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Rebel Cole and Hamid Mehran

DePaul University

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Rebel A. Cole ^a and Hamid Mehran ^b

^a DePaul University, Department of Finance, 1 E. Jackson Blvd., Chicago, IL 60604;
Office: 312-362-6887; Fax: 888-425-4687; Email: rcole@depaul.edu

^b Federal Reserve Bank of New York, Capital Markets Function, 33 Liberty Street, New York, New York, USA
Office: (212) 720-6215; Fax: (212) 720-1582; E-mail: hamid.mehran@ny.frb.org.

Abstract

This study examines the determinants of CEO compensation using data from a nationally representative sample of privately held U.S. corporations. We find that: (i) the pay-size elasticity is much larger for privately held firms than for the publicly traded firms on which previous research has almost exclusively focused; (ii) executives at C-corporations are paid significantly more than executives at S-corporations; (iii) executive pay is inversely related to CEO ownership; (iv) executive pay is inversely related to leverage; and (v) executive pay is related to a number of CEO characteristics, including age, education and gender. Executive pay is inversely related to CEO age and positively related to educational attainment. Finally, female executives are paid significantly less than their male counterparts.

Key words: Compensation; Organizational Form; Taxes; Ownership; Education; Gender.

JEL classification: H24; H25; G32; J33

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1. Introduction

CEO compensation has been a subject of increasing debate as pressures for managerial accountability have mounted. Instances of huge cash payments and lucrative stock options have called into question the basis on which boards of directors determine CEO pay packages. Numerous studies have focused on determining factors which could affect CEO pay (e.g., Murphy, 1986, 1999). Despite a surge in research on CEO compensation, there is little empirical research examining how organizational form, taxation and CEO characteristics (including ownership, education and gender) are related to CEO compensation. Also, with few exceptions, previous researchers have focused on publicly traded firms that are required to file information on compensation with regulators.

In this paper, we extend the literature by examining the determinants of CEO compensation using data from a nationally representative sample of privately held U.S. firms conducted by the Federal Reserve Board in 1993. By focusing on privately held firms, we can overcome many problems associated with measuring compensation and assigning compensation to a given period because the CEOs in the sample are unlikely to have stock-based compensation in their compensation packages and their annual compensation consists of salary and bonus.¹ This is partly due to their size and privately held status and partly due to the fact that stock-based compensation was less popular in the early 1990s even among large publicly traded corporations

¹ For the universe of U.S. firms that were publicly traded during 1994, we examined their proxy statements and found that no firms with less than \$10 million in total assets issued stock options and only one percent of firms with assets between \$10 million and \$100 million issued stock options.

(see Murphy, 1999). Another feature of the sample is that none are publicly traded, although many are large enough to go public.

Focusing on a sample of privately held firms enables us to examine the influence of market factors on CEO compensation (e.g., size, industry, performance, etc.). This situation obtains because the dominant stock ownership by small-firm CEOs insulates their compensation from political process (i.e., board of directors and outside block holders)--the process which stands at the heart of agency framework (e.g., Jensen and Meckling, 1976; Fama, 1980). In contrast to the larger firms analyzed by other researchers (e.g., Murphy, 1985), the average stock ownership by CEOs in our sample is 66%, with about a third of all CEOs owning 50%, and another third owning 100%. Being private also insulates them from regulatory pressures due to disclosure.

The study is important for at least four reasons. First, the CEO-pay, firm-size elasticity has been explored by previous researchers, but only at large, publicly traded firms. Second, little is known about the role of organizational form and taxes in relation to CEO compensation. (See Appendix I for a discussion of S-corporations and C-corporations.) Third, determinants of CEO compensation at privately held firms are poorly understood because of the lack of research in this area. Fourth, the relationship between CEO compensation and CEO characteristics such as age, education and gender has received little attention in the literature, especially at privately held firms with high ownership concentration. In this study, we shed new light in each of these four areas.

Our results are based upon four sources of data. The first source is the 1993 National Survey of Small Business Finances (NSSBF), a general-purpose survey of small privately held firms co-sponsored and co-funded by the Federal Reserve Board and the U.S. Small Business

Administration. Our second source is Standard and Poor's Compustat database, from which we obtain financial data on publicly traded firms. Our third source is Standard and Poor's ExecuComp database, from which we obtain compensation data on large publicly traded firms. Our fourth and final source is a set of proxy statements, from which we obtain compensation data on the smallest publicly traded firms, which are not represented in ExecuComp.

We report five main results. First, we find that the pay-size elasticity is much larger for small privately held firms than for either the large publicly traded firms, on which previous research has almost exclusively focused, or the smallest publicly traded firms, for which we hand-collected compensation data. We speculate that the lower sensitivity at public firms results from the public observability of CEO pay at listed firms coupled with the process by which their Boards of Directors use observable pay comparables recommended by compensation consulting firms in deciding upon compensation packages.

Second, we find that, among privately held firms, executives at C-corporations are paid significantly more than executives at S-corporations.² This finding supports our hypothesis that, at C-corporations, executive pay enables CEOs to avoid double-taxation of income that normally would be distributed as dividends. S-corporations face no double taxation, as all corporate income—salary and dividends—flows through the firm without taxation to the owner's personal income. However, we do not expect that C-corporation CEOs have complete discretion to substitute compensation for dividends because of IRS limitations on "excessive compensation."

Third, we find that executive pay at privately held firms is related to the firm's ownership

² An S-corporation is similar to a C-corporation in that its shareholders enjoy limited liability, but is different in that it is exempt from corporate taxation and, at the time of the survey, had to have less than a certain number of shareholders (35 at the time of the 1993 survey), only one class of stock, and no foreign or corporate shareholders. See Appendix 1 for more information on how the limitation on the number of shareholders has changed over time.

structure. Specifically, pay is inversely related to CEO ownership at both C- and S-corporations, but this effect is stronger at C-corporations. We expect this relationship because a CEO's preference for salary income over dividend income is inversely related to his ownership share. At S-corporations, where there is no corporate tax, each dollar of gross profits distributed as salary is worth more than each dollar of gross profits distributed as dividends because the CEO receives all of the salary but only $\alpha\%$ of the dividends, where ($\alpha < 100\%$) is the CEO's ownership percentage.³ At C-corporations, this effect is magnified by the corporate tax. In effect, it is "cheaper" to compensate the CEO directly through salary than indirectly through dividends because other shareholders also must receive their pro-rata distribution of the firm's cash flow.

Fourth, we find that executive pay at privately held firms is inversely related to leverage as measured by the ratio of total debt to total assets. CEO pay reduces accounting profitability, which is a critically important variable in the loan approval process. In order to improve their firm's ability to obtain credit on favorable terms, CEO should favor dividends over salary compensation. This is especially important for small firm, like those in our sample, where CEO pay is large relative to total profits. In addition, it is not uncommon for lenders to include loan covenants that restrict compensation levels and cash distributions unless certain debt coverage and other ratios are met. Finally, CEOs may adjust their compensation so as to reduce the likelihood of default on firm debt obligations.

Fifth, we find that executive pay is related to a number of CEO characteristics, including age, education and gender. We find a quadratic relationship between executive pay and CEO

³ At $\alpha = 100\%$, one dollar of salary would be exactly equivalent to one dollar of dividends for the shareholder-manager of an S-corporation, ignoring the effect of the payroll tax. At compensation levels below the IRS maximum level of income subject to the Social Security portion of the payroll tax (\$60,600 in 1993), CEOs of S-corporations should favor dividends over salary because dividend distributions are not subject to the 12.4% payroll deduction.

age, with pay reaching a maximum at age 55 and then declining. This finding is consistent with at least two explanations. Older executives tend to be more conservative and risk-averse, so they would prefer to leave earnings in the firm rather than extract them through salary. According to the life-cycle consumption hypothesis, older executives require less current income to meet their consumption needs so they would be more likely to leave earning in the firm, where they could grow tax-free, rather than extract them as taxable salary.

We also find that executive pay is positively related to educational attainment. A CEO with a four-year college degree earns significantly more than one with less than a four-year degree, and a CEO with a graduate degree earns significantly more than one with a four-year degree. These findings are consistent with the literature regarding the effect of education on earnings capacity (see, e.g., Card 1999).

Finally, we find that female CEOs are paid significantly less than their male counterparts. This is consistent with Bertrand and Hallock (2001) who document a pay disparity between male and female executives at firms covered by ExecuComp, but is especially interesting, given the substantial input that CEOs of small firms have in determining their own pay structure.⁴ We speculate that relative risk aversion may play a role here.⁵

The paper is organized as follows. In Section 2, we discuss some important properties of CEO compensation. In Section 3, we describe our data and methodology. We present the empirical results in Section 4, followed, in Section 5, by a summary and conclusions.

⁴ See Blau and Kahn (2006) for a survey of the literature on gender and pay.

⁵ Huberman and Wei (2006) find that women make significantly larger contributions to their 401K plans, suggesting greater risk aversion. Greater relative risk aversion also could explain the

2. Properties of CEO compensation

The search for the determinants of the level of CEO compensation has evolved as a corollary to the neoclassical versus managerialist debate about the pattern of corporate behavior (see Rosen (1982) for an early discussion and Murphy (1999) for more recent findings). For example, Murphy (1985) has demonstrated that changes in CEO compensation are a positive function of changes in sales, even after controlling for the value of the firm. Baker, Jensen, and Murphy (1988) point out that this suggests that CEOs can increase their pay by increasing firm size, even when the increase in size reduces the firm's market value. They also state that the best documented empirical regularity regarding levels of CEO compensation is an elasticity with respect to firm sales of about 0.3, and that this regularity is remarkably stable across industries. Murphy (1999), however, points out that this relationship has weakened over time. He further argues that sales remains the primary pay benchmark recommended by compensation consulting firms, although market capitalization, total assets and number of employees also are used, especially for start-up ventures. He notes that both sales and market capitalization are often conflated with performance.

Murphy (1986) investigates whether CEOs are better characterized as employees or entrepreneurs. He notes that CEOs on average hold only about 0.1% of their firm's common stock as evidence of the implausibility of treating managers as residual claimants. At the same time, he argues that CEOs are not conventional employees because executives, especially those with large share holdings, undoubtedly have a much larger influence on the size and composition of their paycheck than lower level workers.

lower CEO compensation we find in our analysis.

Scholes and Wolfson (1992) argue that corporate managers devise strategies to minimize the burden of corporate taxes. The incentive to engage in tax-avoidance activities is greater when the CEO has a larger ownership stake in the firm. In addition, the CEO has incentive to minimize the burden of personal taxes. The combined incentives from corporate and personal taxes will have differential effect depending upon the organizational form of the firm.

At C-corporations, dividend income is taxed at the both the corporate and personal levels whereas salary compensation, which is a deductible expense for the corporation, is not. Hence, CEOs of C-corporations can reduce the combined effects of corporate and personal taxation by taking compensation in the form of tax-deductible expense items, such as compensation, interest, rent, and royalties paid to the CEOs, rather than in the form of dividend income.

At S-corporations, CEOs are not concerned with corporate taxation because such firms are taxed as pass-through entities while retaining many of the non-tax advantages of the corporate form.⁶ Stockholders of S-corporations report their pro-rata share of income as well as loss on their personal income tax return. Hence, dividend income is taxed only once, at the personal level.⁷ In addition, dividend income is not subject to payroll withholding taxes, which are imposed at a rate of 15.3% on salary income up to a maximum income, which was \$80,000 at the time of the 1993 NSSBF. Consequently, CEOs of S-corporations can increase their after-tax income by taking distributions in the form of dividends rather than salary, so long as their salary

⁶ Of course, the most prominent advantage of the corporate form of organization over partnerships and proprietorships is limited liability, whereas investors' liability is limited to the amount of their equity investment. Owners of partnerships and proprietorships face unlimited liability. There are other organizational forms which enable shareholders to avoid taxes (see chapter 4 of Scholes and Wolfson (1992)).

⁷ Mehran and Peristiani (2007) examined a large sample of converted banks post-1997 when banks were allowed for the first time to organize themselves as an S-corporation and document that they pay more dividends post-conversion relative to control groups.

is less than the payroll tax income cap.⁸ Above the cap, CEOs of S-corporations should be indifferent between salary and dividend income from a taxation perspective.⁹ Taking into account both the incentive of C-corporation CEOs to favor compensation over dividends and the incentive of S-corporation CEOs to favor dividends over compensation, we expect CEO pay to be higher at C-corporations than at S-corporations.

In addition, we expect CEO ownership to affect this relationship between organizational form and CEO pay. While a CEO may be indifferent between salary and dividend income, the firm has a clear preference for compensating its CEO using salary expense because dividends must be distributed on a pro-rata basis. So long as the CEO owns less than 100% of the firm, it will cost the firm more than \$1.00 to provide the CEO with \$1.00 in compensation via dividend payments. Although the CEO of an S-corporation can take money out of the firm at any time without adverse tax consequences, doing so through a distribution of dividends will be more costly to the firm than doing so through salary payment because all shareholders, not just the CEO, must receive a share of the dividend distribution in proportion to their ownership stake. For example, if the CEO holds 25% of the firm's shares, the firm must distribute an additional \$4.00 in dividends if it is to channel an additional \$1.00 to the CEO, whereas it must pay only \$1.00 in additional salary to achieve the same result. At C-corporations, this effect is magnified by the ability of the firm to deduct salary expense but not dividend expense, i.e., the double

⁸ The median CEO pay for S-corporations in our sample is \$74,000 so slightly more than half of our S-Corporation CEOs would have incentive to favor dividends over salary.

⁹ While many states conform to federal treatment, some do not follow the federal treatment of S-corporations, with some applying a tax surcharge to burden S corporations at a corporate rate when the individual rates are substantially lower. Moreover, if a company has any significant foreign operations, other nations may not recognize the pass-through status of S-Corporations. For a number of non-tax reasons, S-Corporations are unusual in the international arena.

taxation at the corporate level makes it even more costly to channel an additional dollar to the CEO through distribution of dividends.

Therefore, all else equal, we expect that CEO pay is an inverse function of CEO ownership because it is more costly to compensate a CEO via dividend distributions as ownership declines. Moreover, we expect that this effect is more pronounced at C-corporations because of the double taxation of dividends.

Jensen and Meckling (1976) and Amihud and Lev (1981), among others, have suggested that CEOs undertake corporate decisions in order to reduce the probability of financial distress and improve their job security. One such decision is to adjust their compensation, which, we argue, is even more critical at small privately firms, where CEOs typically own a majority of the firm's equity and CEO pay is large relative to profits.¹⁰ At such firms, CEO pay is, in large part, a conduit for distributing residual cash flows to the controlling owner. When residual cash flows in a particular year are high or low, the CEO can adjust her salary accordingly. Consequently, we expect CEOs to reduce their pay as leverage increases. In addition, banks and other lenders to small firms often include loan covenants limiting payments to insiders or requiring maintenance of minimum debt coverage ratios. For both of these reasons, we expect that CEO pay is inversely related to firm leverage as measured by total loans to total assets.

Finally, there is a broad literature on the relationship between earnings and work age, education and gender (see, e.g., Weiss 1986 and Card 1999). In general, these studies find that earnings are an increasing function of educational attainment. We test whether this relation holds true for our sample of CEO, including dummy variables for CEO that attended college (Some College), received an undergraduate degree (College) or received a graduate degree

¹⁰ In our sample, the median firm has CEO pay of \$83,500 but profits of only \$50,000. Median

(Graduate). CEOs with only a high-school degree or less is the omitted category, so our educational attainment dummies measure the percentage increase in CEO pay that is associated with additional educational attainment. We expect to find that higher educational attainment is associated with higher CEO pay. Chung and Pruitt (1996) find a positive but insignificant relation between educational attainment and CEO pay in a sample of CEOs of large publicly traded firms.

Regarding gender, there are numerous studies that find a significant pay differential between men and women. Blau and Kahn (2006) provide a recent survey of this literature for executives below the rank of CEO. Bertrand and Hallock (2001) use the ExecuComp dataset to analyze gender differences among senior executives at listed U.S. corporations. They find that female executives earn 45% less than their male counterparts, but that much of this difference can be explained by firm size and executive experience. They are unable to examine CEOs separately because of the paucity of female CEOs in the ExecuComp data. In our data, we do have sufficient incidence of female CEOs to conduct such an analysis. Other things equal, we expect that female CEOs earn no less than their male counterparts because of the significant input CEOs have in setting executive pay when their ownership stake is large.¹¹

Regarding age, the effect of age and experience on compensation has been the subject of much research in the labor economics literature (see, e.g., Lazear 1976, Weiss 1986, Murphy and Welch 1990). This literature has focused on workers in general rather than senior management. In contrast, our sample consists solely of CEOs who have been managing their firms for many

CEO ownership is 50%.

¹¹Murphy (1999) and others have documented that CEOs of large publicly traded firms have significant discretion in the level and form of their pay, even when CEO ownership is quite small. Therefore, it is reasonable to assume that the CEOs of our small firms, who typically own a controlling stake in their firms, have far more discretion in setting their own pay.

years. Their median experience as an owner or manager is 20 years, which is longer than the 12-year median age of our sample firms. Therefore, the findings of the existing literature may not be applicable to our sample. We hypothesize that CEO pay of small, privately held firms follows the life-cycle hypothesis, as our CEOs in our sample have significant influence on their level of pay. Therefore, we expect that the level of pay rises for younger CEOs to some maximum and then falls for older CEOs. To capture this nonlinearity, we use a quadratic specification for age, expecting a negative coefficient on our square-of-age term and a positive coefficient on our age term.

3. Data and methodology

3.1 Data

In this study, we utilize data from four sources. The first source is the 1993 National Survey of Small Business Finances (NSSBF), which was co-sponsored and co-funded by the Federal Reserve Board and the U.S. Small Business Administration and is available at the Board's website.¹² The firms surveyed constitute a nationally representative sample of 4,637 small businesses operating in the United States as of year-end 1992, where a small business is defined as a non-financial, non-farm business employing fewer than 500 full-time equivalent employees. Data include information on each firm's balance sheet; income statement (including CEO compensation); CEO characteristics, including age, education and gender; and structural characteristics, including organizational form and ownership structure.

¹² Similar surveys were conducted for 1987, 1998 and 2003, but none of those surveys collected information on CEO pay. For more information, visit the survey's website: <http://www.federalreserve.gov/pubs/oss/oss3/nssbftoc.htm>.

We impose two restrictions on the NSSBF sample. First, we use information on organizational form to identify and exclude 1,829 proprietorships and partnerships from our analysis because we want to compare CEO compensation across firms of similar organizational form. Scholes and Wolfson (1989) argue that an organization's form is chosen to minimize both tax costs and transactions costs. If the corporate form of organization has a greater tax cost than that of an alternative then the corporation would not be chosen unless the transaction costs of the alternative (i.e., proprietorship or partnership) exceed those of the corporation. Because proprietorships and partnerships do not offer limited liability and easy transferability of ownership interest, they are less similar to, and thus less comparable to, corporate form of organization.¹³ In addition, the transactions costs associated with partnerships may exceed that of corporate form (see Guenther, 1992).

Second, we exclude 596 firms that did not know or refused to divulge their amount of CEO compensation. This leaves a final sample of 2,212 of which 1,396 are C-corporations and 816 are S-corporations.

Our second source of data is Standard and Poor's Compustat, from which we obtain financial data on publicly traded firms. Our third source of data is Standard and Poor's ExecuComp, from which we obtained CEO compensation data for firms in the S&P500, Mid-Cap 400 and Small-Cap 600 covering the period 1992-2004, for a total of 19,113 firm-year observations.

¹³ Some variations of partnerships offer some, but not all, the advantages of the corporation. For example, the limited partners in a limited partnership enjoy limited liability, although the general partner does not, and partners in a master limited partnership can readily transfer ownership interests. Most like the corporation is the limited-liability company (LLC), but, at the time of the NSSBF, there were fewer than 10,000 such firms nationwide, so they are unlikely to be represented in the sample by more than a handful of firms (see Cole and Wolken, 1995).

We pool data across years in order to have a sufficient number of observations to calculate pay-size elasticities for a wide range of size categories. Murphy (1999) documents that the pay-size elasticity for these firms is relatively time-invariant, so this pooling should not cloud comparisons with the 1993 NSSBF data. However, we also calculate elasticities for broader grouping of ExecuComp firms using data only from 1992-1994. Our purpose here is to examine whether or not the pay-size elasticity of 0.3, holds true for small privately held firms. Because of data limitations, previous research has focused exclusively on the much larger public firms that are included in the ExecuComp database.

Our fourth and final source of data is the set of proxy statements filed with the U.S. Securities and Exchange Commission by all listed firms. We use this source to collect compensation data for 1992-1994 at firms that are no larger than the largest firm in the NSSBF data as measured by total assets. From Compustat, we first selected all firms with assets less than \$250 million, which is the largest value reported for total assets by a firm in the NSSBF, and collected total assets, total employment and annual sales for each of the three years. Next, we collected information on salary and bonus compensation (which we sum to get total compensation) from the proxy statements for each of these firms. As documented in footnote 1, no firms with less than \$10 million in assets, and only one percent of firms with assets of \$10 million to \$100 million, issued stock options. We collect data for 1992, 1993 and 1994 because these years most closely correspond to data from the NSSBF, which was conducted during 1993-94 for firms in existence as of year-end 1992. Our proxy sample provides compensation data on 733 firms in 1992, 1,905 firms in 1993, and 3,457 firms in 1994, for a total sample of 6,095 firm-year observations. Together with the Compustat data on total employment, total assets and annual sales, these compensation data enable us to calculate pay-size elasticities. This provides

us with a sample of public firms that are much more comparable to our privately held firms than anything available from ExecuComp.

3.2 Methodology

To analyze the determinants of CEO compensation at privately held firms, we first analyze univariate statistics for our analysis variables—total assets; total sales revenues; total full-time equivalent employees; debt to assets; firm age; firm organizational form dummy (C-corporation vs. S-corporation); CEO stock-ownership percentage, age, education and gender; and dummy variables indicating each firm's one-digit SIC code. This enables us to characterize the representative small business and to identify potential outliers in the data. Second, we explore the pay-size elasticities for different sizes of firms by regressing the log of executive pay against the log of annual firm sales. Third, we use ordinary-least-squares regression to analyze the potential determinants of CEO compensation in a multivariate framework using the following model:

$$\ln(\text{CEO Compensation}_i) = \beta'X_i + \varepsilon_i \quad (1)$$

where: $\ln(\text{CEO Compensation}_i)$ is the natural logarithm of the dollar value of CEO compensation and X_i is a vector of firm- and CEO-specific explanatory variables. Included in this vector are: size as measured by natural logarithm of annual sales revenues; the natural logarithm of firm age; a dummy variable indicating that the firm is organized as a C-corporation rather than as an S-corporation; leverage as measured by the ratio of total debt to total assets; the

percentage of the firm's stock owned by the firm's chief executive officer; CEO education as measured by dummy variables indicating the CEO's highest educational attainment (high-school, some college, a college degree or a graduate degree); the natural logarithm of CEO age; a dummy variable indicating that the CEO is a female; and a set of nine dummy variables indicating the firm's one-digit SIC code;¹⁴ and ε_i is a normally distributed error term.

4. Empirical results

4.1. Sample characteristics

Panel A of Table 1 presents the size distribution of our sample firms by organizational form (S-corporation or C-corporation). Contrary to our expectations, we do not see that C-corporations are disproportionately represented in the largest quartile while S-corporations are disproportionately represented in the smallest quartile. Instead, both are relatively evenly distributed, suggesting that the size distribution of the two types of corporations is relatively homogenous.

Panel B of Table 1 presents CEO pay by size distribution and organizational form. The results for all firms (column 1) clearly show a positive relationship between firm size and CEO compensation, with the latter rising from \$36,600 in the smallest quartile, to \$87,700 and \$193,800 in the middle quartiles, and to \$453,800 in the largest quartile. Table 1 also shows that CEO compensation is significantly higher at C-corporations than at S-corporations (\$120,600 versus \$85,300), and that this \$35,300 difference is statistically significant ($t = 3.43$ based upon a t-test for difference in means). The differential in CEO pay at C- and S-corporations increases with firm size. In the smallest quartile the difference is only \$3,900 or slightly more than 10

¹⁴ We split wholesale and retail firms, SIC codes 50-51 and 52-59, respectively, into two

percent of the quartile's average S-corporation pay, whereas in the largest quartile the difference is \$67,700 or more than 16% percent of the quartile's average S-corporation pay.

Table 2 presents the descriptive statistics for the NSSBF variables used in this study. For expositional purposes, these statistics are for the original variables rather than for the logarithmic transformations. The average firm in the sample paid its CEO \$107,000; generated \$2.158 million in annual sales revenues; and had a debt-to-asset ratio of 40%. C-corporations account for 63.1% of the sample. The average firm's CEO owned 69.8% of the firm's stock, was 49.6 years old and was male. Just over 20% of CEOs held a graduate degree, with 34% holding a four-year college degree and another 21% having some college education. Only 16.5% of CEOs were female.

Table 2 also shows descriptive statistics separately for the subsamples of 816 S-corporations and 1,396 C-corporations. These statistics show that S-corporations are significantly smaller than C-corporations in terms of annual sales (\$1.9 million versus \$2.3 million) and significantly younger (13.2 years versus 16.9 years).

4.2. Pay-Size Elasticity

In Tables 3 and 4, we explore the “documented empirical regularity regarding levels of CEO compensation,” the pay-size elasticity of 0.3. We estimate elasticities as the coefficient of the natural logarithm of firm size (β_1) obtained from the following regression:

$$\ln(\text{CEO Pay}_{i,t}) = \beta_0 + \beta_1 * \ln(\text{Size}_{i,t}) + \varepsilon_{i,t} \quad (2)$$

separate categories.

where $\ln(\text{CEO Pay}_{i,t})$ is the natural logarithm of CEO Pay at firm i during year t ; $\ln(\text{Size}_{i,t})$ is the natural logarithm of annual sales, total assets or total employment for firm i in year t ; and $\varepsilon_{i,t}$ is an i.i.d. error term.

In column (1) of Table 3, we report elasticities based upon pooled cross-sectional and time-series data from ExecuComp covering the period from 1992-2004. This enables us to analyze elasticities across relatively small size buckets. We break the sample into quartiles by each size measure, and then further break down the smallest quartile into three buckets, the smallest 5% of firms, firms in the 5%-10% quantiles, and firms in the 11%-15% quantiles.¹⁵

When we measure size by annual sales using the ExecuComp data, we cannot reject a pay-size elasticity of 0.3 for the three largest sales quartiles, where the elasticities are 0.319 (standard error = 0.013), 0.281 (standard error = 0.027), and 0.356 (standard error = 0.030). However, this relationship breaks down for the smallest quartile, where the elasticity is only 0.16 (standard error = 0.009). When we break the smallest quartile into smaller quantiles (10%-25%, 5%-10% and 0%-5%), we see that the relationship holds for firms above the smallest decile. The elasticity in the 10%-25% bucket is 0.27 (standard error = 0.040), but falls to 0.17 (standard error = 0.12) for firms in the 5%-10% quantiles and to 0.04 (standard error = .020) for firms in the 0%-5% quantiles.

When we measure size by total assets using ExecuComp data, we find similar but more variable results. The elasticities for the four quartiles (by declining size) are 0.277, 0.209, 0.365 and 0.257. As with sales, this relation breaks down for the smallest 5% of firms, where the elasticity falls to 0.15 (standard error = 0.030).

¹⁵ For robustness, we also estimated and analyzed elasticities based upon data from only the years 1992-1994. The compensation data from this much shorter period should be more

When we measure size by total employment using ExecuComp data, we find elasticities for the four quartiles by (declining size) of 0.274, 0.412, 0.393 and 0.457. Here, the relationship breaks down for firms in the 0%-5% and 5%-10% category, where the elasticities are not statistically different from zero.

Overall, the ExecuComp data are broadly supportive of a pay-size elasticity of 0.3 only for the largest quartile of firms, which have been the subject of most previous research. For smaller firms, the results are less conclusive and, for the smallest decile of firms, this relationship appears to break down completely. Baker, Jensen, and Murphy (1988, p. 610) attribute the apparent stability of the pay-size elasticity across time and industries to “the substitution (by boards of directors) of a mechanical pay/sales relationship” for job–performance evaluations. We speculate that this relationship breaks down for the smaller privately held firms we analyze, where the boards are less likely to hire pay consultants and use industry/size comparables in setting CEO pay.

In column (2) of Table 3, we present results for our SEC proxy sample. When we measure size by annual sales (Panel A), we again cannot reject a pay-size elasticity of 0.3 for the three largest quartiles, where the elasticities are 0.253 (standard error = 0.027), 0.289 (standard error = 0.083), and 0.449 (standard error = 0.088), respectively. As with the ExecuComp sample, the relationship breaks down for the smallest quartile, where the pay-size elasticity is only 0.183 (standard error = 0.056).

When we measure size by total assets (Panel B), we obtain elasticities for the four quartiles (by declining size) of 0.260 (standard error = 0.018), 0.255 (standard error = 0.020),

comparable to the data in the 1993 NSSBF. The results using data from this shorter time period are not qualitatively different from those presented in Table 3.

0.163 (standard error = 0.029) and 0.266 (standard error = 0.045). For the three largest quartiles, these elasticities are significantly less than 0.30, albeit not by much.

When we measure size by total employment (Panel C), only the pay-size elasticity for the second smallest quartile of 0.418 is significantly different from 0.30.

Overall, the results for the small public firms in our SEC proxy sample are generally consistent with those for the larger ExecuComp firms.

In column (3) of Table 3, we present the pay-size elasticities for NSSBF firms using the same three size metrics. In Panel A, where we measure size by sales revenues, we find that the pay-size elasticity for the full sample is 0.52, two-thirds larger than the 0.30 average for both the ExecuComp and SEC proxy samples. Thus, it appears that the pay-size elasticity of privately held firms is significantly greater than that of both small and large public firms.

By looking at the largest of the NSSBF firms, we can shed some light on the private vs. public distinction between the NSSBF and ExecuComp firms. If we analyze only the top quartile of NSSBF firms, we obtain results for a group of 546 relatively large (greater than \$6.3 million in annual sales) private firms that we can then compare with results for the smallest of the ExecuComp firms. For these 546 NSSBF firms, we obtain a pay-size elasticity of 0.475 (standard error = 0.063), not statistically different than the 0.52 elasticity for the full NSSBF sample. This is almost double the 0.27 pay-sales elasticity for the 10th-25th percentile of ExecuComp firms, and multiples larger than the 0.04 pay-sales elasticity for the smallest 5% of ExecuComp firms. Hence, it appears that the pay-sales elasticity is much stronger at the largest privately held firms than at smallest of publicly traded firms.

The pay-sales elasticities for smaller private firms also are much larger than those for public firms. For the smaller three quartiles by declining size, the elasticities are 0.734, 0.887

and 0.449. Each of these is significantly larger than the elasticities for public firms, large or small.

When we measure size by total assets (Table 3 Panel B Column 3) or total employment (Table 3 Panel C Column 3) instead of annual sales, the results for the NSSBF sample are remarkably consistent. Within each the three largest quartiles, none of the three pay-size elasticities are significantly different from each other. For the smallest quartile, the pay-asset elasticity of 0.270 is significantly smaller than the 0.449 pay-sales elasticity and the 0.480 pay-employment elasticity. We also find that the pay-size elasticities are larger for the two middle quartiles than for the largest and smallest quartiles, regardless of the size measure.

In Table 4, we investigate whether these elasticities are stable across industries for privately held businesses by regressing compensation against sales for each of our nine industry groups. For comparison, we also present elasticities by industry for the ExecuComp and SEC proxy samples. This table shows that, for privately held firms, the elasticity of compensation with respect to sales varies widely across industries, in contrast with the stability for larger firms reported by previous researchers. The reported elasticity for each industry is significantly greater than 0.3, and range from 0.48 for wholesale trade firms to 0.73 for professional services firms. Moreover, the reported elasticities for our NSSBF sample are significantly larger than those of the public firms with the sole exception of SIC6 in the SEC proxy sample. These findings suggest that the elasticity of compensation with respect to sales is consistently greater and more variable for privately held firms than for either small or large public corporations.

In Table 5, we use multivariate regression to analyze the determinants of CEO pay at privately held firms. We analyze six different specifications that include various combinations of firm characteristics, CEO characteristics and industry control variables. This enables us to

provide evidence regarding the relative importance of these variables in explaining CEO pay at privately held firms.

We begin with a simple model that includes only firm size—the model used to obtain the pay-size elasticity for the full NSSBF sample reported in Table 3. As shown in column (1) of Table 5, we see that this coefficient of 0.52 is estimated with great precision as evidenced by its associated t-statistic of 37.00. By itself, size explains more than 38 percent of the variability in CEO pay.

In column (2), we include additional firm characteristics: leverage as measured by the ratio of debt to assets, the natural log of firm age, a dummy variable identifying C-corporations and the ownership share of the CEO. Each of these variables is statistically significant at better than the 0.05 level and all but ownership are significant at better than the 0.01 level.

CEO pay is inversely related to ratio of debt to assets. The -0.20 coefficient implies that CEO pay declines by 0.2 percent for each one percentage point increase in the debt-to-asset ratio, supporting our hypothesis that CEOs enhance their job security by extracting less pay as leverage increases. CEO pay is 16% higher at C-corporations than at S-corporations. This finding supports our hypothesis that double taxation of income at C-Corporations leads their managers to prefer salary compensation over dividend income. CEO pay declines with CEO ownership, falling by 2.0 percent for each 10 percentage point increase in CEO ownership. This is consistent with our hypothesis that distributing income to a CEO through a dividend becomes less costly to the company as her ownership share increases. This cost is borne by CEOs of both types of corporations but is higher for CEOs of C-corporations because of the double taxation issue. CEO pay declines significantly with firm age but the magnitude is extremely small.

Adding the four firm characteristics to firm size improves the explanatory power of the model only slightly, from an adjusted R-square of 38.2% to 39.4%.

In column (3), we analyze a set of three CEO characteristics: age, gender and educational attainment, which are measured by a set of dummy variables—graduate degree, college degree and some college, with the omitted category being high school or less. We utilize a quadratic specification for CEO age to capture our hypothesized nonlinearity. Our results support the nonlinear specification, with a significant negative age-square and a significant positive age term. We run an additional regression including only the age- and age-square terms in order to find the age of maximum CEO pay (not shown). This regression reveals that CEO pay for small privately held corporations reaches a maximum value at an age of 55 years.¹⁶

We also find that CEO pay is significantly lower for females and increases with educational attainment. Female CEOs earn 46% less than their male counterparts, after adjusting for age and education. CEOs with college degrees earn 36% more, while CEOs with graduate degrees earn 76% more, than CEOs with a high-school degree or less. Together, these CEO characteristics explain approximately eight percent of the variability in CEO pay.

In column (4), we combine the firm characteristics with the CEO characteristics. For the most part, the results from columns (2) and (3) hold up, with each variable maintaining its sign and statistical significance except for the log of firm age. The reduced significance of firm age is likely due to collinearity with CEO age, as they are highly correlated (Pearson product-moment coefficient = 0.44). The coefficient for gender declines from -0.46 to -0.20 , underlining the importance of firm control variables in any analysis of gender and compensation. This specification explains approximately 44 percent of the variability in CEO pay.

¹⁶ The coefficients from this regression correspond to a quadratic equation. Taking the first

In column (5), we add a set of industry controls in the form of nine dummy variables indicating one-digit standard industrial classification. Individual coefficients are not shown, but several are significant at better than the 0.01 level and their coefficients show considerable variation. The magnitude on the coefficient for gender falls to -0.18, which indicates that female CEOs earn 18 percent less than their male counterparts after controlling for all of the other variables in this specification. It is important to note that Bertrand and Hallock (2001) were unable to perform a meaningful analysis of gender differences as less than one percent of their ExecuComp sample of CEOs and Chairmen were female. For executives at all levels, they found that females constitute 2.5 percent of the sample and earned 9% less than their male counterparts after controlling for firm size, CEO age, experience and position (i.e., CEO/Chair, CFO, EVP, VP, etc).¹⁷ In our sample, more than 16 percent of the firms are headed by a female CEO. Adding industry controls improves the explanatory power of our model to 49 percent.

Finally, in column (6), we test whether the effect of CEO ownership is greater for C-corporations than for S-corporations as predicted by our hypothesis. We interact CEO ownership with two dummy variables, one indicating S-corporations and one indicating C-corporations. The results show that the negative coefficient for C-corporations is greater in magnitude than that for S-corporations, indicating that the effect of CEO ownership on CEO pay is more pronounced at C-corporations, consistent with our hypothesis that double taxation of C-corporations increases the divergence between compensation via salary versus dividend distributions. However, this difference is not statistically significant.

derivative and setting it equal to zero, we solve for the implied maximum value of age.

¹⁷We also tested specifications including CEO experience in place of and in addition to CEO age. The results are not qualitatively affected. Experience is not significant when added to age,

5. Summary and conclusions

In this study, we extend the literature on CEO compensation by analyzing determinants of CEO compensation at small privately held corporations. Our new evidence is important because differences in the ownership and governance structures of small and large firms suggest that determinants of CEO compensation also should differ.

We find that we can explain almost half of the variability in CEO compensation at small firms. By far, the most important determinant of CEO pay is firm size as measured by annual sales. We find that the pay-size elasticity at small privately held firms is 0.5, two-thirds larger than the 0.3 elasticity documented by previous researchers at public firms. We also find that the previously documented 0.3 pay-size elasticity does not hold for the smallest of public firms, i.e., those with less than \$1 billion in assets. Previous researchers had not examined these smaller ExecuComp firms separately. We speculate that this difference in pay-size elasticity between small private and large public firms results from the reliance on pay comparables and consultants by the compensation committees and boards of the large public firms. While this reliance may insulate the board from public criticism about the level of executive pay, Warren Buffett, among others, has questioned the merit of such benchmarks as opposed to linking pay to measures of firm performance. Smaller listed and unlisted firms are less likely to employ pay consultants and rely upon compensation benchmarks, in large part because compensation information for such firms is not publicly available, leading to the greater correlation between pay and performance.

We speculate that the stronger pay elasticity with respect to firm sales at privately held firms represents a pay-performance rather than a pay-size relationship because private firms rely much more heavily upon sales to measure performance in the absence of market values. In

and is significant with the same qualitative values when in place of age and age squared.

addition, owners of private firms have much flexibility in taking profits in the form of expenses, which renders profitability a much less reliable indicator of performance for small firms.

We also find that executives at C-corporations are paid significantly more than executives at S-corporations. This finding supports our hypothesis that, at C-corporations, executive pay enables CEOs to reduce double-taxation of income that normally would be distributed as dividends

Third, we find that executive pay is related to the firm's ownership structure. Specifically, pay is inversely related to CEO ownership at both C- and S-corporations, but this effect is stronger at C-corporations. These findings result from the fact that it is "cheaper" to compensate the CEO directly through salary than indirectly through dividends because other shareholders also must receive their pro-rata distribution of the firm's cash flow and, at C-Corporations, this effect is magnified by the double-taxation of corporate earnings.

Fourth, we find that executive pay is inversely related to leverage as measured by the ratio of total loans to total assets. This finding supports our hypotheses that CEO pay at privately held firms is, in large part, a conduit for distribution residual cash flows and that CEO of such firms adjust their compensation in order to meet debt service obligations and reduce the costs of borrowing and/or financial distress.

Finally, we find that executive pay is related to a number of CEO characteristics, including age, education and gender. We find a quadratic relationship between pay and age. Pay rises with age until a CEO reaches age 55, and then declines. Pay is significantly higher for better educated CEOs, with graduate degrees providing a 76% premium and college degrees providing a 36% premium over a high-school degree. These findings are consistent with the literature on education and earnings. Pay is significantly lower for female CEOs, even though

these CEOs have substantial input in determining their pay packages. We speculate that relative risk aversion may play a role.

Left unanswered because of data availability are a number of important issues, including how much influence the CEO has in determining her pay package, how the boards of small firms go about setting compensation (e.g., do they seek out market comparables in setting pay, as at larger firms?), and how do pay practices differ at the larger privately held firms that may go public in their future. Also unanswered is why the pay-size elasticity at small publicly traded firms with less than \$1 billion in assets fluctuate so widely between the 0.3 value documented for large firms and the 0.5 value we document for privately held firms. We leave these questions for future researchers who, hopefully, will have access to more detailed data on the governance structures of small firms.

Appendix I: Taxation of C-Corporations and S-Corporations

This appendix provides an overview of the tax-related differences between S-corporations and C-corporations. Each type of corporation is named after section of the U.S. tax laws that address the tax treatment of that type of corporation: Subchapters C and S of Subtitle A, Chapter One of the Internal Revenue Code (Title 26 of the United States Code). The taxation of corporations has been subject of debate among academics, practitioners and politicians for at least as long as corporations have been taxed.

As a legal entity separate from its shareholder-owners, the corporation has been subject, in most countries, to a corporate income tax. In addition, any earnings distributed to shareholders as dividends have been subject to a second level of taxation by personal income tax. Hence, corporate earnings are said to be subject to *double taxation*—first at the corporate level and second at the personal level. This double taxation can result in extremely high marginal tax rates, which has led many countries—such as Australia, Canada, Germany, France, Italy, Spain and the U.K.—to provide relief in the form of dividend-tax imputation, whereby shareholders are given credit for taxes paid at the corporate level.

The U.S. has taken a different path with respect to corporate taxation. In 1958, concerns about the effects of double taxation on small privately held firms led the U.S. Congress to add Subchapter S to Subtitle A, Chapter One of the Internal Revenue Code (Title 26 of the U.S. Code), which created the S-corporation. The profits from an S-corporation are not taxed at a corporate level; instead, they are “passed through” the corporate entity to shareholders on a pro-rata basis where they are taxed only at the personal level. S-corporations require the same corporate formalities as C-corporations, including articles of incorporation, a board of directors, an annual shareholders’ meeting, corporate minutes and shareholder votes on major corporate

decisions.

C-Corporation

One way the C-corporation can reduce the double taxation of corporate income is to pay large salaries to shareholders who are managers or employees of the firm. Because compensation is a valid business expense, a C-corporation can deduct compensation in its calculation of taxable income, avoiding the corporate tax on these distributions. However, the Internal Revenue Service (“IRS”), which enforces the U.S. tax code, imposes limitations on this practice by setting rules on what is considered “reasonable compensation;” excessive compensation can be reclassified by the IRS as a dividend distribution that is subject to the corporate tax plus penalties.

C-corporation shareholders may postpone double taxation by reinvesting earnings in the business rather than distributing them as dividends. In this case, retained earnings are taxed in the current year only at the corporate level, but will be taxed at the personal level when eventually distributed or when the corporation is liquidated. The amount of earnings retained, however, is effectively limited by the *accumulated earnings tax*, which is a 39.6% levy upon earnings retained by a corporation “beyond the reasonable needs of the business.”

When corporate assets are sold, shareholders will pay a capital gains tax on the proceeds of the sale. If a tax-free exchange of stock occurs instead of a sale, owners will not pay tax unless they sell some of the shares received in the exchange. States generally do not offer favorable rates on capital gains.

Because some state corporate income tax rates are higher than individual rates, a business organized as a regular corporation may pay higher state taxes than if it is organized as a partnership or S-corporation. However, this difference may not be significant in the few states

that tax unincorporated businesses.

S-Corporations

S-corporations are subject to a number of restrictions that do not apply to C-corporations, including a limit to one class of stock and a limit on the number of shareholders. Originally, this shareholder limit was set at 10, but subsequently was raised to 15 in 1976, to 25 in 1981, to 35 in 1982, to 75 in 1996 and to 100 in 2004. Both new and existing corporations may elect S-corporation status.

As a general rule, the higher is the percentage of corporate income to be distributed, the more beneficial is the S election. The S-corporation form is beneficial for an existing profit-making corporation that does not reinvest earnings, or cannot do so because of an accumulated earnings problem, and expects to distribute substantially all of its income to shareholders.

In contrast to their C-corporation counterparts, shareholder-managers of S-corporations have incentive to favor dividend distributions over managerial compensation. This result obtains because salary income is subject to a 15.3% payroll withholding tax mandated by the Federal Insurance Contributions Act (FICA), which funds the Social Security (12.4%) and Medicare (2.9%) social insurance programs. Dividend distributions are not subject to the FICA tax, so a shareholder manager avoids the payroll tax to the extent she can shift income from salary to dividends. After the Tax Reform Act of 1982, both salaries and dividends were treated as ordinary personal income, which was subject to federal and state personal income taxes. However, the Jobs and Growth Tax Relief Act of 2003 set the federal personal income tax rate on qualified dividends set at 15% rather than the taxpayer's marginal tax rate on ordinary income. This increased the incentive of a shareholder-manager in a high tax bracket to shift

salary income to dividends. Not only would the dividend income avoid the payroll taxes, it also would be taxed at a lower rate than ordinary income, which includes salary.

For the most part, the incentive to shift salary income to dividends applies only to manager-shareholders earning less than the Social Security Wage Base, which was \$60,600 at the time of the 1993 NSSF but subsequently has increased to \$94,200 as of 2006. Salary income above this cap is subject only to the Medicare Hospital Insurance portion of FICA, which is only 2.9%.

The IRS rules on “reasonable compensation” limit insufficient compensation designed to evade the payroll tax just as they limit excessive compensation designed to evade the corporate tax. Manager-shareholders must pay themselves a “reasonable” salary based upon what comparable non-shareholder managers working comparable hours are paid at other firms of similar size operating in the same industry; otherwise, the IRS may reclassify dividends as salary income subject to the payroll tax. This has led many accounting firms to recommend a “60/40” rule, encouraging S-corporations to pay out at least 60% of earnings as salary and to distribute only 40% as dividends.

Most states follow the federal example, exempting S-corporations from the corporate income tax. However, some states, most notably California and New York, recognize the pass-through nature of S-corporations but still impose a tax at the entity level. Others do not recognize S status and treat all corporations operating in their jurisdictions as regular corporations, subjecting the entity to a corporate tax and its shareholders to a personal income tax on any dividends received from the corporation.

The S-corporation provides a significant advantage over a regular corporation if a business is operating at a loss, particularly if most or all of the owners are in the highest tax

brackets. If the losses are not generated by passive activities, shareholders can use those losses to shelter other personal income. In contrast, the C-corporation does not provide an immediate tax benefit from operating losses unless it can use an optional provision permitting carry-back of losses against profits during the three most recent tax years. However, if a new business loses money in the first years of operation, the carry-back provision does not provide any current benefit. Losses not used in the current tax year or carried back can be carried forward and used to offset profits in future years, but several years may pass before the firm's profits are large enough to realize the full tax benefit of the early losses.

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Table 1
CEO Pay at Privately Held Firms

Panel A presents the distribution of corporations by size quartiles and organizational form (S-corporation versus C-Corporation). Panel B presents average CEO pay by size quartiles and organizational form, with standard errors in parentheses. In the last column of Panel B is the *t*-statistic for a test of differences in the means of S-corporations and C-corporations. Data are taken from the 1993 National Survey of Small Business Finances.

Panel A: Distribution of S-Corps and C-Corps by sales quartile

Sales Quartile (\$000)	(1) All		(2) S-Corp		(3) C-Corp	
	Obs.	Percent	Obs.	Percent	Obs.	Percent
Q1: \$0-\$450	556	25.1%	246	30.1%	310	22.2%
Q2:\$450-\$1,753.5	550	24.9%	184	22.5%	366	26.2%
Q3:\$1,753.5-\$6,377.86	553	25.0%	185	22.7%	368	26.4%
Q4: \$6,377.86-\$335,660	553	25.0%	201	24.6%	352	25.2%
Total	2,212	100%	816	100%	1396	100%

Panel B: CEO pay by sales quartile and organizational form (S-Corp or C-Corp)

Sales Quartile (\$000)	(1) All		(2) S-Corp		(3) C-Corp		t-stat
	Obs.	(\$000)	Obs.	(\$000)	Obs.	(\$000)	
Q1: \$0-\$450	556	36.6 (1.53)	246	34.5 (2.25)	310	38.4 (2.07)	-1.27
Q2:\$450-\$1,753.5	550	87.7 (4.83)	184	73.1 (5.19)	366	94.6 (6.71)	-2.08
Q3:\$1,753.5-\$6,377.86	553	193.8 (11.2)	185	165.9 (13.78)	368	207.5 (15.27)	-1.75
Q4: \$6,377.86-\$335,660	553	453.8 (26.9)	201	408.5 (46.22)	352	476.2 (33.08)	-1.19
Total	2,212	107.0 (5.02)	816	85.3 (7.11)	1396	120.6 (6.78)	-3.43

Note: Q4 means are skewed by large outliers (2 S-Corp and 1 C-Corp)

Table 2**Descriptive Statistics for Determinants of CEO Pay at Privately Held Firms**

Data for 2,212 corporations are taken from the 1993 National Survey of Small Business Finances. For each variable, we present the mean and, in parentheses, standard error. Column 1 presents results for all firms while columns 2 and 3 present results for S-corporations and C-corporations, respectively. *CEO Pay* is total officers' compensation. *Annual Sales* is the firm's annual sales revenues. *Leverage* is the ratio of total loans to total assets. *C-Corporation* is a dummy variable indicating that the firm is organized as a C-corporation; all other firms in the sample are organized as S-Corporations. *Firm Age* is the number of years that the firm has been doing business under current ownership. *CEO Ownership* is the percentage of the firm owned by the principal owner. *CEO Age* is the age of the principal owner. *Graduate Degree*, *College Degree*, *Some College* and *High School Degree or Less* are dummy variables indicating the highest educational attainment of the principal owner. *CEO is Female* is a dummy variable indicating that the principal owner is female.

Variable	(1) All Corps	(2) S-Corp	(3) C-Corp
Observations	2,212	816	1,396
CEO Pay (\$000)	107.0 (5.02)	85.3 (7.12)	120.6 (6.78)
Annual Sales (\$000)	2,158 (142.5)	1,900 (192.0)	2,318 (196.9)
Leverage (Loans to Assets)	0.400 (.011)	0.428 (0.018)	0.382 (0.014)
C-Corporations	0.616 (0.010)	n/a n/a	n/a n/a
Firm Age	15.5 (0.27)	13.2 (0.38)	16.9 (0.36)
CEO Ownership	0.698 (0.006)	0.708 (0.009)	0.691 (0.007)
CEO Age	49.6 (0.24)	48.0 (0.38)	50.5 (0.30)
<i>CEO Education</i>			
Graduate Degree	0.204 (0.009)	0.164 (0.013)	0.229 (0.011)
College Degree	0.342 (0.010)	0.37 (0.017)	0.324 (0.012)
Some College	0.213 (0.009)	0.238 (0.015)	0.198 (0.011)
High School Degree or Less	0.241 (0.010)	0.228 (0.010)	0.249 (0.010)
CEO is Female	0.165 (0.008)	0.171 (0.013)	0.162 (0.010)

Table 3
Pay-Size Elasticities

Pay-size elasticities are obtained by regressing the natural logarithm of CEO compensation against the natural logarithm of firm size as measured by annual sales revenues (Panel A), total assets (Panel B) or total employment (Panel C). Results in column 1 are obtained using ExecuComp data from 1992-2004 for 19,105 firm-year observations; results in column 2 are obtained using data for 6,101 firm-year observations obtained from 1992-1994 SEC proxy statements for firms no larger than the largest firm in the NSSBF sample (\$250 million in total assets); results in column 3 are obtained using data for 2,212 corporations from the 1993 National Survey of Small Business Finances (NSSBF). Standard errors appear in parentheses below coefficients.

Panel A: Size as Measured by Sales Revenues

	(1) ExecuComp		(2) SEC Proxy		(3) NSSBF	
	Range (\$Mil.)	Coef.	Range (\$Mil.)	Coef.	Range (\$Mil.)	Coef.
All		0.289 (0.004)		0.304 (0.010)		0.520 (0.014)
Quartile 4	3,300 - max	0.319 (0.013)	136 - max	0.253 (0.027)	6.3 - max	0.475 (0.063)
Quartile 3	1,100 - 3,300	0.281 (0.027)	46.6 - 136	0.289 (0.083)	1.75 - 6.3	0.734 (0.110)
Quartile 2	415 - 1,100	0.356 (0.030)	15.21 - 46.6	0.449 (0.088)	0.45 - 1.75	0.887 (0.109)
Quartile 1	0 - 415	0.160 (0.009)	0 - 15.21	0.183 (0.056)	0 - 0.45	0.449 (0.049)
Smallest Quartile						
10%-25%	173 - 415	0.27 (0.04)	4.37 - 15.21	0.191 (0.176)		
5%-10%	101 - 173	0.17 (0.12)	1.25 - 4.37	0.023 (0.402)		
0%-5%	0 - 101	0.04 (0.02)	0 - 1.25	0.249 (0.539)		

Panel B: Size as Measured by Total Assets

	(1) ExecuComp		(2) SEC Proxy		(3) NSSBF	
	Range (\$Mil.)	Coef.	Range (\$Mil.)	Coef.	Range (\$Mil.)	Coef.
Quartile 4	4,980 - max	0.277 (0.01)	207- max	0.260 (0.018)	2,315 - max	0.442 (0.060)
Quartile 3	1,335 - 4980	0.209 (0.025)	58.81 - 207	0.255 (0.02)	575 - 2,315	0.48 (0.099)
Quartile 2	440 - 1335	0.365 (0.026)	18.78 - 58.81	0.163 (0.029)	124 - 575	0.656 (0.113)
Quartile 1	0 - 440	0.257 (0.012)	0 - 18.78	0.266 (0.045)	0 - 124	0.27 (0.048)
Smallest Quartile						
10%-25%	195 - 440	0.31 (0.05)	6.71 - 18.78	0.146 (0.053)		
5%-10%	123 - 195	0.53 (0.12)	3.94 - 6.71	0.107 (0.122)		
0%-5%	0 - 123	0.15 (0.03)	0 - 3.94	0.387 (0.092)		

Table 3 (continued)

Panel C: Size as Measured by Total Employment

	(1) ExecuComp		(2) SEC Proxy		(3) NSSBF	
	Range	Coef.	Range	Coef.	Range	Coef.
Quartile 4	15,870 - max	0.274 (0.014)	1,130 - max	0.279 (0.025)	62.5 - max	0.505 (0.079)
Quartile 3	5,450 - 15,870	0.412 (0.036)	340 - 1,130	0.324 (0.035)	22 - 62.5	0.551 (0.139)
Quartile 2	1,900 - 5,450	0.393 (0.040)	101 - 340	0.418 (0.039)	6 - 22	0.727 (0.133)
Quartile 1	0 - 1,900	0.457 (0.033)	0 - 101	0.269 (0.038)	0 - 6	0.48 (0.085)
Smallest Quartile						
10%-25%	640 - 1,900	0.501 (0.076)	34 - 101	0.159 (0.043)		
5%-10%	347 - 640	-0.535 (0.403)	14 - 34	0.182 (0.068)		
0%-5%	0 - 347	0.43 (0.280)	0 - 14	0.454 (0.135)		

Table 4
Pay-Size Elasticities:
By One-Digit SIC Groups

Pay-size elasticities are obtained by regressing the natural logarithm of CEO compensation against the natural logarithm of firm size as measured by annual sales revenues. Results in column 1 are obtained using for 2,212 corporations from the 1993 National Survey of Small Business Finances (NSSBF); results in columns 2-4 are obtained using ExecuComp data from 1992-2004 for 19,105 firm-year observations; and results in column 5 are obtained using data for 6,101 firm-year observations obtained from 1992-1994 SEC proxy statements for firms no larger than the largest firm in the NSSBF sample (\$250 million in total assets). SIC5 is broken into two segments: wholesale trade (SIC50-51) and retail trade (SIC52-59). *t*-statistics appear in parentheses below coefficients.

Industry Group	(1) NSSBF All	(2) ExecuComp All	(3) ExecuComp < \$500M	(4) ExecuComp > \$500M	(5) SEC Proxy All
Sample Size	2,212	19,105	5,665	13,440	6,101
All	0.52 (-37)	0.289 (-76.7)	0.115 (-13.1)	0.327 (-49.4)	0.304 (-31.3)
SIC1: Construction and Mining	0.574 (-14.6)	0.447 (-25.8)	0.311 (-5.3)	0.417 (-13.1)	0.342 (-8.1)
SIC2: Primary Manufacturing	0.63 (-12.6)	0.257 (-40.1)	0.098 (-6.8)	0.34 (-29.7)	0.229 (-11.9)
SIC3: Other Manufacturing	0.651 (-16.2)	0.312 (-43.9)	0.193 (-11.1)	0.31 (-23.8)	0.349 (-17.9)
SIC4: Transportation	0.544 (-7.4)	0.331 (-23.9)	0.28 (-6.5)	0.386 (-18)	0.257 (-10.5)
SIC51: Wholesale Trade	0.500 (-13.7)	0.27 (-14.8)	0.104 (-0.6)	0.311 (-13.8)	0.289 (-7.05)
SIC52: Retail Trade	0.562 (-19.9)	0.32 (-23.9)	0.299 (-4.2)	0.289 (-15.6)	0.306 (-6.99)
SIC6: Insurance and Real Estate	0.393 (-8.2)	0.244 (-21.6)	0.03 (-1.3)	0.319 (-16.5)	0.416 (-15.3)
SIC7: Business Services	0.664 (-17.8)	0.338 (-22.2)	0.23 (-7.7)	0.38 (-11.7)	0.455 (-10.5)
SIC8: Professional Services	0.709 (-14.7)	0.241 (-7.7)	0.045 (-0.7)	0.158 (-2.5)	0.190 (-4.02)
SIC9: Public Administration	n/a n/a	0.157 (-7.4)	-0.018 (-0.6)	0.471 (-15.5)	0.06 (-0.7)

Table 5

Determinants of CEO Pay

Results obtained by regressing the natural logarithm of CEO compensation against a set of explanatory variables using data from a sample of 2,212 corporations taken from the 1993 National Survey of Small Business Finances. *ln(Annual Sales)* is the natural logarithm of one plus the firm's annual sales revenues. *Loans to Assets* is the ratio of total loans to total assets. *C-Corporation* is a dummy variable indicating that the firm is organized as a C-corporation; *S-Corporation* is a dummy variable indicating that the firm is organized as an S-Corporations. *ln(Firm Age)* is the natural logarithm of the number of years that the firm has been doing business under current ownership. *CEO Ownership* is the percentage of the firm owned by the principal owner. *CEO Age* is the age of the principal owner. *CEO Age Squared* is the square of CEO Age. *Graduate Degree*, *College Degree*, *Some College* and *High School Degree or Less* are dummy variables indicating the highest educational attainment of the principal owner. *CEO is Female* is a dummy variable indicating that the principal owner is female. Industry Controls indicates that the model specification includes a set of nine dummy variables indicating the firm's one-digit Standard Industrial Classification.

t-statistics appear in parentheses. *, ** and *** indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Regression Model	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	7.40 (79.87)*	7.78 (60.29)*	8.23 (19.30)*	6.32 (18.38)*	6.55 (19.93)	6.53 (19.45)
<i>Firm Characteristics</i>						
ln(Sales)	0.52 (37.00)*	0.52 (35.54)*		0.49 (34.82)*	0.54 (38.49)*	0.54 (38.44)*
Loans to Assets		-0.20 (-4.97)*		-0.21 (-5.40)*	-0.21 (-5.75)*	-0.21 (-5.73)*
ln(Firm Age)		-0.09 (-3.03)*		-0.035 (-1.10)	-0.031 (-1.03)	-0.031 (-1.04)
C-Corporation		0.16 (3.59)*		0.13 (2.99)*	0.14 (3.32)*	0.17 (1.51)
CEO Ownership		-0.20 (-2.54)**		-0.23 (-2.98)*	-0.31 (-4.29)*	
C-Corporation x CEO Ownership						-0.33 (-3.68)*
S-Corporation x CEO Ownership						-0.28 (-2.24)**

Table 5 (cont.)
Determinants of CEO Pay

Regression Model	(1)	(2)	(3)	(4)	(5)	(6)
<i>Owner Characteristics</i>						
CEO Age			0.088 (5.24)*	0.06 (4.53)*	0.047 (3.77)*	0.047 (3.76)*
CEO Age Squared			-0.0008 (-5.00)*	-0.0006 (-5.01)*	-0.0005 (-4.32)*	-0.0005 (-4.30)*
CEO is Female			-0.46 (-6.53)*	-0.20 (-3.67)*	-0.18 (-3.35)*	-0.18 (-3.36)*
Graduate Degree			0.76 (9.63)*	0.61 (9.90)*	0.30 (4.66)*	0.3 (4.67)*
College Degree			0.36 (5.13)*	0.17 (3.16)*	0.11 (2.07)**	0.11 (2.08)**
Some College			0.09 (1.20)	0.06 (0.92)	0.05 (0.93)	0.05 (0.95)
Industry Controls	No	No	No	No	Yes	Yes
Adjusted R-Square	0.382	0.394	0.08	0.436	0.493	0.492