



# Differences in pay between owner and non-owner CEOs: Evidence from Israel

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## Abstract

In a sample of 124 publicly traded Israeli firms in 1994–2001 we find that CEOs who belong to the family or business group that owns most of the firm shares (“owner CEOs”) receive significantly (about 50%) higher pay than professional CEOs who do not belong to the control group (“non-owner CEOs”). Owner CEOs’ pay performance sensitivity is also (insignificantly) lower than that of non-owner CEOs. These findings are most consistent with the view that owner CEOs exploit the firm and extract private benefits in the form of inflated pay. Among owner CEOs, we do not find any significant differences in pay between CEOs in family firms and CEOs in firms controlled by business partners.

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## 1. Introduction

In most of the world economies ownership structure is concentrated (La Porta et al., 1999); a firm is typically controlled and led by a single person, a family or a partnership of a few individuals. In such firms, the control group frequently appoints one of its members to the CEO position.

A CEO from the control group, an owner CEO hereafter, is powerful and has more authority and incentives than a professional non-owner CEO, which may promote firm value. However, an owner CEO also may misuse her or his extra power by demanding and receiving excessive pay, which hurts firm’s market value. Given a typical Board of Directors structure and operations it is

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practically impossible to block owner CEO pay demands. Hence, owner CEO pay is pretty much determined by the owner CEO herself.

There are at least two factors that deter owner CEOs from paying (taking?) a grossly exaggerated compensation to themselves. First, a CEO's pay is published and may raise public criticism and investors' reservations, which will decrease firm's market value. Owner CEOs care about the market value of their firms because their pride and social status depend also on firm success, and because with bad reputation future offerings of shares will be more difficult and less profitable. This is the cleansing power of publishing CEO pay. Second, excessive CEO pay depletes firm's cash reserves which may undermine firm's financial stability. Thus, especially in weak and poor firms and periods, owner CEOs may refrain from excessive pay.

In this study, we compare owner and non-owner CEO pay level and pay performance sensitivity in a sample of 124 closely held Israeli firms during the period 1994–2001. Israeli data are interesting because corporate governance in Israel is weak relative to the U.S., which affords owner CEOs much leeway in determining their pay.<sup>1</sup> Previous studies examine differences in pay between owner and non-owner CEOs in the U.S., an economy with a relatively high corporate governance score, and did not demonstrate any strong results. We find more clear-cut results in Israel.

A second contribution of our study is its relatively controlled methodology. Previous studies used both concentrated ownership and non-concentrated ownership firms while we study only concentrated ownership firms. (In each firm of our sample there is a majority group that controls at least 50% of firm's vote.) Our focus on concentrated ownership firms only should reveal more clearly the differences between owner CEOs and non-owner CEOs pay. In addition, existing literature on owner CEO pay in closely held firms is scarce, thus any study in this area should be instructive.

Last, we offer a further demarcation of owner CEOs. We distinguish between owner CEOs in family firms and owner CEOs in firms controlled by a partnership of a few individuals. Is there a difference in pay between family firms and "partnership"-controlled firms? To the best of our knowledge we are the first to examine the dependence of owner CEO pay on the organizational form of controlling group.

We find that owner CEOs have significantly higher pay and insignificantly lower pay performance sensitivity than non-owner CEOs. These findings appear to suggest that some owner CEOs extract private benefits from their firms in the form of excessive pay. We do not find significant differences in pay between family and "partnership" owner CEOs.

The paper is organized as follows. Section 2 presents a literature review and the hypotheses. Section 3 describes the sample and Section 4 documents the results. Section 5 concludes.

## 2. Hypotheses development and previous evidence

There are three possible approaches to predicting differences between owner and non-owner CEOs. First, the classical agency theory (Jensen, 1986, for example) contends that in order to align CEO's interests with that of the shareholders, CEO's pay should be sensitive to firm's performance. The important distinction between owner and non-owner CEOs in this context is

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<sup>1</sup> The premium paid for a controlling block of shares in Israel is above median—see Dyck and Zingales' (2004) Tables 2 and 3. This suggests that private benefits in Israel are above median relative to the other 38 countries studied by Dyck and Zingales. Thus, we conclude that corporate governance in Israel is relatively weak, and definitely weaker than in the U.S. La Porta et al. (1998) rank Israel at about median in investor protection.

that even before the firm's pays anything to its CEO, owner CEOs already have a relatively high wealth sensitivity to firm performance (because of their relatively high stock holdings). Hence, owner CEOs need to receive, as direct pay from the firm, fewer incentives than non-owner CEOs. The pay performance sensitivity of owner CEOs should be lower.

The managerial discretion approach (Finkelstein and Boyd, 1998) focuses on the authority and freedom of action of the CEO. According to this view, in firms with higher CEO discretion the potential influence and marginal product of the CEO increase. CEO pay should fit her or his discretion: CEOs with higher discretion should be paid more and have higher pay performance sensitivity because of their higher impact on firm value. Naturally, owner CEOs have more impact and discretion than non-owner CEOs. Thus, the managerial discretion hypothesis predicts that owner CEOs receive higher pay with a higher pay performance sensitivity.

Third, the exploitation approach highlights the fact that owner CEOs are entrenched in their position and are part of firm's control group (see Shleifer and Vishny, 1997). Owner CEOs may choose to exploit their power to influence their own pay. The exploitation hypothesis suggests that owner CEOs demand and receive excessive pay which is essentially part of the private benefits that owners extract from the firm—see Bebchuck and Fried (2003). As risk averse agents, owner CEOs may also choose a relatively low pay performance sensitivity. Thus, according to the exploitation approach, owner CEOs should receive higher pay and lower pay performance sensitivity than non-owner CEOs.

The above analysis suggests

**Hypothesis 1.** Owner CEOs receive higher pay than non-owner CEOs.

Previous evidence on differences between owner CEO and non-owner CEO pay are scarce. Nevertheless, existing studies such as Holderness and Sheehan (1988) tend to support Hypothesis 1. Holderness and Sheehan (1988) find that in the U.S. CEOs owning more than 50% of firm's shares receive significantly higher pay than other CEOs. However, Holderness and Sheehan's sample is small, and they warn against any strong interpretation of their results.

Most of the above approaches also propose

**Hypothesis 2.** The pay performance sensitivity of owner CEOs is lower than that of non-owner CEOs.

Mehran (1995) studies a random sample of U.S. firms, and finds that the proportion of equity based compensation decreases with CEO holdings. Cavalluzzo and Sankaraguruswamy (2000) study 1344 privately owned small firms, included in the 1993 National Survey of Small Business Finances collected by the Federal Reserve and Small Business Administration in the U.S. They find that: (1) closely held firms are less sensitive to accounting performance than disperse ownership firms, and (2) owner CEOs pay is less sensitive to performance. Thus, we sum that despite of the scarce evidence, existing evidence appears consistent with Hypothesis 2.

One of the goals of our study is to try to differentiate between two types of owner CEOs. The first is an owner CEO in a firm controlled by a single individual and/or family (family firm, hereafter). The second is an owner CEO in a firm controlled by a few business partners (partnership firm, hereafter). We propose that in a partnership firm there is some monitoring of the CEO by the partners. Hence, owner CEOs in partnership firms have less discretion and less exploitation power than owner CEOs in family firms. This leads us to suggest

**Hypothesis 3.** Owner CEOs in family firms receive higher pay than owner CEOs in partnership firms, and

**Hypothesis 4.** The pay performance sensitivity of owner CEOs in family firms is lower than that of owner CEOs in partnership firms.

We did not find previous evidence on differences between family and partnership owner CEOs' pay.

When testing our hypotheses we will control for a host of other variables that might have an impact on CEO pay. It is well known that CEO pay increases with firm size—see [Murphy \(1999\)](#). Other studies, such as [Bliss and Rosen \(2001\)](#), report a positive relation between firm risk and CEO pay.

There are also control variables that are related to external monitoring of CEO pay. For example, [Hartzell and Starks \(2003\)](#) unveil a relation between institutional investor holdings and CEO pay. CEO pay decreases with institutional investor holdings' and pay performance sensitivity increases with institutional investor holdings. A second interesting factor is the percent of outside directors on the board. As the percentage of outside directors increases, CEO pay level increases ([Core et al., 1999](#)) or decreases (see [Hermalin and Weisbach, 2003](#)) and pay performance sensitivity increases ([Conyon and Peck, 1998](#)). Last, an increased firm leverage promotes monitoring by banks, resulting in lower CEO pay (see [Denis, 2001](#)).

Additional traditional control variables include firm's industry and CEO personal characteristics. CEO pays were found to differ by firm industry ([Smith and Watts, 1992](#)), CEO age ([Lewellen and Huntsman, 1971](#)) and CEO education ([Palia, 2000](#)).

### 3. Data and sample

The sample starts in 1994, the first year that CEO pay in Israel was publicly published. The pay reported is total direct pay by the company. It does not include the value of options granted and the value of retirement deductions and golden parachutes. During our sample period option grants to CEOs in Israel were rare; hence, CEO pay measurement in Israel is about as accurate as CEO pay measurement in the U.S.

In the beginning of the sample (1994) we have data on 536 CEOs. However, every year we lose firms that replaced their CEOs and a few firms that were delisted or failed to report CEO pay, until in 2001, the last year in our sample, we are left with 154 CEOs only. (We chose not to extend our sample to 2002 because we were reluctant to cut sample size further.) We insist on studying only firms that did not replace their CEOs because new CEOs introduce heavy noise into our pay estimates and pay equations.

We further exclude 30 more firms where the control group structure changed during the sample period because such changes might impact CEO pay and because one of our goals is to control for ownership structure, i.e., we prefer a fixed ownership structure throughout the sample period. The final "clean" sample comprises annual data on 124 CEOs and firms during 1994–2001.

We collect data from several sources: (1) CEO pay, age and education are retrieved from *Globes* (a daily newspaper in Israel); (2) financial data (total assets, market value, equity, net income and leverage) are extracted from "Super Analyst"—a commercial data base; (3) ownership and Board of Directors composition are found in the company reports, electronically available in "Ifat" (a commercial data base); and (4) stock return data comes from a commercial data base called "Predicta".

**Table 1** describes the sample. The mean annual pay of the CEOs in our sample is 1.39 million New Israeli Shekels (NIS) (adjusted for end of 2001 CPI level), and the median is 1.15 million

Table 1  
Sample descriptive statistics

	Average	Standard deviation	Median	Minimum	Maximum	Number of observations
Annual CEO pay in million NIS <sup>a</sup>	1.39	0.95	1.15	0.38	6.75	124
Owner CEO (=1 for owner CEO, and 0 otherwise) <sup>b,d</sup>	0.73	0.45	1	0	1	124
Firm equity in million NIS <sup>a</sup>	205	885	52.3	−19.6	11367	124
Firm market value in million NIS <sup>a</sup>	234	886	62	5.61	9450	124
Net profit in million NIS <sup>a</sup>	17.4	95.7	3.73	−113	1589	124
Return on equity <sup>a</sup>	0.02	0.33	0.05	−3.30	0.80	124
Annual stock return <sup>a</sup>	0.05	0.22	0.02	−0.25	1.72	124
Total assets in million NIS <sup>a</sup>	428	3185	22.4	3.46	34444	124
Daily stock return standard deviation <sup>c,e</sup>	0.03	0.007	0.03	0.02	0.06	122
External directors proportion <sup>b</sup>	0.29	0.09	0.30	0.06	0.50	124
Financial leverage <sup>a</sup>	0.56	0.21	0.57	0.16	1.26	124
Institutional investor holdings <sup>b</sup>	0.02	0.04	0	0	0.19	124
CEO age in years <sup>a</sup>	54	8	53	34	78	124
CEO education (=1 for academic degree, and 0 otherwise) <sup>b</sup>	0.67	0.47	1	0	1	124

<sup>a</sup> Calculated over 8 years (1994–2001).

<sup>b</sup> Calculated over 2 years (1995 and 2001).

<sup>c</sup> The standard deviation of a daily stock return during 1994–2001.

<sup>d</sup> The sample comprises 55 family owner CEOs, 35 partnership owner CEOs and 34 non-owner CEOs.

<sup>e</sup> Two firms with extreme observations are omitted.

NIS (about 260,000\$, given a NIS/U.S.\$ exchange rate of 4.416 at end of 2001). Fifty-five CEOs are owner CEOs in family firms, 35 are owner CEOs in partnership firms, and the rest (34) are non-owner CEOs.<sup>2</sup>

The sample firms represent well firms traded on the Tel-Aviv Stock Exchange (TASE). The mean (median) total assets of our companies is 428 (22) million NIS with a minimum of 3.5 million and a maximum of 35 billion NIS, and the dispersion across industries is similar to that of firms trading on TASE.

The average (median) annual return on equity is 2.1% (4.8%), and the average (median) annual stock return is 5.3% (2.0%). These relatively low profitability and stock return indicate that most of the sample years were poor years for Israeli companies.

Other interesting descriptive statistics are that: (1) outside directors on average account for 30% of the Board; (2) the mean institutional investors holdings is 2.4% only; (3) the mean and median leverage are about 0.6; and (4) the mean CEO age is 54 and about two-third of the CEOs have academic degrees.

<sup>2</sup> Our definition of “owner CEO” is somewhat different than that of Holderness and Sheehan (1988). Holderness and Sheehan define owner CEO as a CEO who controls (together with his or her family) over 50% of firm’s vote, while we classify as owner CEO any individual that belongs to the control group and is appointed CEO. Practically, our definition adds the 35 “partnership” CEOs to the more narrow Holderness and Sheehan definition that would comprise only our 55 family CEOs. In the empirical analysis we find that the pay of owner CEOs in family firms resembles owner CEOs’ pay in partnership firms, which justifies our expanded definition of owner CEO. Anyway, the mean (median) owner CEO holdings in our sample is 52% (53%) of firm’s vote, and the minimum is 20% of vote.

#### 4. Empirical results

Table 2 documents the differences between owner and non-owner CEOs. Non-owner professional CEOs run larger firms that have significantly larger equity and market value. This finding is consistent with the view that when firm size increases, the control group prefers to hire a professional CEO. In this context, note also that a significantly higher proportion of non-owner CEOs hold academic degrees.

Owner CEOs appear to run more profitable firms with higher return on equity (ROE) and higher mean stock returns. Companies run by owner CEOs also are slightly more risky. Interestingly, the mean owner CEO pay exceeds non-owner CEO pay by about 7% only, insignificant. Thus, the simple mean comparison does not support our Hypothesis 1.

The differences between family and partnership owner CEO firms are predominantly statistically insignificant—see Table 2. However, partnership-controlled firms are somewhat larger and with a higher mean ROE and mean stock return. The mean pay of owner CEOs in family firms (1.42 million NIS) is almost identical to that of owner CEOs in partnership firms (1.37 million NIS), which rejects our Hypothesis 3.

We have also estimated the pay for performance sensitivity by fitting for each firm  $i$  the regression:

$$\frac{W_t - W_{t-1}}{W_{t-1}} = a_i + b_i \text{RET}_t + c_i \text{RET}_{t-1} + e_t, \quad (1)$$

where  $W_t$  is firm's  $i$  CEO pay in year  $t$ , and  $\text{RET}_t$  is firm  $i$  stock return in year  $t$ . The coefficients  $b_i + c_i$  measure the elasticity of pay with respect to share price, which is the percentage increase in CEO pay in year  $t$  in response to a 1% increase in firm's share price in year  $t$  ( $b_i$ ) and year  $t - 1$  ( $c_i$ ). An alternative formulation of regression 1 with an accounting performance measure, return on equity, instead of RET was also examined, but yielded statistically insignificant positive coefficients. Empirical research in the U.S. (see Core et al., 1999) also finds CEO pay to depend primarily and almost exclusively on stock performance.

The average total pay performance elasticity ( $b_i + c_i$  in regression 1) is: 0.14 in owner CEO firms and 0.30 in non-owner CEO firms.<sup>3</sup> These point estimates support Hypothesis 2 that proposes that non-owner CEOs have higher pay performance sensitivities. However, in a formal test, the mean difference in pay elasticity between owner and non-owner CEOs is found to be statistically insignificant—see Table 2.<sup>4</sup> Hence, we conclude that the evidence weakly supports Hypothesis 2. The difference between CEO pay elasticity in family firms (0.13) and partnership firms (0.14), also reported in Table 2, is statistically insignificant, clearly rejecting our Hypothesis 4.

Finally, as a robustness test we repeated all the tests of differences in Table 2, using the non-parametric Kruskal–Wallis test. All conclusions remain intact, i.e., all significant differences in Table 2 are significant, at the 5% level, also when the Kruskal–Wallis tests are employed.

Table 3 examines the determinants of CEO pay using cross-sectional regressions. The dependent variable is the mean annual CEO pay in 1994–2001. The first regression in the table (regression 1) uses as explanatory variables various firm and CEO characteristics. Regression

<sup>3</sup> Notably, the documented mean pay elasticity of professional non-owner CEOs (0.3) is similar to the pay elasticity of about 0.26 estimated by Hall and Liebman (1998) for CEOs in the U.S.—see their Table 4.

<sup>4</sup> We have also attempted cross-sectional regressions of pay elasticities on various explanatory variables, including a dummy variable for owner CEO. The coefficient of the dummy variable for owner CEO, albeit positive, is insignificantly different from zero.

Table 2  
Mean comparison of owner and non-owner CEO firms, and differences within the owner CEO segment

	Owner vs. non-owner CEO			Family vs. partners' firm owner CEO		
	Mean for owner CEO	Mean for non-owner CEO	<i>p</i> -Value of difference (based on <i>t</i> -tests)	Mean for family owner CEO	Mean for partnership owner CEO	<i>p</i> -Value of difference (based on <i>t</i> -tests)
Annual CEO pay in million NIS <sup>a,d</sup>	1.41	1.32	0.94	1.42	1.37	0.83
Pay performance elasticity <sup>a</sup>	0.14	0.30	0.45	0.13	0.14	0.95
Firm equity in million NIS <sup>a</sup>	77.35	543	0.01	74.94	80.10	0.82
Firm market value in million NIS <sup>a</sup>	106.70	588	0.01	107.50	104.47	0.96
Net profit in million NIS <sup>a</sup>	5.38	49.11	0.05	4.60	6.19	0.79
Return on equity <sup>a</sup>	0.05	−0.04	0.36	0.03	0.07	0.28
Annual stock return <sup>a</sup>	0.07	0.004	0.22	0.055	0.10	0.44
Total assets in million NIS <sup>a</sup>	57.44	1386	0.1	36.75	89.17	0.27
Daily stock return standard deviation <sup>c,e</sup>	0.032	0.029	0.01	0.033	0.032	0.40
External directors' proportion <sup>b</sup>	0.30	0.27	0.001	0.305	0.30	0.25
Financial leverage <sup>a</sup>	0.55	0.59	0.001	0.56	0.53	0.51
Institutional investor holdings <sup>b</sup>	0.0227	0.0245	0.02	0.01	0.04	0.004
CEO age in years <sup>a</sup>	55	54	0.70	55	55	0.83
CEO education (=1 for academic degree, and 0 otherwise) <sup>b</sup>	0.59	0.88	0.001	0.46	0.77	0.004

<sup>a</sup> Calculated over 8 years (1994–2001).

<sup>b</sup> Calculated over 2 years (1995 and 2001).

<sup>c</sup> The standard deviation of a daily stock return during 1994–2001.

<sup>d</sup> The sample comprises 55 family owner CEOs, 35 partnership owner CEOs and 34 non-owner CEOs.

<sup>e</sup> Two firms with extreme observations are omitted.

Table 3  
Determinants of the level of CEO pay: cross-sectional regressions

	Regression 1	Regression 2	Regression 3
RET	0.58*** (4.00)	0.47*** (3.48)	0.47*** (3.49)
LnSize	0.21*** (5.50)	0.27*** (7.14)	0.27*** (8.51)
Institution	0.18 (0.15)	0.11 (0.10)	
Risk	-0.17** (-2.21)	-0.16** (-2.18)	-0.17*** (-2.74)
Lev	-0.12 (-0.41)	-0.25 (-0.90)	
Director	1.45** (2.53)	1.03** (2.06)	1.10** (2.11)
Education	-0.003 (-0.05)	0.10 (1.14)	
Age	0.01 (1.63)	0.004 (0.60)	
Owner		0.44*** (4.48)	0.42*** (4.28)
Adjusted $R^2$	0.395	0.481	0.498
$p$ -Value	0.001	0.001	0.001

The regression model is:  $\ln(W_i) = \psi_{\text{ind}} \times \text{Dumindustry}_i + \alpha \times \text{Owner}_i + \beta \times \text{RET}_i + \gamma \times \text{Director}_i + \nu \times \text{Lev}_i + \kappa \times \text{LnSize}_i + \delta \times \text{Institution}_i + \theta \times \text{Risk}_i + \eta \times \text{Age}_i + \lambda \times \text{Education}_i + e_i$ , where  $W_i$ ,  $\text{RET}_i$ ,  $\text{Lev}_i$  and  $\text{Size}_i$  are the average annual CEO pay, firm stock return, financial leverage and firm total assets, respectively, during 1994–2001.  $\psi_{\text{ind}} \times \text{Dumindustry}_i$  represents the industry fixed effect of firm  $i$ .  $\text{Owner}_i$  is a dummy variable equal to 1 if the CEO is from the control group (owner CEO), and 0 otherwise.  $\text{Director}_i$  is the proportion of the external directors on the firm's board.  $\text{Institution}_i$  is the institutional investor holdings.  $\text{Risk}_i$  is the standard deviation of the daily stock return during the 8-year period.  $\text{Age}_i$  is the average CEO age, and  $\text{Education}_i$  is a dummy variable equal to 1 when the CEO has an academic degree and 0 otherwise. In order to reduce multicollinearity,  $\text{Risk}_i$ ,  $\text{Lev}_i$  and  $\text{Director}_i$  were regressed first on  $\text{LnSize}_i$  and the residuals of these preliminary regressions are used as explanatory variables here.  $t$ -statistics are shown in parentheses.

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

2 adds the dummy variable for owner CEO, and regression 3 reports a final parsimonious regression. Because of multicollinearity problems, the variables firm risk, firm leverage, and outside directors were regressed first on firm size, and the residuals of these preliminary regressions serve as explanatory variables in Table 3 pay regressions.

In Table 3, the coefficients of firm size are positive and statistically significant. CEOs in larger firms receive higher pay probably because running larger firms is more complicated and requires more talented CEOs.<sup>5</sup> The coefficient of stock return also is positive and statistically significant. Evidently, CEO pay is sensitive to stock performance.

The negative coefficient of firm risk implies that CEOs in risky firms earn less. This finding is somewhat puzzling because we would expect risky firms to be run by more skillful CEOs who earn higher pay. Even more surprising, the coefficient of the proportion of outside directors is positive. Apparently, in firms with a higher proportion of outside directors CEOs earn more. We are not the first to document such coefficients. Core et al. (1999) also find in U.S. data negative coefficients for firm risk and positive coefficients for the proportion of outside directors.

We have further investigated this issue, and found that the pay performance sensitivities in our sample decrease with firm risk and increase with the proportion of outside directors. The emerging picture is much more rational. Apparently, in risky firms the CEO receives lower pay performance sensitivity at the cost of a lower pay. Similarly, outside directors appear to promote CEO pay performance sensitivity at the cost of higher total pay.

<sup>5</sup> We have also attempted adding the number of firm subsidiaries, a proxy for managing complexity, as an explanatory variable to the regression. Its coefficient is positive yet statistically insignificant ( $t$ -value of 1.1).



The most important evidence in Table 3 is the positive and significant coefficient of the “owner” dummy variable. This coefficient proves that when controlled for a host of other variables that affect CEO pay, the pay of owner CEOs is significantly higher. Hypothesis 1 is strongly supported. Using the estimated coefficient of the “owner” dummy variable in the parsimonious regression (0.42—see Table 3), our estimate is that (all other things equal) owner CEO pay is higher than non-owner CEO pay by about 52%. This difference is statistically and economically significant.

The combination of higher pay (Table 3) and lower pay performance sensitivity (Table 2) of owner CEOs is most consistent with the predictions of the exploitation view. Some owner CEOs appear to extract private benefits from the firm in the form of inflated pay and relatively low pay performance sensitivities.

However, the evidence may also be consistent with the managerial discretion approach because of the large stock holdings of owner CEOs. These large holdings dramatically increase the sensitivity of owner CEO's *wealth* to firm's performance, to a point where it exceeds the wealth performance sensitivity of non-owner CEOs. Thus, the true situation may be such that owner CEOs receive higher direct pay from the firms and are subject to higher wealth performance sensitivities, which is consistent with the predictions of the managerial discretion hypothesis (providing that we focus on wealth instead of on pay).

Table 4 presents our most elaborate examination of the study hypotheses. We use panel data (pooled time-series cross-section regressions) with dummy variables for each industry and each calendar year. Such regressions utilize all data and all control variables we have, in order to achieve more efficient estimation.

The first model estimated in Table 4 (Model 1) verifies the findings of Table 3. Owner CEOs receive significantly higher pay than non-owner CEOs. When controlled for other variables the excess pay of owner CEOs is about 50%.

The pay performance elasticity of owner CEOs (the sum of the coefficients of  $RET_{t-1}$  and  $RET_t$ ) is 0.15, similar to what we estimated in Table 2. The pay performance elasticity of non-owner CEOs is 0.30 (the sum of the coefficients of  $RET_{t-1}$ ,  $RET_t$ , Non-owner  $\times$   $RET_{t-1}$  and Non-owner  $\times$   $RET_t$ ), identical to what we estimated in Table 2. As we found before, the pay performance elasticity of non-owner CEOs is double of that of owner CEOs. Also similar to our Table 2 analysis, the difference in pay elasticity between owner and non-owner CEOs is statistically insignificant. We test and cannot reject the hypothesis that the sum of the coefficients of Non-owner  $\times$   $RET_{t-1}$  and Non-owner  $\times$   $RET_t$  equals zero. Thus, we offer only weak support for Hypothesis 2.

The rest of the coefficients of Model 1 are of the same sign and implication as we found in Table 3. The only exception is the coefficient of firm leverage which becomes statistically significant. The negative coefficient of financial leverage implies that banks and other debtholders monitor and restrain CEO pay. This effect is expected and was documented before (see Denis, 2001).

The comparison of owner CEOs from family and partnership-controlled firms in Model 2 of Table 4 also did not yield any novel results. The coefficient of the dummy variable for partnership is  $-0.02$ , insignificant statistically and economically. We do not identify significant differences in pay level between owner CEOs in family and partnership firms, which rejects Hypothesis 3.

Hypothesis 4 is rejected as well. The difference in pay elasticity between partnership and family firms is statistically insignificant. We test and cannot reject the hypothesis that the sum of the coefficients of Partner  $\times$   $RET_{t-1}$  and Partner  $\times$   $RET_t$  equals zero.

A potentially sharper test of Hypotheses 3 and 4 is to run the panel data regression of Table 4 in the subsample of 90 owner CEOs only (excluding the non-owner CEOs). The results of this regression are qualitatively the same as those reported in Table 4. Hypotheses 3 and 4 are rejected.

Table 4  
Panel data regressions of CEO pay

	Model 1: owner CEO vs. non-owner CEO	Model 2: non-owner CEO vs. family CEO and “partnership” CEO
Intercept	-2.61***	-2.60***
RET <sub>t-1</sub>	0.09***	0.11***
RET <sub>t</sub>	0.06***	0.08***
LnSize <sub>t</sub>	0.27***	0.27***
Risk	-0.08**	-0.08**
Director	0.93***	0.87***
Lev <sub>t</sub>	-0.37***	-0.38***
Institution	0.63	0.72
Age	0.002	0.002
Education	0.06	0.06
Non-owner	-0.42***	-0.43***
Partner		-0.02
Non-owner × RET <sub>t-1</sub>	0.09	0.07
Non-owner × RET <sub>t</sub>	0.06	0.04
Partner × RET <sub>t-1</sub>		-0.06
Partner × RET <sub>t</sub>		-0.05
Adjusted R <sup>2</sup> (%)	49	49
p-Value	0.001	0.001

Two models are fitted: (1)  $\ln(W_{it}) = \alpha + \beta \times \text{Non-owner}_i + b \times \text{RET}_{it} + c \times \text{RET}_{i,t-1} + b_2 \times (\text{Non-owner}_i \times \text{RET}_{it}) + c_2 \times (\text{Non-owner}_i \times \text{RET}_{i,t-1}) + v \times \text{Lev}_{it} + \kappa \times \text{LnSize}_{it} + \gamma \times \text{Director}_i + \delta \times \text{Institution}_i + \theta \times \text{Risk}_i + \eta \times \text{Age}_i + \lambda \times \text{Education}_i + \Psi_{\text{ind}} \times \text{Dumindustry}_i + \omega_t \times \text{Dumyear}_t + e_{it}$ ; (2)  $\ln(W_{it}) = \alpha + \beta_1 \times \text{Partner}_i + \beta_2 \times \text{Non-owner}_i + b \times \text{RET}_{it} + c \times \text{RET}_{i,t-1} + b_2 \times (\text{Partner}_i \times \text{RET}_{it}) + c_2 \times (\text{Partner}_i \times \text{RET}_{i,t-1}) + b_3 \times (\text{Non-owner}_i \times \text{RET}_{it}) + c_3 \times (\text{Non-owner}_i \times \text{RET}_{i,t-1}) + v \times \text{Lev}_{it} + \kappa \times \text{LnSize}_{it} + \gamma \times \text{Director}_i + \delta \times \text{Institution}_i + \theta \times \text{Risk}_i + \eta \times \text{Age}_i + \lambda \times \text{Education}_i + \Psi_{\text{ind}} \times \text{Dumindustry}_i + \omega_t \times \text{Dumyear}_t + e_{it}$ , where  $W_{it}$  is the annual pay of firm  $i$  CEO in year  $t$ . Non-owner is a dummy variable equal to 1 for non-owner CEOs, and 0 otherwise. Partner<sub>*i*</sub> is a dummy variable equal to 1 for CEOs in firms controlled by a few business partners, and 0 otherwise. RET<sub>*it*</sub> and RET<sub>*i,t-1*</sub> are the annual stock returns in years  $t$  and  $t-1$ , respectively. Lev<sub>*it*</sub> and Size<sub>*it*</sub> are firm leverage and total assets at the end of year  $t$ , respectively.  $\Psi_{\text{ind}} \times \text{Dumindustry}_i$  controls for firm industry and  $\omega_t \times \text{Dumyear}_t$  controls for calendar year  $t$ . The rest of the variables are as defined in Table 3. The number of observations is 868 (=124 × 7).

\*\* Significance at the 5% level.

\*\*\* Significance at the 1% level.

Finally, to examine the impact of “edge effects”, we identified 15 CEOs who left their companies during 2002. In 2001 these CEOs might have received some extraordinary pay as a prepayment for their separation from the firm, which could distort our estimates. We add to Table 4 regressions a dummy variable equal to 1 for these CEOs in 2001. The coefficient of this dummy variable is positive and statistically significant. However, the statistical significance of all the other explanatory variables does not change. Thus, our conclusions remain intact.

## 5. Summary and conclusions

This study examines owner and non-owner CEO pay in closely held companies. Using annual data on a sample of 124 closely held Israeli firms in the period 1994–2001 we find support for the hypothesis that owner CEO pay is higher than non-owner CEO pay. All other things equal, owner CEO pay exceeds that of non-owner CEO by about 50%.

We also estimate that the pay performance elasticity of owner CEO is about half of that of non-owner CEO. However, the difference in pay elasticity between owner and non-owner CEO pay is statistically insignificant, preventing us from drawing any strong conclusions on this issue.

Last, we cannot find any significant difference in pay or pay performance sensitivity between owner CEOs in family firms and owner CEOs in firms controlled by business partners. The organizational form of the control group (family or partners) does not appear to significantly impact CEO pay.

Our evidence is most consistent with the exploitation view. According to this view, owner CEOs extract private benefits from the firm in the form of inflated pay and reduced pay performance sensitivity. However, given that owner CEO wealth is heavily invested in the firm and is highly sensitive to firm's stock performance, it is arguable that the evidence also is potentially consistent with the managerial discretion hypothesis. For if we focus on wealth, the owner CEOs receive higher pay and are subject to higher wealth performance sensitivity, just like the managerial discretion hypothesis predicts.

Future studies should try to verify our results, especially with respect to our differentiation between owner CEOs in family and in partner-controlled firms. Future research can also extend the study to other parameters such as firm valuation. The ritual call for further research is reiterated.

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