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What do we know about executive compensation at privately held firms?

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Abstract:
This study examines the determinants of executive compensation using data from two nationally representative samples of privately held U.S. corporations conducted ten years apart—in 1993 and 2003. We find that: (i) the level of executive pay at privately held firms is higher at larger firms and varies widely by industry, consistent with stylized facts about executive pay at public companies; (ii) inflation-adjusted executive pay has fallen at privately held companies, in contrast with the widely documented run-up in executive pay at large public companies; (iii) 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; (iv) executive pay is higher at more complex organizations; (v) organizational form affects taxation, which, in turn, affects executive pay, with executives at C-corporations being paid significantly more than executives at S-corporations; (vi) executive pay is inversely related to CEO ownership; (vii) executive pay is inversely related to financial risk; and (viii) executive pay is related to a number of CEO characteristics, including age, education and gender: executive pay is inversely related to CEO age, positively related to educational, and is significantly lower for female executives.

Key words: CEO; Compensation; Education; Executive; Executive Pay; Gender; Organizational Form; Ownership; SSBF; Taxes.

JEL classification: H24, H25, G32, J33

What do we know about executive compensation at privately held firms?

1. Introduction

Not much. While there has been an explosion during the past decade in the number of studies analyzing executive compensation at publicly traded companies, there remains a virtual vacuum in research on executive pay at privately held firms. [1] In this study, we begin the task of filling this void by examining executive compensation and its determinants, using data from two nationally representative samples of privately held U.S. firms conducted by the Federal Reserve Board a decade apart—in 1993 and 2003.

This study is important because fewer than 10,000 out of more than five million U.S. corporations and 35 million U.S. businesses are publicly traded, and public corporations are typically much larger than private firms. Yet, according to the U.S. Small Business Administration, private firms account for half of U.S. private sector employment and 60% to 80% of net job growth. Our study will begin to provide insights into how executive pay is set at privately held corporations.

There are likely to be key differences in how pay is set at private firms relative to public firms. For example, the average CEO owns more than half of the shares of our privately held firms, whereas average ownership at public U.S. corporations is typically less than one percent. Therefore, CEOs at privately held firms have almost total control over their compensation. This enables us to better examine the influence of market factors on executive compensation (e.g., size, industry, performance, etc.) because the dominant stock ownership by private-firm CEOs

[1] A survey article by Murphy (1999) is generally regarded as the definitive work in this area of the literature, providing references to more than 200 academic articles published up through 1998. Hallock and Murphy (1999) reprints 45 of the most influential of these manuscripts.

insulates their compensation from corporate political processes (i.e., board of directors and outside block holders) that stand at the heart of the owner-manager agency framework (e.g., Jensen and Meckling, 1976; Fama, 1980). Being private also insulates them from regulatory pressures due to disclosure of executive pay.

Our study is important for at least three reasons. First, almost nothing is known about executive pay at privately held firms. Do the "stylized facts" about executive pay at large publicly traded firms documented by Murphy (1999) hold true for privately held firms? Is executive pay higher at larger private firms? Does the well known pay-size elasticity of 0.3 hold at privately held companies? Has executive pay at privately held firms risen as precipitously as at public firms? Does the level of pay at privately held companies differ by industry? We provide answers to each of these four questions—yes, no, no, and yes.

Second, little is known about the role of organizational form and taxes in relation to executive compensation. (See Appendix I for a discussion of S-corporations and C-corporations.) We provide new evidence that executive pay is higher at C-corporations than at S-corporations, consistent with the U.S. tax treatment of profits, dividends, and compensation at these two types of corporations.

Third, the relationship between executive 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. We find that executive pay first rises with age and then falls; that CEOs with college and graduate degrees earn significantly more than their less educated counterparts; and that female CEOs pay themselves less than do male CEOs.

Our results are based upon five sources of data. The first two sources are the 1993 and 2003 Surveys of Small Business Finances ("SSBFs")—two general-purpose surveys of small

firms co-sponsored and co-funded by the Federal Reserve Board and the U.S. Small Business Administration. Our third source is Standard and Poor's Compustat database, from which we obtain financial data on publicly traded firms. Our fourth source is Standard and Poor's ExecuComp database, from which we obtain compensation data on large publicly traded firms. Our fifth and final source is a set of hand-collected proxy statements of the smallest public companies, from which we obtain compensation data that are not available from ExecuComp. (ExecuComp only covers the largest 1,500 public companies in three cohorts: Large cap 500, Mid-cap 400, and Small cap 600)

We report five main results that are remarkably consistent across the two surveys, even though they were conducted a decade apart. First, we test whether the stylized facts about executive compensation based upon research on large public firms hold true for smaller privately held firms. We confirm that the level of pay is higher for larger private firms and varies widely by industry, even after controlling for firm size. However, we find that executive pay at privately held firms has fallen, rather than risen during the past decade, in sharp contrast to what has happened at large public firms. We also find that that the pay-size elasticity is much larger at privately held firms than the 0.3 benchmark established by large publicly traded firms, on which previous research has almost exclusively focused, and also is much larger than the elasticities at the smallest publicly trade firms, for which we provide the new evidence based upon our hand-collected 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 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 α% 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.

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[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 I for more information on how the limitation on the number of shareholders has changed over time.

[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

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, CEOs should favor dividends over salary compensation. This is especially important for small firms, 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 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).

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because dividend distributions are not subject to the 12.4% payroll deduction.

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.

2. Properties of Executive Compensation

The search for the determinants of the level of executive 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 executive 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

[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

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.

Scholes and Wolfeson (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 salary, 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

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lower CEO compensation we find in our analysis.

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 SSBF. 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 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

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[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 Suher (2008) 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-conversation relative to control groups.

[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.

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 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 held firms, where the CEO typically owns 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.

Murphy (1999, p. 9) notes that firm size is an imperfect proxy for the complexity of the CEO's job. In an attempt to capture additional aspects of complexity, we analyze three dummy variables. First, we include a variable indicating whether the firm primarily does business only in the local area as opposed to also doing business regionally, nationally or internationally. We expect a negative relation between executive pay and this indicator variable. Second, we include a variable indicating whether the firm conducts business only at a single site as opposed to conducting business from multiple locations. We expect a positive relation between executive pay and this variable. Third, we include a variable indicating whether or not the firm obtains pension or brokerage services from a financial institution, which is a proxy for the complexity of the firm's finances. We expect a positive relation between executive compensation and this variable.

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

[10] In our sample, the median firm has CEO pay of $83,500 but profits of only $50,000. Median CEO ownership is 50%.

earnings are an increasing function of educational attainment. We test whether this relation holds true for our sample of CEOs by including dummy variables for CEOs that attended college (Some College), received an undergraduate degree (College) or received a graduate degree (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]

[11] Murphy (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.

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 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 the 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 five sources. The first two sources are the 1993 and 2003 Surveys of Small Business Finances ("SSBF"), which were co-sponsored and co-funded by the Federal Reserve Board and the U.S. Small Business Administration and are available at the Board's website.[12] The firms surveyed constitute a nationally representative sample of 4,637 (4,240) small businesses operating in the United States as of year-end 1992 (2003), where a small

[12] Similar surveys were conducted for 1987 and 1998, but neither of those two surveys collected information on CEO pay. For more information, visit the survey's website: http://www.federalreserve.gov/pubs/oss/oss3/nssbftoc.htm.

business is defined as a non-financial, non-farm business employing fewer than 500 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.

We impose several restrictions on the SSBF samples. First, we exclude publicly traded firms from each sample. The SSBF selects firms based upon employment size so that it includes a very small number of public firms. There are 32 public firms among the 4,637 observations in the 1993 SSBF firms and 9 among the 4,240 observations in the 2003 SSBF. This restriction leaves us with a clean sample of privately held firms.

Second, we use information on organizational form to identify and exclude proprietorships and partnerships from our analysis because we want to compare CEO compensation across firms of similar organizational form. This eliminates about half of the total number of observations from both the 1993 and 2003 SSBFs. 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

[13] Some variations of partnerships offer some, but not all, of 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 1993 SSBF, 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).

transactions costs associated with partnerships may exceed that of corporate form (see Guenther, 1992).

Third, we exclude firms where day-to-day management of the firm was the responsibility of someone other than one of the owners of the firm. We exclude these firms because we cannot match up owner characteristics with officer compensation.

Fourth, we exclude firms that did not know or refused to divulge their amount of CEO compensation because we cannot analyze CEO pay without this variable.

Finally, we exclude a handful of firms (fewer than 10 in each survey) that reported zero sales or assets. These restrictions leave us with a final sample of 1,630 firms from the 1993 SSBF, of which 1,009 are C-corporations and 621 are S-corporations; and with a final sample of 1,668 firms from the 2003 SSBF, of which 601 are C-corporations and 1,067 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. We exclude firms in agriculture and financial services, as firms in these industries are excluded from the SSBFs.

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 SSBF data. However, we also calculate elasticities for broader grouping of ExecuComp firms using data only from 1992-1994 (3,135 firm-year observations) and 2002-2004 (4,088 firm-year observations). 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 1991-1994 and 2001-2003 at firms that are no larger than the largest firm in the SSBF 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 SSBF, and collected total assets, total employment and annual sales for each of the three years. We exclude firms in agriculture and financial services, as firms in these industries also are excluded from the SSBFs. 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 14 below, we expect that the use of stock options by privately held firms is extremely rare because only large public firms typically use such compensation.[14]

We collect data for 1992, 1993 and 1994 (2001, 2002, and 2003) because these years most closely correspond to data from the 1993 (2003) SSBF, which was conducted during 1993-1994 (2003-2004) for firms in existence as of year-end 1992 (2002). We do not use data from 2004 because of difficulties in obtaining proxy statements in text format rather than HTML format, and many firms ceased providing proxies in text format beginning in 2004. Our search

[14] For the population of U.S. firms that were publicly traded during 1994, we examined the proxy statements of each firm. We 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.

tools with which we search through the proxy statements for compensation data work poorly on HTML documents.

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 to match with the 1993 SSBF; and 844 firms in 2001, 770 firms in 2002 and 565 firms in 2003, for a total sample of 2,179 firm-year observations to match with the 2003 SSBF. 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 two samples 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 executive 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:

$$ln\,(CEO\ Compensation_i) = \beta' X_i + \varepsilon_i \qquad (1)$$

where: *ln* (*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;[15] and ε_i is a normally distributed error term.

There is one critically important limitation inherent in the SSBF data on executive compensation. The survey asks for total amount of officers' compensation rather than for the amount of CEO compensation. [16]

Hence, for SSBF firms with multiple officers, this amount likely contains the sum of compensation paid to all officers of the firm. For most SSBF firms, it is highly unlikely that there are multiple officers. In addition, we have restricted our sample to firms where the primary owner also serves as the day-to-day manager of the firm. Even so, this limitation of the data should be kept in mind when interpreting the analysis, especially when comparing pay-size elasticities of the privately held SSBF firms with those of publicly traded ExecuComp firms, where we use

[15] We split wholesale and retail firms—SIC codes 50-51 and 52-59, respectively—into two separate categories.

[16] In the 1993 SSBF, question P10 asks "During [YEAR], what was the amount of officers' compensation?" In the 2003 SSBF, question P5.5 asks "For the fiscal year ending [DATE], what was the total amount of officers' compensation?"

only the pay of the CEO. One way to at least partially address this issue is to analyze the subset of SSBF firms where the primary owner holds 100% of the firm's shares, in addition to serving as the day-to-day manager of the firm. It is highly unlikely that such firms have multiple officers, so this analysis provides an important test of the robustness of our data.

4. Empirical Results

4.1.1. Sample characteristics

Panel A of Table 1 presents the size distribution of our 1993 and 2003 samples by organizational form (S-corporation or C-corporation). In 1993, approximately two-thirds of all corporations were organized using the C-form and one third using the S-form. By 2003, those percentages had reversed with only one third organizing as C-form and two thirds organizing as S-form. This is likely attributable by changes in the tax law increasing the maximum number of shareholders in an S-corporation from 35 in 1993 to 75 in 1996 and 100 in 2004. In addition, the highest marginal tax rate on individuals dropped from 39.5% to 35% in 2003, making the S-form more attractive. (Many of the 2003 SSBF interviews were conducted in 2004, although the reference year was 2003.) The distribution by size, as measured by sales quartiles, also changed from 1993 to 2003. In 1993, the distributions of both C-corporations and S-corporations were relatively uniform, but, by 2003, smaller firms were disproportionately organized as S-corporations whereas larger firms were disproportionately organized as C-corporations.

4.1.2. Executive pay by size and organizational form

Panel B of Table 1 presents executive pay by size distribution and organizational form. The results for all 1993 (2003) firms shown in column 1 (column 4) clearly show a positive

relationship between firm size and executive compensation, with the CEO pay rising from $33,700 ($36,200) in the smallest quartile, to $78,500 ($99,500) and $164,600 ($183,800) in the middle quartiles, and to $389,000 ($439,400) in the largest quartile. Table 1 also shows that CEO compensation is significantly higher at C-corporations than at S-corporations ($109,700 versus $80,700 in 1993 and $145,600 versus $92,400 in 2003), and that these differences ($29,000 in 1993 and $53,200 in 2003) are both statistically significant at better than the 0.001 level based upon a *t*-test for difference in means.

According to Murphy (1999, p. 1), one of the stylized facts about executive compensation is an "undisputed escalation in chief executive officer (CEO) compensation." In our sample of ExecuComp firms, the median compensation rose from $739 thousand in 1993 to $1.055 million in 2003. However, after adjusting for the 27% increase in the CPI during this same period, the 43% nominal increase in CEO pay translates into only a 12% real increase in CEO pay. The mean pay at these same firms increased by 62% on a nominal basis and by 27% on a real basis, evidence of the skewness of the distribution of CEO pay at public firms.

By comparison, the median compensation at privately held firms rose from $45 thousand in 1993 to $52 thousand in 2003, and this 16% nominal increase translates into a 9% real decrease in executive pay. Using the mean instead of the median, we find that a 10% nominal increase in pay translates into a 13% real decrease in executive pay at privately held firms. By either measure, executive pay at privately held firms has been falling on a real basis whereas it has been rising on a real basis at public firms. Hence, this "stylized" fact about executive compensation based upon data from public firms does not appear to hold at privately held firms.

4.1.3. Executive pay by industry

According to Murphy (1999, p. 5), one of the stylized facts about executive pay at public companies is that "pay levels vary by industry." In Table 2, we present new evidence on this issue from our two samples of privately held firms. For both 1993 and 2003, we do, indeed, find wide variation in executive pay by industry, evidence that this stylized fact about executive pay holds for privately held firms just as it does for publicly traded firms. In 1993, average pay ranged from a low of $63,900 at Business Services firms to a high of $162,500 at Insurance and Real Estate firms. For each of these industries and for Retail Trade firms ($66,200) and Professional Services firms ($149,600), the average pay is significantly different from the overall average of $98,300. In 2003, average pay ranged from a low of $68,500 at Transportation firms to a high of $163,000 at Professional Services firms. For each of these industries and for Retail Trade firms ($81,900) and Business Services firms ($81,800), the average pay is significantly different from the overall 2003 average pay of $108,300.

One potential explanation for our findings regarding pay by industry is that larger firms are concentrated in particular industries, so that what we observe in Table 2 is a size effect rather than an industry effect. We partially address this issue by examining the subsamples of firms with 20 or fewer employees. For all firms with 20 or fewer employees, we clearly see the size effect, as the average pay in 1993 (2003) is only $67,700 ($76,500) as compared with $98,300 ($108,300) for the full samples. However, we still see wide variation in pay by industry. In 1993, the range is from $39,900 for Primary Manufacturing to $152,100 for Insurance and Real Estate; in 2003, the range is from $39,400 for Transportation to $114,600 for Professional Services. We will address this issue more thoroughly when we conduct our multivariate analyses.

4.1.4. Descriptive statistics

Table 3 presents the descriptive statistics for the SSBF 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 1993 (2003) sample paid its CEO $98,300 ($108,300); generated $1.921 million ($1.914 million) in annual sales revenues; and had a debt-to-asset ratio of 60.4% (63.9%). C-corporations account for 60.4% (29.8%) of the sample. The average firm's CEO owned 68.9% (76.3%) of the firm's stock, was 49.1 (51.3) years old and was female in gender 15.2% (20.4%) of the time. The CEO held a graduate degree at 19.0% (22.1%) of the firms, and held a four-year college degree at 34.2% (32.9%) of the firms.

Table 3 also shows descriptive statistics separately for the subsamples of S- and C-corporations. These statistics show that S-corporations are significantly smaller than C-corporations in terms of annual sales and significantly younger.

4.2. Pay-size elasticity

In Tables 4 and 5, we explore another of the stylized facts listed by Murphy (1999). In particular, we analyze the "best documented stylized fact regarding CEO pay: CEO pay is higher at larger firms" (Murphy 1999, p. 6) with a pay-size elasticity of approximately 0.3.

We estimate elasticities as the coefficient of the natural logarithm of firm size (β_1) obtained from the following regression:

$$ln\,(CEO\ Pay_{i,t}) = \beta_0 + \beta_1 \times ln\,(Size_{i,t}) + \varepsilon_{i,t} \qquad (2)$$

where: $ln\ (CEO\ Pay_{i,t})$ is the natural logarithm of CEO pay at firm *i* during year *t*; $ln\ (Size_{i,t})$ is the natural logarithm of size as measured by annual sales, total assets or total employment for firm *i* in year *t*; and $\varepsilon_{i,t}$ is an i.i.d. error term.

4.2.1. Pay-size elasticity for large public firms

Our results for estimating eq. (2) by year for 1992 – 2004 based upon pooled cross-sectional and time-series data from ExecuComp (not shown in the tables) produce elasticities from 0.265 (standard error = 0.010) in 1994 to 0.305 (standard error = 0.012) in 1996. The only years in which the elasticity is significantly different from 0.30 at the 0.05 level are 1994 (elasticity = 0.273, standard error = 0.013), 2000 (elasticity = 0.271, standard error = 0.013) and 2001 (elasticity = 0.268, standard error = 0.014). In general, these results strongly support a pay-sales elasticity of 0.30.

In column (1) of Table 4, we report elasticities covering the period from 1992-2004. This enables us to analyze elasticities across relatively small size buckets. We first break the sample into quartiles by each size measure, and then further break down the smallest quartile into three even finer buckets—the smallest 5% of firms, firms in the 5% – 10% quantiles, and firms in the 10% – 15% quantiles.[17]

When we measure size by annual sales using the ExecuComp data, we cannot reject a pay-size elasticity of 0.3 for the two largest sales quartiles, where the elasticities are 0.307

[17] For robustness, we also estimate and analyze elasticities by quartiles based upon ExecuComp data from only the years 1992 – 1994 and 2002 – 2004. The contemporaneous compensation data from these much shorter periods should be more comparable to the data from the 1993/2003 SSBFs. The results using data from these shorter time periods are not qualitatively different from those presented in Column 1 of Table 4, where we analyze ExecuComp data from 1992 – 2004.

(standard error = 0.02) and 0.269 (standard error = 0.04). However, this relationship breaks down for the smaller quartiles, where the elasticity in quartile 2 is 0.392 (standard error = 0.04) and in the smallest quartile is only 0.100 (standard error = 0.01).

When we break the smallest quartile into even smaller quantiles (10% – 25%, 5% – 10% and 0% – 5%), we see that the relation holds only for firms above the smallest decile. The elasticity in the 10% – 25% bucket is 0.296 (standard error = 0.06), but falls to 0.200 (standard error = 0.15) for firms in the 5% – 10% quantiles and to 0.067 (standard error = 0.02) for firms in the 0% – 5% quantiles.

When we measure size by total assets using ExecuComp data, we find similar, but more stable, results. The elasticities for the four quartiles (by declining size) are 0.272, 0.226, 0.303 and 0.254, with standard errors of 0.03 or less. When we break the smallest quartile into smaller buckets, we again find that the pay-size relation weakens considerably for the smallest five percent of firms, with an elasticity of only 0.138 (standard error = 0.04). For the 5% – 10% and 10% – 25% buckets, the elasticity is not significantly different from the 0.30 benchmark.

When we measure size by total employment using ExecuComp data, we find elasticities for the four quartiles by (declining size) of 0.284, 0.369, 0.382 and 0.456. Only the 0.456 elasticity is significantly different from the 0.30 benchmark.

Overall, the ExecuComp data are broadly supportive of a pay-size elasticity of 0.3 only for the largest two quartiles of firms, and those are the firms that have been the subject of most previous research. For the smaller half ExecuComp firms, the results are less conclusive and, for the smallest decile of firms, this relationship appears to break down completely.

4.2.2. Pay-size elasticity for small public firms

In columns (2) and (4) of Table 4, we present results for our 1992-1994 and 2001-2003 SEC proxy samples, respectively. When we measure size by annual sales, we cannot reject a pay-size elasticity of 0.3 for the three largest quartiles in either proxy sample. As with the ExecuComp sample, the relationship weakens for the smallest quartile, where the pay-size elasticity is only 0.183 (standard error = 0.056) for the 1992-1994 sample and is not significantly different from zero for the 2001-2003 sample. In the smallest decile of each proxy sample, the elasticity is not significantly different from zero.

When we measure size by total assets, we obtain elasticities of 0.260, 0.255, 0.163 and 0.266 for the four quartiles (by declining size) of the 1992-94 proxy sample, and of 0.275, 0.267, 0.170, and 0.144 for the four quartiles of the 2001-2003 proxy sample. For the two largest quartiles of the earlier sample, these elasticities are significantly less than 0.30, albeit not by much. For the two largest quartiles of the later sample, these elasticities are not significantly different than 0.30.

When we measure size by total employment, in the early proxy sample, only the pay-size elasticity for the second smallest quartile of 0.418 is significantly different from 0.30; in the later proxy sample, only the elasticity for the largest quartile is not significantly different from 0.30.

Overall, the results for the small public firms in our 1992-1994 and 2001-2003 SEC proxy sample are supportive of the benchmark elasticity of 0.30 only for the larger two quartiles of firms. Within the smaller two quartiles of small public firms, this relation weakens and breaks down.

4.2.3. Pay-size elasticity for privately held firms

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 hypothesize that this relation breaks down for the smaller privately held firms we analyze, where the boards are far less likely to hire pay consultants and use industry/size comparables in setting executive pay.

In column (3) of Table 4, we present the pay-size elasticities for 1993 SSBF firms using the same three size metrics. 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 SSBF firms, we can shed some light on the private vs. public distinction between the SSBF and SEC proxy firms. If we analyze only the top quartile of SSBF firms, we obtain results for a group of relatively large (greater than $5.5 million in annual sales) private firms that we can then compare with results for the smallest of the SEC proxy firms.

For the largest quartile of 1993 SSBF firms, we obtain a pay-size elasticity of 0.664 (standard error = 0.07), not statistically different than the 0.569 elasticity for the full 1993 SSBF sample. This is more than double the 0.304 pay-sales elasticity for the 1993 SEC proxy firms, and multiples larger than the 0.183 pay-sales elasticity for the smallest quartile of 1993 SEC proxy firms.

For the largest quartile of 2003 SSBF firms, we obtain a pay-size elasticity of 0.336 (standard error = 0.06), significantly smaller than the 0.457 elasticity for the full 2003 SSBF

sample. Still, this is more than double the 0.129 pay-sales elasticity for 2003 SEC proxy firms, and multiples larger than the 0.013 pay-sales elasticity for the smallest quartile of 1993 SEC proxy firms. Hence, our results suggest 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 0.421, 0.858 and 0.653. Except for the 0.421 figure, each of these is significantly larger than the elasticities for public firms, large or small. We also can use these elasticities by quartile to shed light on whether the higher pay-size relationship observed at SSBF firms is driven by aggregation of executive pay across multiple officers. Were this true, then we should expect to observe monotonically increasing pay-size elasticities by size quartile. Instead, we actually observe just the opposite—a higher pay-sales relationship at the smaller half of SSBF firms.

We also can estimate the pay-size elasticity using only those firms where the primary owner owns 100% of the firm's shares, as well as serving as the day-to-day manager of the firm. It is highly unlikely that there are multiple officers at such firms. For 1993, we obtain a pay-sales elasticity of 0.53 for this group of firms, which is smaller but not statistically different from the 0.57 elasticity obtained for the full sample. For 2003, we obtain a pay-sales elasticity of 0.37, which is significantly smaller than the 0.46 elasticity for the full sample.

We also estimate elasticities for this group of single-owner corporations using assets and total employment as our measures of size, both for 1993 and 2003. Only for the 2003 sample using sales as our measure of size do we find a significantly smaller pay-size elasticity for the single-owner firms than for our full sample. For each of the other five pairs of elasticities, we

find no significant difference. This strongly suggests that our findings are not attributable to aggregation of executive pay across multiple officers.

When we measure size by total assets or total employment instead of annual sales, the results for the 1993 SSBF sample are remarkably consistent. Within each of the three largest quartiles, none of the three pay-size elasticities are significantly different from each other, with the exception of the 0.858 pay-sales elasticity in the second smallest sales quartile. For the smallest quartile, the pay-asset elasticity of 0.152 is significantly smaller than the 0.653 pay-sales elasticity and the 0.472 pay-employment elasticity. For employment, we 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.

Data from the 2003 SSBF tell yet another story. As shown in column (5), the average pay-size elasticity based upon annual sales is 0.457, which is significantly smaller than the 0.567 elasticity for 1993 SSBF firms. Even more interesting are the elasticities for the four sales quartiles, which are (from largest to smallest) 0.336, 0.306, 0.402 and 0.280 and none are significantly different from 0.30 except for the overall 0.457 average. Thus, it appears that the pay-sales elasticity dropped significantly from 1993 to 2003, by more than half in each quartile except the second largest. We speculate that this decline has been driven by the growing familiarity with and use of the 0.30 benchmark among accountants that advise privately held firms.

When size is measured by total assets, the average elasticity for 2003 is 0.258, significantly smaller than the 0.371 average elasticity for 1993. However, when we compare elasticities for the four asset quartiles, we find no significant differences between 1993 and 2003. For 2003, the pay-asset elasticities (from largest to smallest) are 0.707, 0.536, 0.509 and 0.140.

As with the pay-sales elasticity, the pay-asset elasticity of the smallest quartile is significantly smaller than those for the three larger quartiles.

When measured by total employment, the average 2003 pay-size elasticity by quartile, from largest to smallest, is 0.531, 0.919, 0.462 and 0.273. As with 1993, the elasticity is smallest for the smallest quartile of firms and largest for the second largest quartile of firms.

Overall, the results in Table 4 show significantly higher pay-size elasticities for privately held firms relative to public firms both large (ExecuComp sample) and small (SEC proxy sample). Among the large public firms, the results provide strong support for the 0.30 pay-size elasticity for the full sample and for the larger quartiles of firms, but suggest lower elasticities for the two smaller quartiles and elasticities that are not significantly different from zero for the smallest decile of firms (less than $200 million in annual sales). Among the small public firms, the results also support the 0.30 pay-size elasticity for the two larger quartiles, but also suggest lower elasticities for the two smaller quartiles, and elasticities that are not significantly different from zero for the smallest decile of firms (less than $4 million in annual sales). Among the privately held firms, the results strongly reject the 0.30 pay-size elasticity for the three largest quartiles of firms in favor of a much larger elasticity in the range of 0.50 – 0.70. Among the smallest quartile of privately held firms (less than $10,000 in annual sales), the results reject the 0.30 pay-size elasticity in favor of a smaller elasticity of about 0.15.

4.2.4. Pay-size elasticities across industries

In Table 5, we investigate whether pay-size 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 both the 1993 and 2003 samples of privately held firms, the elasticity of compensation with respect to sales varies widely across industries, in contrast with the stability for larger public firms reported by previous researchers. The reported elasticity for each industry is significantly greater than 0.3 with the sole exception of the 2003 sample of transportation firms. Moreover, the reported elasticities for the SSBF samples are significantly larger than those of the public firms with the exceptions of SIC 1 and SIC 4 in the 2003 sample. In most comparisons, the elasticity of the SSBF sample is close to double the elasticity in the ExecuComp sample. Also of note is the decline in the elasticities for SSBF firms from 1993 to 2003. In general, these declines are statistically significant for each industry except SIC 1, and are largest for SIC 4, SIC 3 and SIC 2.

4.3. Determinants of executive compensation at privately held firms

In Table 6, we use multivariate regression to analyze the determinants of executive pay at privately held firms. We begin with a simple model not shown in Table 6, but reported in Table 4, that includes only firm size. The pay-sales elasticity for the full 1993 (2003) SSBF sample is 0.569 (0.457) and is estimated with great precision as evidenced by its associated t-statistic of 34.6 (33.5). By itself, size explains more than 40 percent of the variability in CEO pay for each sample.

In Panel A of Table 6, we include not only firm size as measured by the natural logarithm of annual sales but also a series of seven dummy indicator variables for industry as defined by one-digit standard industrial classification. This enables us to test whether there is an industry effect independent of the well-documented size effect. To avoid the dummy variable trap, we exclude the indicator for firms in SIC 1 (Construction and Mining), so the interpretation of each

industry coefficient is the percentage difference in pay between that industry and pay in the Construction and Mining industry group. Our results clearly show that, for both the 1993 and 2003 samples, executive pay at privately held firms varies by industry, even after controlling for firm size. For 1993, six of the eight included industry indicator variables are statistically significant at the 0.05 level or better, with two being positive and four being negative. Pay is highest for Professional Services firms and lowest for Retail Trade firms. For 2003, six of the eight included industry indicator variables are statistically significant at the 0.05 level or better, with five being positive and one being negative. As in 1993, pay is highest for Professional Services firms and lowest for Retail Trade firms.

In Panel B of Table 6, we augment the specification analyzed in Panel A; first with a set of firm characteristics and then with a set of owner characteristics. This enables us to provide evidence regarding the relative importance of these variables in explaining executive pay at privately held firms.

In column (1) of Table 7, we include additional firm characteristics—leverage as measured by the ratio of debt to assets, a dummy variable identifying C-corporations, firm age, firm profitability as measured by return on assets, and three dummy variables indicating whether the firm does business locally as opposed to regionally, nationally, or internationally; whether the firm operates at multiple sites; and whether the firm uses pension or brokerage services.

As shown in column (1), which is based upon the 1993 SSBF, only firm sales, leverage and the dummies for C-corporations and for firms using pension or brokerage services are significant at better than the 0.05 level. More highly levered firms pay significantly lower compensation, supporting our hypothesis that CEOs enhance their job security by extracting less pay as leverage increases. C-corporations pay significantly higher compensation, which supports

our hypothesis that double taxation of income at C-corporations leads their managers to prefer salary compensation over dividend income. Executive pay is significantly higher at firms using pension or brokerage services, supportive of our hypothesis that executive pay is higher at more complex firms, even after controlling for firm size.

In column (2), which is based upon the 2003 SSBF firms, firm sales, and the dummies both for C-corporations and for firms using pension and brokerage services remain positive and significant, but the leverage ratio loses significance. In its place, the D&B credit score is positive and significant, indicating that firms with better credit scores pay significantly higher executive compensation.[18] This also is consistent with our hypothesis that CEOs look after their job security by extracting less compensation as the probability of financial distress increases. Return on assets is negative and significant, which is consistent with the substitution of salary for dividends. Finally, the dummy variable for firms that only do business locally is negative and the dummy for multiple sites is positive, as expected, but neither is statistically significant.

Also included in these specifications is 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. In general, executive pay in the Professional Services industry is significantly higher than those in other industries, consistent with the results in Panel A of Table 6.

In columns (3) and (4), we add to firm size and industry a set of six variables related to the characteristics of the CEO—percentage ownership, age and the square of age, dummy

[18] The D&B credit score is not available from the 1993 SSBF.

variables indicating whether the CEO had a college or graduate degree and a dummy variable indicating the gender of the CEO. Each of these six variables is statistically significant at better than the 0.10 level for both samples, with the sole exception of the 1993 *College* dummy.

Executive pay declines with CEO ownership, falling by 4.2 to 5.6 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.

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 (not shown) that includes only the age and age-square terms in order to find the age of maximum CEO pay. This regression reveals that executive pay for small privately held corporations reaches a maximum value at an age of 55 years.[19]

We also find that executive 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. The magnitude on the coefficient for gender is -0.13 for 1993 and -0.26 for 2003, which indicates that female CEOs earn approximately 13 to 26 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

[19] The coefficients from this regression correspond to a quadratic equation. Taking the first derivative and setting it equal to zero, we solve for the implied maximum value of age.

Chairpersons 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).[20] In our 1993 (2003) sample, more than 15 (20) percent of the firms are headed by a female CEO. CEOs with college degrees earn 4% to 6% more, while CEOs with graduate degrees earn 8% to 25% more, than CEOs with less than a college degree.

One potential criticism of our results is that officer compensation may cover pay to not only the firm's CEO but also to other corporate officers, if there are any. For most small private firms, this is highly unlikely, but is less so for the larger private firms. One way to mitigate this concern is to examine firms where the CEO owns 100% of the firm's shares, making it unlikely that there are multiple corporate officers across which to aggregate officers' pay—our measure of executive compensation. There are 456 of these firms in the 1993 sample and 640 in the 2003 sample. We re-estimate the specification shown in columns (5) and (6) based upon these subsamples of firms. As shown in columns (7) and (8), the results are, for the most part, qualitatively unaffected by this rather severe restriction on our sample. Only the variables for firm age and return on assets lose statistical significance in the 2003 sample. This robustness test strongly suggests that our results are not driven by aggregation of executive pay at firms with multiple officers.

[20] We 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 executive compensation by exploring and analyzing determinants of executive 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. In particular, the typical majority-ownership stake of CEOs at privately held firms provides far different incentives and agency conflicts than the typical CEO ownership stake of less than one percent at public companies.

We document that many "stylized facts" about executive pay established from studies of publicly traded firms also hold true for privately held firms. First, the level of executive pay is higher at larger firms. Second, the level of executive pay varies widely by industry. However, we also find that the well-documented increase in executive pay observed at large public firms during the past two decades has not occurred at private firms.

In addition, we find that the 0.30 benchmark pay-size elasticity that has been widely documented at publicly traded firms does not hold for privately held firms; instead we find that the pay-size elasticities for private firms is much higher, in the range of 0.46 to 0.57. 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

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

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 also 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 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 find that we can explain almost half of the variability in executive compensation at small firms. By far, the most important determinant of executive pay is firm size as measured by annual sales. 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 either leverage as measured by the ratio of total loans to total assets or credit quality as measured by the D&B credit score. 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 CEOs 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 an 11% - 27% premium and college degrees providing a 3% - 18% 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. This is consistent with the growing literature establishing that women are more risk averse in their investment behavior; by leaving money in the firm, these executives are avoiding an increase in firm leverage and therefore the probability of financial distress.

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 elasticities 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

C-Corporation

C-corporations are subject to corporate income tax at both federal and state levels. Any earnings distributed to shareholders as dividends are subject to a second level of taxation at personal income tax rates. Although this double tax often is cited as a reason not to conduct business as a C-corporation, it is just one factor to consider. Others may outweigh it, and careful tax planning can minimize this disadvantage.

One way the 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 IRS 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 the double tax if earnings are reinvested in the business rather than paid as dividends. In this case, retained earnings are taxed only at the corporate level. The amount of earnings retained, however, is effectively limited by the accumulated earnings tax. It also is important to remember that shareholders will pay tax if the earnings eventually are distributed or if corporate assets are sold and the corporation liquidated.

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

An S-corporation is a firm that elects special tax status as defined by Subchapter S of the Internal Revenue Code. The S-corporation was created in 1958 to provide tax relief primarily to small privately held firms. An S-corporation requires the same corporate formalities as a C-corporation, including articles of incorporation, a board of directors, an annual shareholders' meeting, corporate minutes and shareholder votes on major corporate decisions.

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.

The major difference between a C-corporation and an S-corporation is that S-corporation income "passes through" to its shareholders so that it is subject to a single level of taxation—at the personal level. Its income, whether or not distributed, is passed through to shareholders on a pro rata basis and included on their individual tax returns. Because an S-corporation passes through its income to its shareholders, it avoids the double taxation of corporate income suffered by C-corporations. 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. For an ongoing business that anticipates an accumulated earnings problem, an S-corporation election may be beneficial, at least during the interim period when earnings are distributed.

Some C-corporations avoid double taxation by paying out salaries and bonuses large enough to reduce corporate net income to zero. The IRS may challenge such compensation as excessive and reclassify part of the compensation as a nondeductible dividend. A business effectively can eliminate the possibility of excessive compensation disputes with the IRS by electing S-corporation status.

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 at 15% rather than at 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 SSBF but subsequently has increased to $97,500 as of tax year 2007. Salary income above this cap is subject only to the Medicare Hospital Insurance portion of FICA, which is only 2.9%.

The IRS imposes a requirement of "reasonable compensation" at S-corporations to limit avoidance of the payroll tax just as it imposes a requirement at C-corporations to limit avoidance of 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. The IRS may reclassify dividends as salary if it deems managerial compensation to be "unreasonably" low. This has led many accounting firms to recommend a "60/40" rule: pay out at least 60% of earnings as salary and 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:
Executive Pay at Privately Held Firms by Size

Panel A presents the distribution of corporations by size quartiles and organizational form (S-corporation versus C-corporation). Panel B presents average executive compensation 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 and 2003 Surveys of Small Business Finances (SSBFs).

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

	1993						2003					
	All		S-Corp		C-Corp		All		S-Corp		C-Corp	
Sales Quartile ($000)	Obs.	Percent	Obs.	Percent	Obs.	Percent	Obs.	Percent	Obs.	Percent	Obs.	Percent
Q1: $0-$380	400	24.5%	195	31.4%	205	20.3%	417	25.6%	325	30.5%	92	15.3%
Q2:$380-$1,511.5	403	24.7%	132	21.3%	271	26.9%	413	24.8%	280	26.2%	133	22.1%
Q3:$1,511.5-$6,000.0	418	25.6%	139	22.4%	279	27.7%	421	25.2%	226	21.2%	195	32.4%
Q4: $6000.0-$210,900	409	25.1%	155	25.0%	254	25.2%	417	25.0%	236	22.1%	181	30.1%
Total	1,630	100%	621	38.1%	1,009	61.9%	1,668	100%	1,067	64.0%	601	36.0%

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

	1993							2003						
	All		S-Corp		C-Corp			All		S-Corp		C-Corp		
Sales Quartile ($000)	Obs.	$000	Obs.	$000	Obs.	$000	t-stat	Obs.	$000	Obs.	$000	Obs.	$000	t-stat
Q1: $0-$380	400	33.5	195	33.3	205	33.8	-0.17	417	36.2	325	37.0	92	33.0	1.21
		(1.49)		(2.19)		(2.03)			(1.57)		(1.86)		(2.73)	
Q2:$380-$1,511.5	403	78.5	132	62.5	271	86.0	-2.68	413	99.5	280	90.6	133	121.0	-2.88
		(4.97)		(5.49)		(6.82)			(4.64)		(5.25)		(9.17)	
Q3:$1,511.5-$6,000.0	418	164.6	139	158.9	279	167.1	-0.42	421	183.8	226	160.2	195	210.7	-2.30
		(10.01)		(14.36)		(13.12)			(10.85)		(13.15)		(17.60)	
Q4: $6000.0-$210,900	409	389	155	385.1	254	391	-0.11	417	439.4	236	419.0	181	473.5	-0.91
		(23.04)		(45.48)		(25.58)			(28.74)		(35.22)		(48.82)	
Total	1,630	98.3	621	80.7	1009	109.7	-3.04	1,668	108.3	1,067	92.4	601	145.6	-4.50
		(4.71)		(7.33)		(6.11)			(5.05)		(5.44)		(10.50)	

Table 2:
Executive Pay at Privately Held Firms by Industry

For each year and industry as defined by one-digit standard industrial classification, the average amount of executive compensation (in thousands of dollars) appears above the associated standard error (in parentheses), both for the full sample and then for firms with 20 or fewer employees. Data are taken from the 1993 and 2003 Surveys of Small Business Finances (SSBFs).

	1993				**2003**			
Industry Group	Obs.	Mean	Obs.	Mean	Obs.	Mean	Obs.	Mean
	All Corps		20 or fewer employees		All Corps		20 or fewer employees	
All Industries	1,630.0	98.3	833.0	67.7	1,668.0	108.3	899.0	76.5
		(4.7)		(3.9)		(5.0)		(3.3)
Sic1: Construction	216.0	80.1	113.0	52.0	208.0	89.3	97.0	60.6
and Mining		(10.2)		(5.0)		(13.3)		(6.6)
Sic2: Primary	121.0	84.0	38.0	39.9	93.0	146.1	37.0	92.0
Manufacturing		(12.5)		(6.0)		(34.9)		(24.5)
Sic3: Other	168.0	131.0	46.0	56.1	146.0	127.5	52.0	71.0
Manufacturing		(23.6)		(7.1)		(19.6)		(11.2)
Sic4: Transportation	78.0	81.4	38.0	53.2	78.0	68.5	37.0	39.4
		(18.7)		(16.4)		(13.7)		(7.6)
Sic51: Wholesale	182.0	114.7	105.0	67.3	147.0	109.8	90.0	87.4
Trade		(14.3)		(6.1)		(12.6)		(9.9)
Sic52: Retail	349.0	66.2	167.0	42.4	320.0	81.9	150.0	56.5
Trade		(6.6)		(3.6)		(7.8)		(4.6)
Sic6: Insurance and	112.0	162.5	83.0	152.1	81.0	123.3	58.0	85.2
Real Estate		(25.2)		(28.6)		(32.1)		(13.0)
Sic7: Business	216.0	63.9	136.0	48.1	291.0	81.8	188.0	64.6
Services		(8.2)		(5.3)		(8.4)		(7.8)
Sic8: Professional	188.0	149.6	107.0	108.1	304.0	163.0	190.0	114.6
Services		(17.8)		(14.2)		(15.3)		(9.0)
Sic9: Public		n/a				n/a		
Administration		n/a				n/a		

Table 3:
Descriptive Statistics for Executive Pay at Privately Held Firms

Data for 1,630 (1,668) corporations are taken from the 1993 (2003) Survey of Small Business Finances (SSBFs). For each variable, we present the mean and, in parentheses below, the standard error. Column 1 (4) presents results for all firms while columns 2 (5) and 3 (6) present results for S-corporations and C-corporations, respectively. *Executive Compensation* is total officers' compensation. *Annual Sales* is the firm's annual sales revenues. *D&B Credit Score* is a categorical version of the firm's Dun & Bradstreet Credit score (higher means better credit). *Loan-to-Asset Ratio* is total loans divided by total assets. *C-Corporation* is a dummy variable indicating that the firm is organized as a C-corporation. *Firm Age* is the number of years that the firm has been doing business under current ownership. *Return on Assets* is profit divided by total assets. *Firm Does Business Locally* is a dummy variable indicating that the firm primarily does business in the metropolitan area where it is located (as opposed to regionally, nationally, or internationally).*Firm Operates at Multiple Sites* is a dummy variable indicating that the firm does business at two or more sites. *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. *CEO has Graduate Degree* and *CEO has College Degree* 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) 1993 All Corps	(2) 1993 S-Corp	(3) 1993 C-Corp	(4) 2003 All Corps	(5) 2003 S-Corp	(6) 2003 C-Corp
Observations	1,630	621	1,009	1,668	1,067	601
Firm Characteristics:						
Executive Compensation ($000)	98.3	80.7	109.7	108.3	92.4	145.6
	(4.7)	(7.3)	(6.1)	(5.0)	(5.4)	(10.5)
Annual Sales ($000)	1,921	1,710	2,059	1,914	1,745	2,312
	(123.6)	(198.9)	(157.7)	(162.5)	(202.1)	(273.5)
D&B Credit Score	n/a	n/a	n/a	3.9	3.8	4.1
				(0.04)	(0.05)	(0.06)
Loan-to-Asset Ratio	0.415	0.427	0.408	0.639	0.678	0.546
	(0.01)	(0.02)	(0.02)	(0.036)	(0.050)	(0.043)
C-Corporations	0.604	0.000	1.000	0.298	0.000	1.000
	(0.01)	(0.00)	(0.00)	(0.011)	0.000	0.000
Firm Age	14.899	12.774	16.293	14.885	13.296	18.626
	(0.31)	(0.42)	(0.02)	(0.253)	(0.304)	(0.419)
Return on Assets	0.398	0.495	0.555	0.615	0.738	0.324
	(0.02)	(0.02)	(0.02)	(0.025)	(0.033)	(0.035)
Firm Does Business Locally	0.531	0.195	0.220	0.524	0.536	0.495
	(0.01)	(0.02)	(0.01)	(0.012)	(0.015)	(0.020)
Firm Operates at Multiple Sites	0.210	0.694	0.686	0.191	0.187	0.202
	(0.01)	(0.01)	(0.01)	(0.010)	(0.012)	(0.016)
Owner Characteristics:						
CEO Ownership	68.90	69.40	68.57	76.33	76.22	76.58
	(0.01)	(1.59)	(0.86)	(0.629)	(0.788)	(1.045)
CEO Age	49.10	47.68	50.03	51.26	49.90	54.47
	(0.27)	(0.42)	(0.34)	(0.257)	(0.307)	(0.446)
CEO is Female	0.152	0.168	0.142	0.204	0.201	0.210
	(0.01)	(0.01)	(0.01)	(0.010)	(0.012)	(0.017)
CEO has Graduate Degree	0.190	0.165	0.207	0.221	0.212	0.242
	(0.01)	(0.01)	(0.01)	(0.010)	(0.013)	(0.017)
CEO has College Degree	0.342	0.370	0.326	0.329	0.330	0.328
	(0.01)	(0.02)	(0.01)	(0.012)	(0.014)	(0.019)

Table 4:
Pay-Size Elasticities

Pay-size elasticities are obtained from a regression of the natural logarithm of executive 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 1993 SSBF sample ($250 million in total assets); results in column 3 are obtained using data for 1,630 corporations from the 1993 Survey of Small Business Finances (1993 SSBF); results in column 4 are obtained using data for 2,179 firm-year observations obtained from 2001-2004 SEC proxy statements for firms no larger than the largest firm in the 2003 SSBF sample ($250 million in total assets); results in column 5 are obtained using data for 1,668 corporations from the 2003 Survey of Small Business Finances (2003 SSBF). Standard errors appear in parentheses below coefficients.

Panel A: Size as Measured by Sales Revenues ($Millions)

	(1) ExecuComp 1992-2004		(2) SEC Proxy 1992-1994		(3) 1993 SSBF		(4) SEC Proxy 2001-2003		(5) 2003 SSBF	
	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.
All		0.289		0.304		0.569		0.129		0.457
		(0.004)		(0.01)		(0.02)		(0.01)		(0.01)
Quartile 4	3,300 - max	0.307	136 - max	0.253	5.500 - max	0.664	207 - max	0.322	5.682 - max	0.336
		(0.02)		(0.03)		(0.07)		0.03		(0.06)
Quartile 3	1,100 - 3,300	0.269	46.6 - 136	0.289	1.500 - 5.500	0.421	54.72 - 207	0.292	1.400 - 5.682	0.306
		(0.04)		(0.08)		(0.13)		(0.08)		(0.13)
Quartile 2	415 - 1,100	0.392	15.21 - 46.6	0.449	0.400 - 1.500	0.858	16.00 - 54.72	0.284	0.392 - 1.400	0.402
		(0.04)		(0.09)		(0.13)		(0.10)		(0.12)
Quartile 1	0 – 415	0.100	0 - 15.21	0.183	0 - 0.400	0.653	0 - 16.00	0.013	0 - 0.392	0.28
		(0.01)		(0.06)		(0.07)		(0.01)		(0.03)
Smallest Quartile										
10% - 25%	173 – 415	0.296	4.37 - 15.21	0.191			3.94 - 16.00	0.265		
		(0.06)		(0.18)				(0.12)		
5% - 10%	101 - 173	0.20	1.25 - 4.37	0.023			0.65 - 3.94	0.038		
		(0.15)		(0.40)				(0.17)		
0% - 5%	0 - 101	0.067	0 - 1.25	0.249			0 - .65	0.028		
		(0.02)		(0.54)				(0.03)		

Table 4: (Cont)
Pay-Size Elasticities

Pay-size elasticities are obtained from a regression of the natural logarithm of executive 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 1993 SSBF sample ($250 million in total assets); results in column 3 are obtained using data for 1,630 corporations from the 1993 Survey of Small Business Finances (1993 SSBF); results in column 4 are obtained using data for 2,179 firm-year observations obtained from 2001-2004 SEC proxy statements for firms no larger than the largest firm in the 2003 SSBF sample ($250 million in total assets); results in column 5 are obtained using data for 1,668 corporations from the 2003 Survey of Small Business Finances (2003 SSBF). Standard errors appear in parentheses below coefficients.

Panel B: Size as Measured by Total Assets ($Millions)

	(1) ExecuComp 1992-2004		(2) SEC Proxy 1992-1994		(3) 1993 SSBF		(4) SEC Proxy 2001-2003		(5) 2003 SSBF	
	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.	Range ($Mil.)	Coef.
All		0.271				0.371		0.234		0.258
		(0.004)				(0.02)		(0.01)		(0.01)
Quartile 4	4,980 - max	0.272	207- max	0.26	2.315 - max	0.656	514 - max	0.275	2.024 - max	0.707
		(0.01)		(0.02)		(0.09)		(0.03)		(0.06)
Quartile 3	1,335 - 4,980	0.226	58.8 - 207	0.255	0.575 - 2.315	0.543	147 - 514	0.267	0.450 - 2.024	0.536
		(0.03)		(0.02)		(0.12)		(0.08)		(0.13)
Quartile 2	440 - 1,335	0.303	18.8 - 58.8	0.163	0.124 - 0.575	0.618	28.5 - 514	0.170	.0965 - 0.450	0.509
		(0.03)		(0.03)		(0.13)		(0.06)		(0.11)
Quartile 1	0 - 440	0.254	0 - 18.8	0.266	0 - 0.124	0.152	0 - 28.5	0.144	0 - .0965	0.140
		(0.02)		(0.05)		(0.05)		(0.03)		(0.04)
Smallest Quartile										
10% - 25%	195 - 440	0.339	6.71 - 18.78	0.146			7.2 - 28.5	0.067		
		(0.07)		(0.05)				(0.10)		
5% - 10%	123 - 195	0.426	3.94 - 6.71	0.107			3.5 - 7.2	-0.387		
		(0.13)		(0.12)				(0.39)		
0% - 5%	0 - 123	0.138	0 - 3.94	0.387			0 - 3.5	0.256		
		(0.04)		(0.09)				(0.08)		

Table 4: (Cont.)
Pay-Size Elasticities

Pay-size elasticities are obtained from a regression of the natural logarithm of executive 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 1993 SSBF sample ($250 million in total assets); results in column 3 are obtained using data for 1,630 corporations from the 1993 Survey of Small Business Finances (1993 SSBF); results in column 4 are obtained using data for 2,179 firm-year observations obtained from 2001-2004 SEC proxy statements for firms no larger than the largest firm in the 2003 SSBF sample ($250 million in total assets); results in column 5 are obtained using data for 1,668 corporations from the 2003 Survey of Small Business Finances (2003 SSBF). Standard errors appear in parentheses below coefficients.

Panel C: Size as Measured by Total Employment

	(1) ExecuComp 1992-2004		(2) SEC Proxy 1992-1994		(3) 1993 SSBF		(4) SEC Proxy 2001-2003		(5) 2003 SSBF	
	Range	**Coef.**	**Range**	**Coef.**	**Range**	**Coef.**	**Range**	**Coef.**	**Range**	**Coef.**
All		0.337				0.584		0.191		0.497
		(0.005)				(0.02)		(0.01)		(0.02)
Quartile 4	15,870 - max	0.284	1,130 - max	0.279	62.5 - max	0.612	1,003 - max	0.264	54 - max	0.531
		(0.02)		(0.03)		(0.10)		(0.03)		(0.12)
Quartile 3	5,450 - 15,87(	0.369	340 - 1,130	0.324	22 - 62.5	0.752	236 - 1,003	0.032	16 - 53	0.919
		(0.05)		(0.04)		(0.14)		(0.07)		(0.14)
Quartile 2	1,900 - 5,450	0.382	101 - 340	0.418	6 - 22	0.724	79 - 236	0.450	5 - 15	0.462
		(0.06)		(0.04)		(0.16)		(0.10)		(0.14)
Quartile 1	0 - 1,900	0.465	0 - 101	0.269	0 - 6	0.472	0 - 79	0.100	0 -4	0.273
		(0.04)		(0.04)		(0.10)		(0.05)		(0.11)
Smallest Quartile										
10% - 25%	640 - 1,900	0.351	34 - 101	0.159			26 -79	0.073		
		(0.10)		(0.04)				(0.17)		
5% - 10%	347 - 640	-0.857	14 - 34	0.182			12 - 26	0.648		
		(0.52)		(0.07)				(0.36)		
0% - 5%	0 - 347	0.826	0 - 14	0.454			0 - 12	0.08		
		(0.39)		(0.14)				(0.18)		

Table 5:
Pay-Size Elasticities by One-Digit SIC

Pay-size elasticities are obtained from a regression of the natural logarithm of executive compensation against the natural logarithm of firm size as measured by annual sales revenues. 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 ExecuComp data from 1992-2004 for firms with less than $500 million in assets for 5,665 firm-year observations; results in column 3 are obtained using data on 1,630 corporations from the 1993 Survey of Small Business Finances (1993 SSBF); results in column 4 are obtained using 1992-94 ExecuComp data for 3,129 firm-year observations; results in column 5 are obtained using data on 6,101 from 2001-2003 SEC proxy statements for firms no larger than the largest firm in the 2003 SSBF sample ($250 million in total assets); results in column 6 are obtained using data on 1,668 corporations from the 2003 Survey of Small Business Finances (2003 SSBF); and results in column 7 are obtained using 2002-04 ExecuComp data for 4,088 firm-year observations; results in column 8 are obtained using data on 2,179 from 2001-2003 SEC proxy statements for firms no larger than the largest firm in the 2003 SSBF sample ($250 million in total assets). Absolute values of *t*-statistics appear in parentheses below coefficients.

Industry Group	(1) ExecuComp All	(2) ExecuComp < $500M	(3) SSBF 1993	(4) ExecuComp 1992-94	(5) SEC Proxy 1992-1994	(6) SSBF 2003	(7) ExecuComp 2002-04	(8) SEC Proxy 2001-2003
Sample Size	19,105	5,665	1,630	3,129	6,101	1,668	4,088	2,179
All Industries	0.289	0.115	0.569	0.272	0.304	0.457	0.297	0.129
	(76.7)	(13.1)	(34.6)	(38.9)	(31.3)	(33.5)	(32.7)	(20.6)
Sic1: Construction	0.447	0.311	0.544	0.339	0.342	0.533	0.617	0.220
and Mining	(25.8)	(5.3)	(12.7)	(10.7)	(8.1)	(14.4)	(13.1)	(11.3)
Sic2: Primary	0.257	0.098	0.605	0.219	0.229	0.421	0.280	0.066
Manufacturing	(40.1)	(6.8)	(10.2)	(20.0)	(11.9)	(9.3)	(15.0)	(4.3)
Sic3: Other	0.312	0.193	0.70	0.316	0.349	0.523	0.316	0.095
Manufacturing	(43.9)	(11.1)	(13.8)	(24.4)	(17.9)	(13.5)	(17.2)	(9.6)
Sic4: Transportation	0.331	0.28	0.518	0.278	0.257	0.212	0.390	0.135
	(23.9)	(6.5)	(5.9)	(9.8)	(10.5)	(5.9)	(10.3)	(5.1)
Sic51: Wholesale	0.27	0.104	0.544	0.219	0.289	0.380	0.207	0.155
Trade	(14.8)	(0.6)	(13.3)	(7.0)	(7.1)	(8.3)	(7.3)	(4.1)
Sic52: Retail	0.32	0.299	0.605	0.284	0.306	0.548	0.315	0.305
Trade	(23.9)	(4.2)	(18.8)	(13.5)	(7.0)	(18.2)	(11.8)	(7.0)
Sic6: Insurance and	0.244	0.03	0.675	0.293	0.416	0.605	0.252	0.259
Real Estate	(21.6)	(1.3)	(11.8)	(13.4)	(15.3)	(8.3)	(9.5)	(7.8)
Sic7: Business	0.338	0.23	0.683	0.367	0.455	0.577	0.308	0.148
Services	(22.2)	(7.7)	(15.0)	(11.2)	(10.5)	(15.7)	(9.5)	(8.8)
Sic8: Professional	0.241	0.045	0.683	0.307	0.19	0.597	0.261	0.038
Services	(7.7)	(0.7)	(11.3)	(3.1)	(4.0)	(18.6)	(5.2)	(1.3)

Table 6:
Panel A
Determinants of Executive Compensation

Results obtained by a regression of the natural logarithm of executive compensation against a set of explanatory variables. Results in column 1 (2) are based upon data from a sample of 1,640 (1,660) corporations taken from the 1993 (2003) Survey of Small Business Finances. *ln(Sales)* is the natural logarithm of one plus the firm's annual sales revenues. SIC 2 – SIC 8 are dummy variables indicating that the firm is classified in that industry based upon one-digit standard industrial classification. Absolute values of *t*-statistics appear in parentheses. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1) **1993**	**(2)** **2003**
Intercept	-6.841[a]	-2.686[a]
	(59.4)	(14.3)
ln(Sales)	0.6174[a]	0.488[a]
	(38.4)	(36.7)
Sic2: Primary	-0.3327[a]	0.418[a]
Manufacturing	(2.9)	(3.3)
Sic3: Other	-0.0396	0.272[a]
Manufacturing	(0.4)	(2.7)
Sic4: Transportation	-0.3035[b]	0.002
	(2.4)	(0.0)
Sic51: Wholesale	-0.3406[a]	0.077
Trade	(3.8)	(0.9)
Sic52: Retail	-0.4658[a]	-0.147[b]
Trade	(6.3)	(2.0)
Sic6: Insurance and	0.2257[b]	0.401[a]
Real Estate	(2.3)	(4.0)
Sic7: Business	-0.0063	0.198[a]
Services	(0.1)	(2.8)
Sic8: Professional	0.6565[a]	0.771[a]
Services	(8.0)	(10.9)
Adjusted R-squared	0.500	0.473

Table 6:
Panel B
Determinants of Executive Compensation

Results obtained by a regression of the natural logarithm of executive compensation against a set of explanatory variables. Results in columns 1, 3 and 5 (2, 4 and 6) are based upon data from a sample of 1,640 (1,660) corporations taken from the 1993 (2003) Survey of Small Business Finances. Results in column 7 (8) are based upon a sample of 456 (640) corporations with 100% CEO ownership from the 1993 (2003) SSBF. *ln(Sales)* is the natural logarithm of one plus the firm's annual sales revenues. *D&B Credit Score* is a categorical version of the firm's Dun & Bradstreet Credit score (higher means better credit). *Loan-to-Asset Ratio* is total loans divided by total assets. *C-Corporation* is a dummy variable indicating that the firm is organized as a C-corporation. *Firm Age* is the number of years that the firm has been doing business under current ownership. Return on Assets is profit divided by total assets. *Firm Does Business Locally* is a dummy variable indicating that the firm primarily does business in the metropolitan area where it is located (as opposed to regionally, nationally, or internationally). *Firm Operates at Multiple Sites* is a dummy variable indicating that the firm does business at two or more sites. *Firm Uses Pension or Brokerage Services* is a dummy variable indicating that the firm obtains either pension services or brokerage services from a financial institution. *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. *CEO has Graduate Degree* and *CEO has College Degree* 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. Absolute values of *t*-statistics appear in parentheses. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Regression Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1993	2003	1993	2003	1993	2003	1993	2003
Intercept	7.03[a]	-2.340[a]	6.662	-2.765[a]	6.78[a]	-1.78[a]	5.15[a]	-2.67[a]
	(56.7)	(11.5)	(17.4)	(6.97)	(17.9)	(4.50)	(6.67)	(4.06)
Firm Characteristics								
ln(Sales)	0.584[a]	0.432[a]	0.599[a]	0.464	0.570[a]	0.407[a]	0.601[a]	0.353[a]
	(33.3)	(30.6)	(36.6)	(34.8)	(32.5)	(29.0)	(17.9)	(18.1)
Firm's D&B Credit Score	n/a	0.065[a]			n/a	0.067[a]	n/a	0.059[a]
	n/a	(4.72)			n/a	(4.94)	n/a	(2.81)
Loan-to-Asset Ratio	-0.225[a]	0.006			-0.237[a]	-0.010	-0.314[a]	-0.018
	(5.72)	(0.42)			(6.11)	(0.74)	(4.01)	(0.90)
C-Corporation	0.143[a]	0.127[a]			0.137[a]	0.161[a]	0.195[b]	0.147[b]
	(3.15)	(2.82)			(3.07)	(3.64)	(2.34)	(2.12)
Firm Age	-0.0016	0.002			0.0005	0.0048[b]	-0.0012	0.0032
	(0.87)	(0.83)			(0.27)	(2.10)	(0.22)	(0.89)
Return on Assets	-0.003	-0.047[b]			-0.0087	-0.049[a]	-0.0207	-0.043
	(0.13)	(2.42)			(0.37)	(2.58)	(0.53)	(1.46)
Firm Does Business	-0.030	-0.037			-0.0155	-0.028	-0.0405	-0.091
Locally	(0.64)	(0.90)			(0.33)	(0.68)	(0.49)	(1.37)
Firm Operates	-0.033	0.067			-0.0516	0.064	-0.173[c]	0.165[a]
at Multiple Sites	(0.59)	(1.30)			(0.94)	(1.28)	(1.69)	(2.01)
Firm Uses Pension	0.290[a]	0.412[a]			0.247[a]	0.385[a]	0.192[c]	0.344[a]
or Brokerage Services	(4.98)	(8.73)			(4.27)	(8.29)	1.81	(4.84)

Table 6: (Cont.)
Panel B
Determinants of Executive Compensation

Results obtained by a regression of the natural logarithm of executive compensation against a set of explanatory variables. Results in columns 1, 3 and 5 (2, 4 and 6) are based upon data from a sample of 1,640 (1,660) corporations taken from the 1993 (2003) Survey of Small Business Finances. Results in column 7 (8) are based upon a sample of 456 (640) corporations with 100% CEO ownership from the 1993 (2003) SSBF. *ln(Sales)* is the natural logarithm of one plus the firm's annual sales revenues. *D&B Credit Score* is a categorical version of the firm's Dun & Bradstreet Credit score (higher means better credit). *Loan-to-Asset Ratio* is total loans divided by total assets. *C-Corporation* is a dummy variable indicating that the firm is organized as a C-corporation. *Firm Age* is the number of years that the firm has been doing business under current ownership. Return on Assets is profit divided by total assets. *Firm Does Business Locally* is a dummy variable indicating that the firm primarily does business in the metropolitan area where it is located (as opposed to regionally, nationally, or internationally). *Firm Operates at Multiple Sites* is a dummy variable indicating that the firm does business at two or more sites. *Firm Uses Pension or Brokerage Services* is a dummy variable indicating that the firm obtains either pension services or brokerage services from a financial institution. *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. *CEO has Graduate Degree* and *CEO has College Degree* 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. Absolute values of *t*-statistics appear in parentheses. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Regression Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1993	2003	1993	2003	1993	2003	1993	2003
Owner Characteristics								
CEO Ownership			-0.412[a]	-0.555[a]	-0.403[a]	-0.548[a]	n/a	n/a
			(4.97)	(6.98)	(4.93)	(7.16)	n/a	n/a
CEO Age			0.028[c]	0.0337[b]	0.0308[b]	0.0132[a]	0.078[b]	0.055[b]
			(1.89)	(2.47)	(2.10)	(0.99)	(2.46)	(2.26)
CEO Age Squared			-0.0032[b]	-0.0003[b]	-0.0004[b]	-0.0002[b]	-0.0009[a]	-0.0006[b]
			(2.23)	(2.46)	(2.55)	(1.52)	(2.75)	(2.56)
CEO has Graduate Degree			0.280[a]	0.126[b]	0.246[a]	0.081	0.222[b]	0.153[c]
			(4.26)	(2.05)	(3.79)	(1.40)	(1.88)	(1.67)
CEO has College Degree			0.054	0.093[a]	0.0441	0.064	0.0201	0.150[b]
			(1.07)	(1.97)	(0.89)	(1.40)	(0.21)	(1.99)
CEO is Female			-0.133[b]	-0.236[a]	-0.129[b]	-0.260[a]	-0.114	-0.227[a]
			(2.18)	(4.66)	(2.15)	(5.27)	(0.99)	(2.98)
Industry Controls	Yes[a]	Yes[a]	Yes[a]	Yes[a]	Yes[a]	Yes[a]	Yes[a]	Yes[a]
Adjusted R-squared	0.519[a]	0.518[a]	0.516[a]	0.496	0.534[a]	0.542[a]	0.537[a]	0.461[a]