The Relation Between Private Ownership of Equity and Executive Compensation

By Daniel Ames*

This study compares the executive compensation practices of firms with private equity and public debt to the compensation practices of firms with public equity and public debt. From 1992-2005, in a sample of 77 firms, it was found that privately-owned companies pay less equity compensation and less total compensation. Three explanations for observed differences in equity compensation are proposed and tested, and it was found that results consistent with an explanation that privately-held firms pay executives less equity due to inherent difficulties in valuing and/or liquidating equity.

I. Introduction

The forms and levels of executive compensation in a firm are varied and are influenced by several factors, including firm size, executive tenure and rank and, ideally, firm performance. However, one factor that has not been adequately researched is the relation of equity ownership to the type and amount of executive compensation in a firm. In this paper, I examine differences in executive compensation between public equity firms and private equity firms, holding public debt constant. Specifically, I test for differences in both aggregate compensation and its components: equity-based pay, other incentive-based pay (including bonuses and perquisites) and fixed compensation, such as salary. My intent is to identify and explain differences in compensation that occur as a result of the private ownership of equity and subsequently to identify the underlying causes of any existing differences.

Prior research on differences in executive compensation between public and private firms provides mixed results. Ke *et al.* (1999) find weak support for a difference in total CEO (Chief Executive Officer) compensation among insurance companies. Givoly *et al.* (2010) find that equity-based compensation increases in dollar value after an initial public offering, though the percentage of CEOs receiving equity-based compensation remains unchanged before and after an initial public offering (IPO).

Private equity firms and family-founded firms share a number of characteristics including a more concentrated ownership group and higher ownership levels by executives. Ali *et al.* (2006) test for compensation differences between family-founded firms and non-family-founded firms in a sample of S&P 500 firms. He finds that CEOs of family-founded firms receive less equity-based compensation and less total compensation.

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*Assistant Professor of Accounting, Illinois State University, Department of Accounting-5520, Normal, IL 61761. E-mail: dames@ilstu.edu.

I employ a sample similar to Givoly *et al.* (2010) and extend their results by analyzing data from firms whose equity is privately traded but whose debt is publicly traded.

Specifically, I use a sample of 77 firms, containing 445 firm-year observations from 1992 to 2005, whose equity is privately held but whose debt is publicly owned. I then compare the executive compensation practices of these firms to the compensation practices of a corresponding sample of companies whose debt and equity are publicly owned.

Consistent with Ali *et al.* (2006) and Givoly *et al.* (2010) but in contrast to Ke *et al.* (1999), I find that private equity firms pay their executives less equity compensation than do their public equity counterparts, in dollars and as a percentage of total compensation. This result is robust when the sample is restricted to CEOs. I find that private equity firms pay less incentive-based compensation in some specifications, but more in others. I find that private equity firms offer less total compensation.

I also test for three possible determinants of the differences in equity compensation:

1. *Ownership differences*. Private firm managers own more of the firms they manage than their public counterparts. Increased ownership leads to better incentive alignment and decreases the need for compensation, especially equity-based compensation.

2. *Liquidity and valuation differences*. Accurately valuing and/or liquidating equity holdings in firms with no publicly-traded equity shares are comparatively difficult. As a result, private ownership of equity induces a firm to reduce the use of this form of compensation.

3. *Monitoring differences*. Private firms generally have few owners. This concentrated ownership yields superior monitoring that in turn reduces the need for incentive alignment mechanisms in compensation contracts, such as payment in the form of equity.

To test for differences in ownership between publicly- and privately-traded firms, I measure the number of shares owned by the executives in my sample. I find that private equity executives own more shares of the firms they manage than public equity executives but not larger percentages of total shares outstanding. This suggests that ownership differences are *not* a primary determinant in the difference in equity compensation in my sample.

To test the second explanation, that the difficulty in valuing and/or liquidating equity compensation drives differences, I collect a sample of firms who have either 'gone public' or 'gone private' while maintaining public debt. I find evidence that, prior to an initial public offering or after going private, firms offer less equity compensation than when a public market exists for their equity shares. This result is consistent with the second explanation. However, a change in equity status (from public to private or vice versa) not only affects liquidity and valuation but also monitoring as ownership changes. Thus, I perform an additional test designed to test monitoring specifically.

Because most of the firms in my sample do not file a proxy statement, many of the traditionally employed monitoring proxies are unavailable. In their place, I use earnings management. Following Givoly *et al.* (2010) and Burgstahler and Dichev (1997), I test for significant discontinuities in frequency distributions of firms' reported earnings around zero. I find no evidence of differences in monitoring using this test. In further monitoring tests, I compare differences in the number of large shareholders in public and private firms, as significant owners

in a company may be able to monitor a firm more closely than atomistic shareholders. The number of large shareholders (owners of at least 5 percent of outstanding common stock) does not differ significantly between public and private firms. Finally, I test for differences in the number of board meetings of public and private firms and find that private firms have fewer meetings. Thus, my tests do not support the explanation that superior monitoring drives the differences in equity compensation that I observe. Taken together, these findings are consistent with the argument that private equity firms compensate their executives differently because of liquidity and/or valuation concerns.

My study is based on a sample of US private equity firms from non-regulated industries, which improves the generalizability of findings relative to Ke *et al.* (1999). This study expands upon Givoly *et al.*'s (2010) description of CEO compensation differences and incorporates compensation data for all of the top five executives in each firm. In addition, I compare private equity firm compensation practices to public equity firm compensation practices during periods that do not immediately precede an initial public offering. Finally, I test for determinants of differences in executive compensation between public and private equity firms.

This paper improves our understanding of the relation between equity ownership and executive compensation. According to Sanders and Hambrick (2007), lower levels of certain types of equity compensation reduce the likelihood of risky decisions by managers and reduce the likelihood of big losses for shareholders (see also Sanders, 2001). Thus, my findings imply that managers of companies in which equity is privately held may be less likely to engage in risky behavior and are less likely to deliver large losses for owners of the corporations that they manage.

The rest of this paper is organized as follows: Section II includes a brief literature review and develops the hypotheses, Section III describes sample selection, Section IV explains results and Section V concludes.

II. Literature Review and Hypothesis Development

A. Literature review

Even assuming reasonably accurate and complete financial reports, relatively little is known of privately-owned firms, largely because, except in the case of firms with publicly-traded debt, they are not subject to the same reporting requirements as publicly-traded companies. Researchers have attempted to identify key differences between publicly-traded and privately-traded firms in several instances. Most of that research focuses on earnings management (Beatty *et al.*, 2002; Beatty and Harris; 1999, Burgstahler *et al.*, 2006; Penno and Simon, 1986), conservatism (Ball and Shivakumar, 2005), or earnings quality (Givoly *et al.,* 2010).

Within the realm of public and private firm executive compensation, prior research provides conflicting results. Ke *et al.* (1999) examine 43 privately-held and 18 publicly-held property liability insurers. They find that privately-held firms exhibit a weaker pay-for-performance relationship than the corresponding publicly-held firms. In levels, they find no significant difference in total compensation between these two groups. In changes, they do find that publicly-held firms offer greater total compensation.

Givoly *et al.* (2010) study the effect of equity ownership on accruals quality. Their sample of firms with private equity but public debt spans 1978 through 2003 and includes 531 distinct firms and observations on a total of 2,519 firm-years. They compare these to a sample of firms with public debt and public equity (3,954 distinct firms and 30,696 total firm-year observations).

They find that private equity firms are more conservative with respect to their reporting practices than public equity firms but that private equity firms are more likely to manage their earnings relative to public equity firms. They compare CEO compensation in the years immediately preceding and following an IPO and compare the compensation after the IPO. They conclude that CEOs were just as likely to receive stock options before an IPO as after the IPO, though the value of the options included in the annual compensation package was greater after the IPO.

Finally, Ali *et al.* (2006) study the compensation of managers of family-founded firms relative to the compensation of non-family-founded companies that share a number of characteristics with private firms, including concentrated ownership and better monitoring (Demsetz and Lehn, 1985). Using a 2002 sample of 177 S&P 500 firms, Ali *et al.* (2006) find that family-founded firms are less likely to grant equity-based compensation to their professional CEOs and that they pay less total compensation to their CEOs. Furthermore, he finds that family-founded firms use fewer, though more financial-based, performance measures in compensation contracts and use more discretion in determining CEO bonuses.

Taken together, the extant literature leaves an incomplete understanding of the compensation practices of privately-owned firms and how they may differ from those of publicly-owned companies. My purpose, in addition to addressing this question in a more generalizable setting, is to identify the determinants of extant differences.

B. Hypothesis Development

I expect the value of total compensation to differ between executives of privately- and publicly-owned firms. Employment as a manager of a private firm differs fundamentally from employment as a manager of a publicly-traded firm in some important ways. For example, shareholders in privately-owned firms hold their shares for longer periods than in publicly-owned firms, so managers are able to focus on the long term (Beatty and Harris, 1999). Managers of public firms are often pressured by the market to focus on short-run success, potentially at the cost of reduced long-term growth (James, 1999; Kwak, 2003; Stein, 1988 and 1989). This difference in focus by ownership may constitute a superior working environment or an implicit form of compensation.

This long-term focus by private ownership may also lead to greater job security for managers in privately-held firms. In other words, managers of privately-held firms may be less likely to be fired than managers of a publicly-traded firm. This reduced risk, if present, is another form of implicit compensation. Furthermore, to the extent that managers of private firms are already personally tied to the company through a large equity stake or through emotional attachment, as in some family-founded firms (Ali *et al.*, 2007; Anderson and Reeb, 2003; Shleifer and Vishny, 1997), less annual compensation is required to motivate managers to work.

It is important to note, however, that firms backed by financial sponsors may not enjoy the same long-horizon benefits. That is, the tenure of executives in firms backed by financial sponsors is actually very low (Kaplan and Strömberg, 2009 and Givoly *et al.*, 2010). Thus, to the extent that firms in this sample have a financial sponsor, I do not expect to observe this difference.

Given these two competing forces, I remain agnostic in expectation and state the hypothesis in the null form:

H1. No difference exists in the value of total compensation paid to executives in firms with privately-traded equity and firms with publicly-traded equity.

In firms with privately-owned equity, I expect that many managers are large stakeholders of the firms they manage, as is often the case with family-founded firms (Anderson and Reeb, 2003; Ali *et al.*, 2007). If a manager's wealth is strongly linked to firm wealth, additional equity-based compensation is not required (Hall and Murphy, 2003). Another reason to expect equity compensation to differ in firms with privately-traded equity is the difficulty inherent without a public market—liquidity and valuation of the shares. Equity-based compensation in a private firm is difficult to value and is likely to be difficult (or impossible) to liquidate. While independent valuations of stock price are available and required in some cases, this price is derived from a single source, offered at a specific point in time. This stands in stark contrast to the stock price of a publicly-traded firm, which is based on the valuation estimates of many, perhaps millions, updated almost constantly. Even if the stock price were readily and accurately estimable, the liquidity of a privately-held share of stock is unclear. In a publicly-held company, trading a share of stock for cash is a relatively straightforward exchange. This is unlikely to be the case in a privately-traded firm.

However, some privately-held firms may actually *emphasize* equity-based compensation. Many privately-held firms have a long term goal to become publicly traded. While this intention is impossible to observe, to the extent that it exists, executives may actually *prefer* to receive equity-based compensation in anticipation of a time when equity stakes in the firm become liquid and the opportunity arises to 'cash in'. It is also the case that privately-owned firms of this type may prefer to offer equity-based compensation because cash is scarce. Given these two competing forces, I remain agnostic in expectation and state the hypothesis in the null form:

H2. No difference exists in the value of equity compensation paid to executives in firms with privately-traded equity and firms with publicly-traded equity.

III. Sample Selection

A. Primary Sample

My sample consists of Security and Exchange Commission (SEC) registrants whose debt is publicly traded but whose equity is privately held. In order to compare the compensation practices of these privately-owned companies to those of publicly-traded firms, I compare my sample to a subsample of the Execucomp database, which contains compensation data for publicly-owned companies.

The private equity portion of my sample is based on a subsample of firms from the Compustat database whose equity status has been verified as private (per the 10-K filing). I begin with the entire Compustat industrial annual database for the years 1992-2005[1]. I then eliminate firms that have a stock price at fiscal year-end. I also exclude firms that have less than 1 million dollars in debt. As with Givoly *et al.* (2010), the sample excludes SIC (Standard Industrial Classification)

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[1] The sample focuses on 1992 (the first year 10-k filings became available electronically) through 2005 (the last year prior to the implementation of the Summary of Financial Accounting Statement (SFAS) 123R This sample also avoids the impact of the financial crisis in 2008 and after.

codes 6000-6999 (financial institutions) and SIC codes 4800-4900 (regulated industries). Heavily-regulated industries face different incentives and may have different compensation contract designs that adversely affect the analysis. The sample excludes foreign firms, either listed as American Depository Receipts or with a state incorporation code of 99. I further eliminate firms with a stock ownership code of 1 (subsidiary of public firm) and firms with public equity. Of these, I randomly sample 2,500 firm-year observations for verification that each firm's equity is privately owned.

I eliminate firms that were publicly traded, even on small exchanges or over-the-counter markets, subsidiaries of public firms, and firms in bankruptcy. Because compensation contracts may change in the periods immediately prior to a "going public" transaction, I also exclude the two years prior to an initial public offering. Additionally, I eliminate firm years in which the executive compensation information is not included in the 10-K or proxy statement. Additionally, I eliminate observations that did not contain executive compensation information. The resulting sample of 445 firm-year observations from 77 firms[2] represents approximately 20 percent of the population of firms having these characteristics during the period 1992-2005. The other 2,055 firm-year observations sampled were excluded from further analysis.

Data for my sample was collected from the 10-K and proxy statements of each firm. The data includes names and titles of each executive, as well as relevant financial information such as salary, bonus, other annual compensation, long-term incentive payouts, and all other compensation. Equity compensation information is also available through these filings including stock awards, restricted stock awards, number of options granted, grant date, and, where available, grant date present value.

In many instances, an estimate of stock price is not included in the reports of privately-owned firms in the sample. As a result, an estimation process is required. In order to assess the value of private equity shares and options, I use a "pseudo stock price" and an estimated volatility measure as variables in the Black-Scholes pricing model. Calculation of these variables is described below.

As a control group, I employ firms from the Execucomp database, which contains corresponding data for executive compensation from public equity firms. Because each of the privately-owned firms in my sample has public debt, I eliminate Execucomp firms without public debt, in order to isolate the differences in compensation due to equity status. I eliminate firms without a debt rating and rated firms without current public debt. The final control group contains 1,994 firm-year observations from 1992-2005.

In order to calculate the "pseudo stock price", I match each private equity observation with a public equity counterpart from the control group based on industry (four digit SIC code), year and total assets. For each match, I calculate the price to sales ratio and multiply this value by the private equity firm's sales to obtain a "pseudo stock price". This practice is substantiated by findings from Liu *et al.* (2002), Alford (1992), Beaver and Morse (1978), Nissim and Thomas (2002) and Hines (2011).[3] [4]

Table 1 Panel A contains univariate statistics for private and public equity firms associated with my primary sample. Six variables are components of compensation and (in log form) serve

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[2] For each firm-year observation, compensation information for up to five executives is available for each firm year. I excluded compensation information for executives joining or leaving the company mid-period. The remaining executives are clustered so that each firm year includes a single observation in the regression tests.

[3] The "pseudo stock price" is an estimate. However, this practice does not introduce any systematic estimation errors in favor of finding results consistent with my hypotheses. In fact, any noise in the measure renders the detection of differences more difficult.

[4] Using the price-to-sales ratio is required in order to ensure that all "pseudo stock prices" have positive values.

as dependent variables in later regressions. Equity compensation includes stock options, restricted stock awards, and stock awards. Equity valuation is based on a pseudo stock price, derived using the price-to-sales ratio of a public company and matched on size, year, and industry. For option valuation, I use the Black-Scholes model, using the pseudo stock price and volatility[5] ratings from Execucomp as inputs. Other income components are reported herein as they appear in the ExecuComp Database for public equity firms and SEC filings for private equity firms.

Table 1: Descriptive Statistics for Firms with Privately-Owned Equity and Public Debt and the Corresponding Control Group of Firms with Publicly-Owned Equity and Public Debt

Panel A. Primary Sample

Private Equity Descriptive Statistics

n=445	Salary	Bonus	Other	Equity
Mean	333.68	185.42	115.56	1,392.5
Stdev	419.49	711.51	375.3	16,779.09
Q3	350	164.5	38.44	0
Median	236.42	57.5	9.47	0
Q1	165.96	0	2.14	0

Public Equity Descriptive Statistics

n=1,994	Salary	Bonus	Other	Equity
Mean	384.15	524.4	276.88	835.34
Stdev	243.57	1,536.55	1,851.37	2,342.12
Q3	468.15	433	130.41	683.61
Median	310	198.61	37.74	224.08
Q1	225	85.63	9.68	0

	Total Comp	Assets	Net Income	Leverage
Mean	2,027.17	743.64	-1.71	26.14
Stdev	16,868.46	748.01	66.05	519.93
Q3	682.35	870	15	5.4
Median	365.9	490	2.07	-1.57
Q1	239.52	290	-9.3	-3.94

	Total Comp	Assets	Net Income	Leverage
Mean	2,020.77	6,473.84	352.64	2.18
Stdev	4,098.55	14,659.16	1,150.26	7.82
Q3	1,870.6	5,702.52	271	2.57
Median	912.41	2,386.77	93.99	1.58
Q1	501.4	1,102.79	22.82	1.03

Variable definitions:
Salary and Bonus = As reported by 10-K filings or Execucomp.
Other = Other compensation which includes Long Term Incentive Payouts and Other Compensation, generally perquisites.
Equity = Stock awards + restricted stock awards + option awards as reported by 10-K filings or Compustat.
Total Comp = Total annual compensation.
Assets and Net Income = As reported by Compustat.
Leverage = Total liabilities scaled by book value of equity, as reported by Compustat.
Note: All compensation data are reported in thousands of dollars. Net Income and Assets are in millions of dollars.

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[5] The use of the same volatility measure for privately-owned firms helps to eliminate the possibility that my results are driven by changes in compensation contracts as a result of Sarbanes-Oxley (Narayanan and Seyhun, 2006; Cohen *et al.,* 2013).

**Table 1: Descriptive Statistics for Firms with Privately-Owned Equity
and Public Debt and the Corresponding Control Group of Firms
with Publicly-Owned Equity and Public Debt: Continues**

Panel B. Secondary Sample of Firms During Periods of Private and Public Equity with Public Debt

Private Equity Descriptive Statistics					Public Equity Descriptive Statistics				
n=162	Salary	Bonus	Other	Equity	n=155	Salary	Bonus	Other	Equity
Mean	255.69	126.16	76.83	300.96	Mean	266.88	189.8	78.78	79.13
Stdev	160.02	406.87	428.49	7,653.61	Stdev	165.79	582.76	640.31	607.6
Q3	306.2	135	340	0	Q3	337	175	17.74	0.000018
Median	233.57	67.5	286.9	0	Median	229.52	81.15	5.5	0
Q1	160.94	0	233.8	0	Q1	165.96	20	0	0

	Total Comp	Assets	Net Income	Leverage		Total Comp	Assets	Net Income	Leverage
Mean	760.04	659.31	-4.16	81.81	Mean	535.52	25,673.7	153.58	-15.38
Stdev	7672	1,125.83	67.76	943.91	Stdev	952.43	98,009.92	411.93	96.93
Q3	479.08	536.48	11.42	3.77	Q3	531.48	1,834.79	136.52	1.41
Median	318.83	358.15	0.29	-1.95	Median	338.71	82.44	1.77	0.57
Q1	213.75	203.2	-26.56	-5.39	Q1	217.9	4.47	-1.3	0.12

Contrary to expectations, the Equity Compensation is smaller for public equity firms than for private equity firms ($0.84 million versus $1.39 million, respectively). Examination of the distributions indicates that the mean of equity compensation for private equity firms is driven by a few extreme observations. These are Winsorized at the 1st and 99th percentiles prior to performing regression analysis. The distribution of total compensation is also skewed as a result. Other univariate statistics are generally in line with expectations.

Table 2: Correlation Matrix

N=2,439	Private	Equity	Bonus	Salary	Other	Total Comp	Assets	ROA	Leverage	Loss
Private		-0.48	-0.2	-0.17	-0.21	-0.32	-0.45	-0.23	0.05	0.25
Equity	-0.43		0.22	0.24	0.23	0.6	0.36	0.18	-0.01	-0.17
Bonus	-0.28	0.44		0.22	0.18	0.37	0.24	0.27	0	-0.27
Salary	-0.23	0.48	0.58		0.2	0.52	0.32	0.07	0	-0.07
Other	-0.23	0.31	0.34	0.43		0.42	0.33	0.07	0	-0.08
Total Comp	-0.36	0.76	0.72	0.8	0.54		0.52	0.17	-0.02	-0.15
Assets	-0.46	0.43	0.46	0.53	0.41	0.57		0.1	-0.02	-0.13

Table 2: Correlation Matrix: Continues

ROA	-0.32	0.24	0.32	0.1	0.09	0.24	0.12		-0.29	-0.65
Leverage	0.1	-0.07	-0.05	-0.01	0.01	-0.05	0.09	0		-0.01
Loss	0.25	-0.17	-0.25	-0.08	-0.07	-0.16	-0.13	0.37	0.06	

Scores reported above the diagonal are Pearson correlation coefficients and scores below the diagonal are Spearman rank correlation coefficients.
Variable definitions:
Private: Indicator variable equal to 1 if equity is privately owned, else 0.
ROA: Return on assets. Calculated as Net income divided by total assets as reported by Compustat.
Loss: Indicator variable equal to 1 if net income is negative, else 0.
Other variables defined in Table 1.

Table 2 presents the correlation matrix for the relevant variables as they appear in the subsequent multivariate regressions. Scores reported above the diagonal are Pearson correlation coefficients while scores below the diagonal reflect Spearman rank correlation coefficients. Several of the compensation-related variables have high correlations, such as the log of equity compensation and the log of total compensation (0.76 Pearson, 0.60 Spearman), probably due to the fact that equity compensation is a component in total compensation. In assessing *H1* and *H2*, assessment of the correlations show that private ownership is negatively associated with total compensation (-.32 Pearson, -.36 Spearman) and with equity compensation (-.48 Pearson, -.43 Spearman), suggesting that private firms offer less total compensation and less equity compensation. The log of assets and private equity are negatively correlated (-0.45 Pearson, -0.46 Spearman), advising that private equity firms in the sample are smaller. Non-reported variance inflation scores were low enough (generally between one and two) to dismiss concerns about multicollinearity.

B. Secondary Samples

I employ three distinct sets of secondary tests of explanations for differences in compensation between public equity firms and private equity firms. To test the first, I use the ownership information collected with my primary sample. To test the second and third explanations (whether equity valuation and liquidity drives differences in compensation between publicly-owned and privately-owned firms and whether superior monitoring in privately-owned firms reduces equity compensation), I collect a sample of firms that either 'went public' or 'went private' while maintaining public debt and thus SEC registration. This "gone public/private" sample consists of 43 firms that either "went public" or "went private" between 1992 and 2007 while maintaining public debt. This sample permits firms to serve as their own controls. The sample has 317 firm years, each containing the compensation information for approximately five executives for a total of 162 firm-year private equity observations and 155 firm-year public equity observations. Firms meeting this description are not common and this sample represents approximately 50 percent of the population of firms of this specific type. Table 1 Panel B shows the descriptive statistics for this secondary sample. These statistics are grouped by equity status of the firms—periods of private equity and periods of public equity. As with the primary sample, the two years prior to an IPO are excluded.

The descriptive statistics of these 317 firm-year observations show the averages of relevant variables for firm years corresponding to privately-owned equity and when ownership of equity is publicly owned. As with the primary sample, observing the non-zero equity compensation at the

75th percentile shows that a greater percentage of public equity firms employ equity-based compensation and the high mean for privately-traded firms is likely due to extreme observations. As with the primary tests, observations are Winsorized at the 1st and 99th percentiles. In other respects, the differences are similar generally to those observed using the primary sample.

The majority of firms with privately-traded equity do not file a proxy statement, which eliminates many of the traditionally available monitoring proxies. In the absence of these measures, I use earnings management as a proxy for monitoring—I interpret a high incidence of earnings management as evidence of poor monitoring. Thus, following Givoly *et al.* (2010) and Burgstahler and Dichev (1997)[6], I plot frequency distributions using my primary sample and its corresponding control group to test for earnings management by measuring the number of unexpected observations just above and below zero. I interpret a trend indicating aggregate avoidance of reporting small losses or a small negative change in earnings as evidence of earnings management. For this test, firms with missing Compustat values for net income and book value of equity are also eliminated.

To evaluate monitoring, I use two additional measures. From the gone public/private sample, I obtain the number of owners holding more than five percent of the total shares outstanding from 10-K filings. This measure assumes that investors holding at least five percent of outstanding shares are likely to more closely monitor the activities of managers than are atomistic shareholders. Finally, where available, I collect the number of board meetings held for each firm each year from the proxy statements of firms in the gone public/private sample. This measure assumes that a greater number of meetings is positively associated with superior monitoring.[7]

IV. Results

A. Primary Tests: Tests of Differences in Compensation

In order to test my hypotheses, I employ the following regression equation beginning in Table 3:

$$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + \beta_{8-36} Industry_{jt} + \beta_{37-49} Year_{jt} + \varepsilon \qquad (1)$$

x_i = a component of compensation and subscripts j and t indicate firm and year.
Private = 1 if the firm's equity is privately traded and is equal to 0 otherwise.
Assets = a firm's assets, which is inserted in log form into the regression, *ROA* is return on assets.
Loss = 1 if the firm's reported net income in year t is negative and is equal to 0 otherwise.
Leverage = measured as total liabilities divided by book value of equity.

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[6] This measure is not without limitations (see Beaver *et al.,* 2007). However, the limitations of other potential measures of earnings management, such as the various forms of the Jones model, are also well documented (see Dechow *et al.,* 1995, Kothari *et al.,* 2005).
[7] One limitation of this measure is that it fails to capture informal meetings that may be held by board members.

Table 3: Tests for Differences in Levels of Executive Compensation in Firms Whose Equity is Privately Owned Versus Firms Whose Equity is Publicly Owned, Both with Public Debt

Panel A. All Executives Listed in the 10-K

$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + \beta_{8-36} Industry_{jt} + \beta_{37-49} Year_{jt} + \varepsilon$

N=2,439	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X1=Salary	9.36	-0.1	0.24	354.91	0.02	1042.41	-0.06	0	47.56
t-stat	29.63	-0.82	11.46***	2.1**	0.56	1.21	-0.65	-1.76*	
X2=Bonus	6.24	-1.69	0.44	4205	-1.1	7840.33	0.24	0	20.61
					-				
t-stat	3.17	-2.3**	0.327	2.59***	3.91***	1.83*	0.39	0.96	
X3=Other	1.94	-0.38	0.6	1289.22	0.46	1182.65	-0.38	0	28.79
t-stat	1.55	-0.8	7.33***	1.49	2.74***	0.39	-1.08	-0.28	
X4=Equity	-1.58	-8.79	1.06	1044.47	-0.93	4467.06	0.56	0	58.54
t-stat	-0.57	-8.57***	5.71***	0.43	-2.25**	0.76	0.88	-1.08	
X5= Total Comp	1.84	-4.46	0.83	1594.85	-0.43	2322.33	0.23	0	62.09
t-stat	1.33	-8.6***	9.03***	1.35	-2.04**	0.77	0.68	-1.91*	

See Table 1 and Table 2 for variable definitions.

Panel B. Chief Executive Officers

$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + \beta_{8-36} Industry_{jt} + \beta_{37-49} Year_{jt} + \varepsilon$

N=530	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X1=Salary	9.68	0.01	0.23	665.19	0.1	-58.02	-0.09	0	72.76
t-stat	18.81	0.05	7.87***	1.57	1.21	-0.07	-0.91	-0.92	
X2=Bonus	13.72	-4.18	0.39	-2083	1.04	26,219	-1.69	0	36.84
t-stat	2.05	-2.24**	1.05	-0.38	1	2.52**	-1.38	0.68	
X3=Other	10.61	1.91	0.05	3,652.38	1.13	-12,816	-1.9	0	35.27
t-stat	3.86	2.48**	0.31	1.62	1.65*	-3***	-3.79***	1.72*	
X4=Equity	-16.24	-10.5	1.72	-18,590	-1.36	25,995	1.6	0	63.58
t-stat	-1.85	-4.27***	3.48***	-2.57**	-1	1.9*	0.14	-3.12***	
X5= Total Comp	-5.22	-5.37	1.21	-7,733.3	-0.79	8,421.5	0.02	0	64.57
t-stat	-1.07	-3.93***	4.4***	-1.92*	-1.04	1.11	0.02	-2.59***	

See Table 1 and Table 2 for variable definitions

Table 3 Panel A shows the results of this test using this regression equation for all executives in the primary sample.[8] The primary variable of interest is *Private*. In this specification, we are able to test both *H1,* that total compensation is the same for managers in both privately- and publicly-owned firms, and *H2,* that equity compensation is the same for managers in both privately- and publicly-owned firms. These results show that executives in privately-owned firms receive significantly less bonus compensation (*t*-stat = 2.3, *p*-value < .05), less equity compensation (*t*-stat -8.57, *p*-value < .01) and less total compensation (*t*-stat -4.46, *p*-value <.01). Table 3 Panel B tests the same hypotheses while restricting the sample to CEOs. The inferences are identical with one exception—that private firm CEOs receive more perquisite compensation (labeled other) than public firm CEOs. These results suggest that *H1* and *H2* should be rejected.

Table 4: Tests for Relative Differences in Executive Compensation in Firms Whose Equity is Privately Owned Versus Firms Whose Equity is Publicly Owned, Both with Public Debt

Panel A. All Executives Listed in the 10-K

$$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + \beta_{8-36} Industry_{jt} + \beta_{37-49} Year_{jt} + \varepsilon$$

N=2,439	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X1=Salary/Total Comp	0.76	0.39	-0.05	-217.45	0.01	48.66	-0.01	0	37.9
t-stat	4.41	7***	-3.76***	-1.49	0.45	0.13	-0.21	0.69	
X2=Bonus/Total Comp	0.11	0.1	-0.01	47	-0.01	104.13	-0.02	0	10.98
t-stat	1.04	2.49**	-0.79	0.55	-0.91	0.42	-0.88	-0.34	
X3=Other /Total Comp	0.03	0.04	0	-393.15	-0.03	-7.26	0.04	0	6.89
t-stat	0.16	0.6	0.13	-2.61***	-1.14	-0.02	0.89	-0.66	
X4=Equity/Total Comp	0.21	-0.55	0.05	173.71	-0.01	-87.73	0.01	0	32.61
t-stat	0.78	-7.06***	2.56**	0.73	-0.2	-0.19	0.18	-0.31	

See Table 1 and Table 2 for variable definitions.

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[8] The reader should exercise caution in interpreting parameter estimates due to the log transformation of the dependent variable in each specification.

Table 4: Tests for Relative Differences in Executive Compensatio
in Firms Whose Equity is Privately Owned Versus Firms
Whose Equity is Publicly Owned, Both with Public Debt: Continues

Panel B. Chief Executive Officers

$$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + \beta_{8-36} Industry_{jt} + \beta_{37-49} Year_{jt} + \varepsilon$$

N=530	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X1=Salary/Total Comp	0.31	0.46	-0.03	1,167.92	0.12	-757.62	0.57	0	58.01
t-stat	0.62	3.32***	-1.24	2.85***	1.57	-0.98	0.63	2.48**	
X2=Bonus/Total Comp	0.19	0.38	0	1,551.65	0.15	-1,500.53	-0.18	0	47.56
t-stat	0.47	3.43***	0.04	4.71***	2.39**	-2.41**	-2.51**	1.63	
X3=Other /Total Comp	0.49	0.13	-0.03	-38.34	0.04	-703.23	-0.05	0	49.04
t-stat	2.38	2.24**	-2.46**	-0.23	1.27	-2.2**	-1.36	2.22**	
X4=Equity/Total Comp	0.01	-0.98	0.06	2,681.53	-0.31	2,969.91	0.18	0	65.35
t-stat	0.02	-5.52***	1.75*	-5.15***	-3.16***	3.02***	1.54	-3.71***	

See Table 1 and Table 2 for variable definitions.

Table 4 repeats the above tests with each compensation component scaled by total compensation. This specification allows for a comparison of compensation practices as a percentage of total. This controls for the possibility that differences observed in Table 3 may be driven by a significant difference in total compensation between public and private firms in the sample. Hypothesis 1 is not testable in this specification. In Panel A, with all executives included, we observe that private firm executives receive more salary as a percentage of total income (*t*-stat 7, *p*-value < .01), more bonus as a percentage of total income (*t*-stat 2.49, *p*-value < .05) and less equity compensation (*t*-stat -7.06, *p*-value < .01). Panel B restricts the sample to CEOs. Again, the only qualitative change from Panel A is that private CEOs appear to earn more perquisite compensation (*t*-stat 2.24, *p*-value < .05).

In sum, these results show that both *H1 and H2* should be rejected. That is, private firms offer less total compensation primarily as a result of offering less equity based compensation to their executives. The remainder of this paper is dedicated to tests of the underlying determinants of this difference in equity-based compensation.

B. Secondary Tests: Tests of Determinants of Equity Compensation Differences

Explanation 1: Private equity firm managers are more vested in the firm they manage.

Consistent with the previous discussion, although annual equity compensation is lower for private equity firms, I expect that executives of private equity firms will be more heavily invested in the firms they manage. In the absence of data on managers' total wealth, I use total number of shares owned and total number of shares owned as a percentage of total shares outstanding for the firm. Thus, I expect that executives of privately-held firms are similar to executives of family-founded firms in that I expect them to own more shares of the firms they manage than managers of public equity firms.

Table 5: Share Ownership Comparison Between Public Equity and Private Equity Firms, Both with Public Debt

Panel A. All Executives Listed in the 10-K

$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Lagged\ ROA_{jt} + \beta_5 Leverage_{jt} + Industry_{jt} + Year_{jt} + \varepsilon$

N=2,439	Intercept	Private	Log(Assets)	ROA	Lagged ROA	Leverage
Shares Owned =	3,833,906	1,625,177	416,489	1,028,162	-1,028,162	19.82
t-stat	-3.58***	4.86***	3.86***	-0.51	0.54	0.06
Shares owned/shares outstanding	27.81	7.69	-2.57	9.23	22.33	0
t-stat	1.51	1.27	-1.26	0.3	0.75	-0.43

Panel B. Chief Executive Officers

N=530	Intercept	Private	Log(Assets)	ROA	Lagged ROA	Leverage
Shares Owned =	-801,375	476,874	102,326	-695,933	295,161	-4.74
t-stat	-2.81***	5.08***	3.51***	-1.13	0.53	-0.01
Shares owned/shares outstanding	33.88	6.3	-4.59	48.91	5.27	0
t-stat	1.36	0.61	-1.7*	0.3	0.91	-0.69

Variable Definitions:
Shares owned = Total shares owned of any type as reported in 10-K filings and Execucomp.
Shares owned/Shares outstanding = Shares owned scaled by total shares outstanding as reported in 10-K filings and Execucomp.
Lagged ROA = Calculated as Net income for firm *j* in year *t* divided by total assets for firm *j* in year *t*-1 as reported by Compustat.
See Table 1 and Table 2 for other variable definitions.

Table 5 tests *Explanation 1* using the primary sample executives. Data were obtained using the stock ownership information found in the relevant 10-K filing for private equity firms and as reported in Execucomp for public equity firms. The variable of interest continues to be the *Private* indicator. Table 5 demonstrates that private equity executives hold more shares of the firm they manage (*t*-stat 4.86, *p*-value < .01). However, as a percentage of total shares outstanding, the difference is no longer statistically significant (*t*-stat 1.17, *p*-value > .1). The same is true for CEOs. These findings suggest that private equity firm executives do not own a significantly different percentage of outstanding equity than do public equity executives. These results do not support

the first Explanation for compensation differences - that managers of private equity firms are more economically vested in the firm they manage than public equity executives.

Explanation 2: Inherent difficulties associated with valuing and/or liquidating privately held stock causes private firm managers to receive less equity-based compensation.

The second Explanation for differences in executive compensation between publicly-traded and privately-held firms is the difficulty in valuing or liquidating shares of stock. This leads private equity firms to substitute other forms of compensation for equity-based compensation. In terms of liquidity, some private equity firms may offer to buy back shares of stock owned by employees, creating an outlet for current and departing employees to trade stock and stock options for cash. However, the frequency of such agreements is unobservable and low in expectation. I predict that the challenges associated with valuing and liquidating private firms' equity is the primary force behind differences in equity compensation.

Table 6: Tests for Differences in Executive Compensation During Periods of Private Equity Ownership Versus Periods of Public Equity Ownership for Firms with Public Debt

Panel A. All Executives Listed in the 10-K, in Levels

$Log(x_i) = \beta_0 + \beta_1 Private_{jt} + \beta_2 Assets_{jt} + \beta_3 ROA_{jt} + \beta_4 Loss_{jt} + \beta_5 Private*ROA_{jt} + \beta_6 Private*Loss_{jt} + \beta_7 Leverage_{jt} + Industry_{jt} + Year_{jt} + \varepsilon$

n=317	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
Equity	-1.58	-0.75	-0.24	0.25	0.51	0	-0.77	0.51	60.47
t-stat	-5.51	-1.71*	8.64***	1.56	0.03	-2.28**	-3.17***	3.64***	

Panel B. Chief Executive Officers, in Levels

n=232	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
Equity	1.32	-1.88	0.26	-0.44	-0.1	-0.18	-0.9	-0.16	51.57
t-stat	2.88	-0.88	3.5***	-0.13	-0.7	-0.67	-0.4	-0.34	

Panel C. All Executives Listed in the 10-K, Scaled by Total Compensation

n=317	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X4=Equity/Total Comp	-0.1	-0.02	0.02	0.09	0.01	-0.24	-0.03	0	11.45
t-stat	-3.75	-2.03**	5.21***	1.84*	1.12	-3.01***	-2.7**	-0.53	

Panel D. Chief Executive Officers, Scaled by Total Compensation

n=232	Intercept	Private	Assets	ROA	Loss	Private*ROA	Private*Loss	Leverage	Adj. R^2
X4=Equity/Total Comp	-0.05	-0.03	0.02	0.02	-0.02	-0.58	-0.05	0	8.15
t-stat	-2.06	-1.62	4.74***	0.37	-1.5	-1.91*	-1.75*	-1.66*	

See Table 1 and Table 2 for variable definitions.

Using my 'gone public/private' sample, I test to see whether equity compensation is significantly greater during periods of public equity. I use the same multiple regression model as with the primary sample, with one difference.[9] The results are found in Table 6. In levels, the amount of equity compensation is lower for private equity firms, significant at the five percent level in a one-tailed test. As a percentage of total compensation, equity compensation is again significantly lower for private equity firms. Restricting the sample to CEOs, the difference again becomes insignificant, presumably due to sample size.

A change in equity status, either from private to public or vice versa, captures the effect of a change in liquidity and valuation for equity shares. However, such a change in equity status also captures a change in monitoring to the extent that differences exist. That is, when a firm "goes public" or "goes private", not only does the ease of valuing and/or liquidating stock change, so may the quality of monitoring as ownership changes. As a result, I employ a third set of tests designed to specifically test for differences in monitoring between these two groups.

Explanation 3: Private equity firms are superior monitors

The third Explanation posits that, due to more concentrated ownership in firms with privately-held equity, superior monitoring substitutes for other incentive-aligning mechanisms, such as equity compensation. In order to determine if this effect drives the results found in Table 6, I conduct tests to determine whether private equity firms appear to have superior monitoring. Because many traditional measures of monitoring are unobservable, I use earnings management, which is observable using my data. Earnings management is one potential result of inferior monitoring. Using earnings management as a test of monitoring is predicated on the assumption that superior monitors will exert influence on managers to use their reporting discretion to maximize the reliability and transparency of financial statements and subsequently, earnings. This approach further assumes that managers, in the absence of monitoring, will always manage earnings in the presence of an opportunity to do so. Using the same secondary sample of 43 firms used to test *Explanation 2*, I test for earnings management following Givoly *et al.* (2010). In the absence of earnings management, a distribution of firms' reported earnings should be approximately normal. However, in the presence of earnings management, the distribution may be distorted such that an unexpectedly low number of firms report small losses and an unexpectedly high number of firms report small gains (see Burgstahler and Dichev, 1997).

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[9] In order to avoid over fitting with a small sample, I exclude control variables that were statistically insignificant. The associated F-change statistic was insignificant.

Table 7: Tests for Differences in Monitoring
During Periods of Private Equity Ownership
Versus Periods of Public Equity Ownership for Firms with Public Debt

Panel A. Frequency Distribution of Earnings Around Zero[a]

	N	Number "Just Below Zero"[b]	Expected[c]	Standardized Difference[d]	Number "Just Above Zero"[b]	Expected[c]	Standardized Difference[d]
Private Equity Firms	162	10	22.5	-2.18	38	18.5	3.34
Public Equity Firms	155	10	12.5	-0.49	49	19	4.92

Panel B. Number of Owners Holding at Least 5 Percent of Outstanding Equity

	N	Mean	Std Dev	t-stat
Private Equity Firms	162	4.34	2.69	1.45
Public Equity Firms	155	3.81	3.01	

Panel C. Number of Board Meetings Per Year

	N	Mean	Std Dev	t-stat
Private Equity Firms	6	4.3	3.07	4.38*
Public Equity Firms	100	6.3	0.82	

*Satterthwaite adjustment

[a]In Panel A, the distribution of net income in year t scaled by total assets at the end of year t-1 (Income/Assets) is measured to assess earnings management around zero.

[b]"just below zero" and "just above zero" refer to intervals. Intervals, or bin widths, are calculated following Degeorge *et al.* (1999), as $2*2(IQR)n^{(1/3)}$, where IQR is the sample inter-quartile range and n is the number of observations. The resulting bin widths for the distribution of Income/Assets are .052 for private equity firms and .058 for public equity firms.

[c]The expected frequency in the interval is calculated as the average of the number of observations observed in the adjacent intervals on each side.

[d]The standardized difference is the difference between the actual frequency and expected frequency, divided by the standard deviation of the difference. The standard deviation of the difference is computed, following Burgstahler and Dichev (1997), as $[n*P_i*(1- P_i) + .25*n*(P_{i-1} + P_{i+1}) *(1-P_{i-1} + 1- P_{i+1})]^{.5}$, where n is the number of observations and P_i is the probability that an observation will fall into interval i.

The results of this test of differences in earnings management are reported in Table 7, Panel A. For private firms, the number of firms reporting earnings "just below zero" is significantly lower than expected, while for public firms, the number of firms reporting earnings "just below zero" was not significantly lower than expected. For the "just above zero" bin, both public and private equity firms exhibit frequencies that were significantly higher than expected. Together, this provides evidence of earnings management during periods in which equity is privately owned as well as periods of public ownership. That private firms do not manage earnings less than public firms is substantiated by Burgstahler *et al.* (2006). These results do not support *Explanation 3*.

I use two other tests designed to detect differences in monitoring using this sample. According to Hill and Jones (1992), larger stockholders are likely to be better monitors than atomistic ones. Based on this theory, if private firms are superior monitors, they are likely to have

more large stakeholders than public firms. Thus, I test for differences in the number of large shareholders during periods of private equity versus periods of public equity. For purposes of this test, I define a large shareholder as one owning at least five percent of total shares outstanding, regardless of class. The results of this test are reported in Table 7 Panel B. These results provide no evidence of a difference in the number of large shareholders between publicly- and privately-owned firms.

Superior monitoring also seems likely to be positively correlated with the number of board meetings occurring during the year. Thus, I also test for differences in the number of board meetings during periods of private ownership and periods of public ownership in Table 7 Panel B. Though of limited generalizability due to data availability, the results of this test suggest that during periods of private ownership, firms hold significantly fewer board meetings than during periods of public ownership. Together, these results do not provide support for *Explanation 3*.

V. Conclusion

In summary, I find support for my first hypothesis that privately-owned companies pay their executives less total compensation. I also find strong support for my second hypothesis—that executives of privately-owned corporations receive less equity-based compensation. As this difference in equity compensation appears to be the primary difference in compensation practices between publicly- and privately-owned firms, I test for the determinants of these differences. In subsequent tests, I find that the difference in equity compensation is due to difficulty in value/liquidity associated with equity compensation in a privately-held corporation. Based on prior research, this difference in the form of compensation may result in less risky behavior on the part of private firm managers (Sanders, 2001; Sanders and Hambrick, 2007).

Future research may explore the differences in incentive-based compensation between publicly- and privately-owned firms, especially perquisites. Future researchers could improve generalizability further by examining the compensation arrangements of firms whose equity is privately owned and whose debt is also owned privately. Additionally, researchers might compare the long-term performance and decision making of private firm managers compared to public ones.

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