (0.66)
<i>Adjusted R</i> ²		0.30	0.22	0.22
<i>N</i>		1735	1735	1735

Variable Definition: The dependent variable, *Log (COMPENSATION)*, represents three different measures, *TOTAL*, *CASH*, and *SALARY*. *TOTAL* represents total compensation and is the sum of salary, bonus, the value of stock options and restricted tocks, long-term performance plans, and other compensation. *CASH* is the sum of salary and annual bonus. *SALARY* is the annual basic salary of CEO. *SIZE* is the natural logarithm of sales. *INVEST* is defined as the firm's year end market-to-book ratio averaged over the prior five years. *ROA* is the ratio of earnings before tax and interest to total assets of. *RET* is stock returns. *STD_ROA* is the standard deviation of the percentage return on assets for the prior five years. *STD_RET* is the standard deviation of stock return for the prior five years. *MEETINGS* is the number of board meetings held. *INSTITUTION* is the percentage of the company's stock owned by institutional investors. *CEOOWN* is the percentage of firm's stocks held by the CEO. *CEO_CHAIR* is a dummy variable that equals one if the CEO also serves as the chairperson of the board.

The regression model includes dummy variables for industry membership and year. I use the Fama-French definition of industry. For brevity, I do not report the industry and year dummy coefficients. The t-statistics are shown in parentheses and are corrected using the Huber-White procedure. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Table 5
The design of annual bonus plan

Panel A: Performance measures in annual bonus plans

	Family firms	Non-Family firms	Difference t-statistics
# of firms with single performance measure	25%	8%	2.52***
# of firms with multiple performance measures	75%	92%	-2.52***
# of performance measures used	1.78	3.92	-1.99**
Performance measures			
Earnings	80%	79%	0.16
EBIT	39%	58%	-2.20**
Sales	36%	38%	-1.08
Stock Price	7%	7%	-0.80
Strategy Goals	29%	41%	-1.71*
EVA	7%	14%	-1.66*
Non-Financial	24%	40%	-2.13**

Earnings includes net income, pre-tax net income, and return on assets, equity, and capital.

EBIT denotes Earnings before Interest and Taxes includes Operating Income, EBITDA, and other cash flow measures.

EVA (Economics Value Added) usually represents a measure of operating income minus a charge of capital.

Non-Financial includes customer satisfaction, employee related targets, quality, process improvement, new product, market share, innovation, operational performance, and productivity or efficiency.

Panel B: Performance standards in annual bonus plans

	Family firms	Non-Family firms	Difference t-statistics
Performance standards			
Budget standard	43%	62%	-2.98***
Prior-Year standard	17%	38%	-3.07***
Discretionary standard	43%	11%	4.22***
Peer group standard	29%	14%	1.48
Timeless standard	5%	11%	-1.28
Cost of capital standard	5%	14%	-1.66*

“Budget standard” denotes performance standards which measure CEO’s performance against the firm’s annual budget targets (e.g., budgeted EPS).

“Prior-Year standard” are standards which measure CEO’s performance based on year-to-year growth (e.g., growth in EPS).

“Discretionary standard” are plans where the performance targets are set subjectively by the board of directors based on the firm’s operating plan and following a subjective evaluation of the difficulty in achieving the performance targets.

“Peer group standard” are plans where performance goals are set relative to other companies in the same market or industry (e.g., EPS compared to a peer group in the same industry).

“Timeless standard” are performance standards that are fixed across years (e.g., 10% ROA across years).

“Cost of capital standard” are performance standards based the company’s cost of capital (e.g., plans based on EVA).

Panel C: Pay-performance structures in annual bonus plans

	Family firms	Non-Family firms	Difference t-statistics
80/120 Plans	40%	43%	-0.35
Formula-Based Pool	27%	20%	1.31
Modified “Sum-of-Targets”	12%	34%	-3.21***
Discretionary	21%	3%	2.55***

A typical “80/120” plan is that threshold performance is defined as 80% of target performance, and the bonus is capped at 120% of target performance.

A “formula-based” plan is, for example, 5% of Net Income exceeds 12% of ROE. The pool is allocated to individuals based on formula.

A “sum-of-targets” approach equals the sum of each participant’s target bonus, modified up or down depending on company performance.

A “discretionary” approach, top managers and the compensation committee review a variety of year-end performance measures, and subjectively determine the magnitude of the bonus pool.

The sample contains 79 pairs of family and non-family firms (158 firms) with 79 observations pertaining to family firms and 79 observations pertaining to non-family firms in the S&P 500. The sample period is 1997 to 2002. Each pair is matched on two digit SIC codes, size (sales), and growth opportunities (market-to-book ratio). Firms in financial industries (SIC code 6000-6999) or in utility industries (SIC code 4900-4999) are excluded. In each cell, the denominator is the total number of family and non-family firms and the numerator is the number of firms that correspond to that given question. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Table 6
The weight on accounting earnings in annual bonus plan

Panel A: Descriptive statistics

	Mean			Median		
	Family firm	Non-family firm	t-stat.	Family firm	Non-family firm	z-stat.
<i>CASH(\$,000)</i>	780	1,023	-3.51 ^{***}	529	682	-4.53 ^{***}
<i>SIZE</i>	8.51	8.83	-2.68 ^{***}	8.37	8.84	-3.01 ^{***}
<i>INVEST</i>	5.52	3.35	4.21 ^{***}	4.49	3.44	3.96 ^{***}
<i>ΔROA</i>	0.01	0.00	0.55	0.01	0.00	0.66
<i>RETURN</i>	0.19	0.13	1.86 ^{**}	0.11	0.08	1.99 ^{**}
<i>CEOOWN (%)</i>	0.24	0.18	2.01 ^{**}	0.07	0.07	0.99
<i>VAR</i>	0.21	0.16	2.22 ^{**}	0.04	0.02	2.31 ^{**}
<i>N</i>	396	1309		396	1309	

Panel B: Regression results

	Predicted Sign	(1) $\Delta \log (CASH)$	(2) $\Delta \log (CASH)$
Intercept	?	0.19** (1.97)	0.20* (1.77)
<i>SIZE</i>	?	-0.02** (-2.06)	-0.02** (-1.97)
ΔROA	+	2.38*** (14.44)	2.12*** (11.31)
<i>RETURN</i>	+	0.27*** (9.21)	0.25*** (8.11)
<i>FAMILYFIRM</i>	?		0.04 (1.21)
<i>FAMILYFIRM</i> * ΔROA	+		0.99*** (3.45)
<i>FAMILYFIRM</i> * <i>RETURN</i>	-		0.04 (0.79)
<i>CEOOWN_RETURN</i>	-		-0.02** (-2.21)
<i>FAMILYFIRM</i> * <i>RETURN</i> * <i>CEOOWN</i>	-		-0.01* (-1.86)
<i>Adjusted R</i> ²		0.11	0.19
<i>N</i>		1705	1705

Variable Definitions: The dependent variable, *CASH* is the sum of salary and annual bonus. *FAMILYFIRM* is a binary variable that equals 1 if the firm is a family firm and 0 otherwise. *SIZE* is the natural logarithm of market capitalization. *INVEST* is defined as the firm's year end market-to-book ratio averaged over the prior five years. ΔROA is the change of the ratio of earnings before tax and interest to total assets in year t. *RET* is prior year's stock return. *CEOOWN* is the percentage of the firm's stocks held by the CEO.

The t-statistics are shown in parentheses and are corrected using the Huber-White procedure. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Table 7

The economic benefits of the CEO stock options grants

Panel A: Descriptive statistics

	Mean			Median		
	Family firm	Non-family firm	t-stat.	Family firm	Non-family firm	z-stat.
<i>OI (\$million)</i>	2010.43	2844.19	-2.01**	821.58	1155.96	-1.94**
<i>VOLATILITY</i>	0.05	0.04	2.62***	0.02	0.02	2.87***
<i>ESO (\$million)</i>	7.46	6.94	1.22	3.57	3.55	0.88
<i>ASSET (\$million)</i>	11887.25	19133.07	-4.45***	4356.78	7677.82	-5.01***
<i>N</i>	212	632		212	632	

Panel B: Regression results

	Dependent var. = $OI_{i,t}$	
	Coefficient	t-statistics
Intercept	0.14	7.85***
<i>VOLATILITY</i>	-0.11	-1.93*
<i>ASSET</i>	0.03	6.40***
$ESO_{i,t}$	-3.51	-1.33
$ESO_{i,t-1}$	4.28	1.85*
$ESO_{i,t-2}$	3.51	1.22
$ESO_{i,t-3}$	5.74	1.66*
$(ESO)_{i,t}^2$	158.32	3.83***
$(ESO)_{i,t-1}^2$	-112.22	-2.88***
$(ESO)_{i,t-2}^2$	33.56	0.55
$(ESO)_{i,t-3}^2$	-182.44	-1.71*
$FAMILYFIRM_ESO_{i,t}$	8.33	3.30***
$FAMILYFIRM_ESO_{i,t-1}$	6.71	2.22**
$FAMILYFIRM_ESO_{i,t-2}$	1.82	0.55
$FAMILYFIRM_ESO_{i,t-3}$	-8.82	-1.77*
$FAMILYFIRM_ (ESO)_{i,t}^2$	-175.62	-4.44***
$FAMILYFIRM_ (ESO)_{i,t-1}^2$	80.31	2.05**
$FAMILYFIRM_ (ESO)_{i,t-2}^2$	-237.35	-1.78*
$FAMILYFIRM_ (ESO)_{i,t-3}^2$	216.35	1.58
Adjusted R ²	0.42	
N	844	

Panel C: Economic benefits evaluated at various points of the CEO stock option grants

Distribution cutoff	Family firms			Non-family firms		
	<i>ESO</i> value	Estimated effect on <i>OI</i>	Implied sensitivity	<i>ESO</i> value	Estimated effect on <i>OI</i>	Implied sensitivity
<i>First Quartile</i>	0.0002	0.0036	-	0.0002	0.0020	-
<i>Median</i>	0.0004	0.0072	18.00	0.0005	0.0050	10.00
<i>Third Quartile</i>	0.0020	0.0352	17.50	0.0010	0.0099	9.80

Variable Definitions: The dependent variable, *OI* is the annual operating income, before R&D expense after SGA. *FAMILYFIRM* is a binary variable that equals 1 if the firm is a family firm and 0 otherwise. *ASSET* is the book value of total assets. *VOLATILITY* is the standard deviation of (*OI/SALES*) estimated over the prior five years. *ESO* is the Black-Scholes value of new stock option grants for CEO. All variables are scaled by *SALES*, which is annual sales.

The regression model includes dummy variables for industry membership and year. I use the Fama-French definition of industry. For brevity, I do not report the industry and year dummy coefficients. The t-statistics are corrected using the Huber-White procedure. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.