

‘THE ‘ONE MILLION CLUB:’ EXECUTIVE COMPENSATION AND FIRM PERFORMANCE

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Using data for the 186 public corporations in which the CEO’s total annual remuneration exceeded NIS 1 million in 1997, we examine the statistically significant variables affecting the CEO’s salary and the mean compensation of the five top executives. The results of our cross-sectional examination display greater uniformity than those of other studies as regards the positive and significant effect of the size and performance variables, although the estimated sensitivity of wages to performance was greater than that reported in empirical studies in Israel and abroad. We estimate a sensitivity level of 0.325, which can be translated into average growth of NIS 85,000 rise in the CEO’s annual remuneration associated with a rise of NIS 10 million in the firm’s profits. Against the backdrop of the existence of external and internal controlling mechanisms, which constitute an alternative to drawing up a performance-sensitive employment contract, we examine policy regarding the CEO’s compensation in the framework of the firm’s capacity to cope with the agency problem. In this context, a significant correlation was found between a CEO’s compensation and four substitute controlling mechanisms: monitoring by major shareholders, by mutual funds, by debt-holders, and dividend policy.

One of our most interesting findings was that in 112 of the 186 companies in the sample there was a personal relationship between the holders of a controlling interest and the CEO. We also found that even though firms with a professional CEO were generally larger and more profitable, the overall compensation their CEOs received did not differ significantly from that paid to the CEO in firms where he had a close relationship with the holders of a controlling interest, although the proportion of the operating profit represented by the CEO’s compensation in these companies was 2.6 times as great as it was in companies where no such relationship was found.

One of the conclusions of our analysis is that, *ceteris paribus*, the total compensation awarded to a CEO will be 30 percent higher in a company where his connection with the major shareholders goes beyond natural business relations.

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1. INTRODUCTION

In recent years there has been growing public criticism of the high salaries paid to the CEOs (Chief Executive Officers) of Israel's public corporations. The criticism relates to both the remuneration received and the low level of sensitivity of the CEO's compensation to the company's business performance as expressed in its financial statements and share prices. The main contention is that a contractual agreement between the owners and the CEO which is not based on the firm's performance does not motivate him to act on behalf of all the corporation's shareholders, on the one hand, and enables the major shareholders to withdraw profits without sharing them with the other shareholders, on the other.

The separation of ownership and control which characterizes modern public corporations embodies benefits deriving from specialization in both ownership and management, but is also accompanied by agency problems between the shareholders and the CEO. Since the former are unable to define *ex ante* or examine *ex post* all the possible scenarios, they appoint the CEO as their agent in the decision-making process, limiting their role to defining the mechanisms for monitoring and supervising his actions. The direct monitoring mechanisms put in place by the shareholders or their agents are only part of the structure for supervising the corporation and the CEO, including threats of various kinds from the business and legal environment in which the corporation operates as well as internal and external mechanisms such as monitoring by institutional investors, stakeholders, and others. The formulation of the employment contract is one of the most important internal mechanisms, serving to reduce conflicts of interest between shareholders and the CEO, and reducing the cost to the corporation due to the existence of the agency problem. The need to formulate a performance-sensitive employment contract is based on both the business environment in which the corporation operates and the substitution relations between the internal and external mechanisms serving to reduce agency costs. The ability to formulate a contract according to which a CEO's compensation will be substantially reduced if the company's performance falters is limited, since in most cases the extent of risk borne by the CEO is significantly smaller than that borne by the shareholders.¹

An examination of compensation policy in public corporations in Israel is particularly interesting in view of the trend of the last few years by which the principal shareholders of corporations prefer to appoint their associates to key positions within a company, and particularly to the post of CEO.² An appointment of this kind, in which the agent's personal loyalty to his nominator plays an important role, could reduce conflicts of interest, and hence also the need to construct a more efficient system of monitoring and control, as well as the need to formulate a performance-sensitive contract in order to contend with the agency problem.³

¹ There is also a risk that imprecise formulation could motivate the CEO to act against the interests of the shareholders. Thus, for example, a connection between salary and profits could lead to short-termism, serving to increase profits in the short term at the expense of long-term investment and R&D. For the development of more precise indices of performance, such as managerial value added, see, e.g., Bar-Yosef and Talmor (1995).

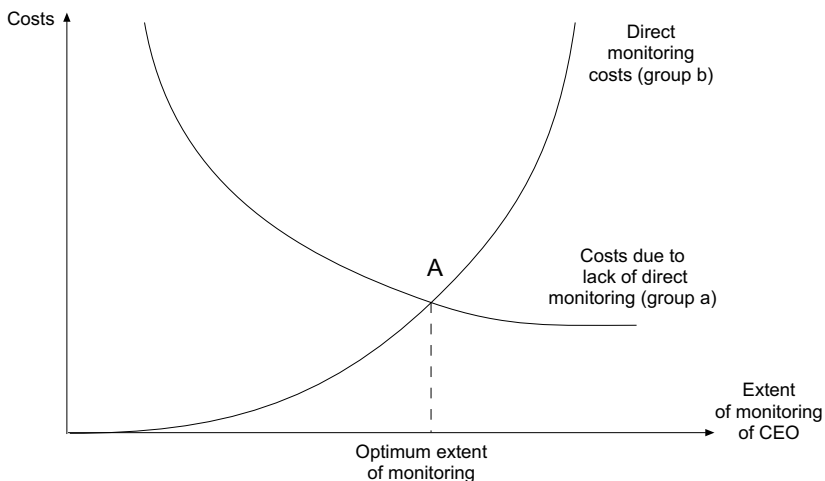
² Thus, for example, in 60 percent of the corporations in the sample the CEO was appointed directly by the corporation's chief shareholders.

³ Although the reference in this article is to shareholders as one group, note that an appointment of this kind enables holders of a controlling interest to withdraw profits from a corporation without having to share them with external shareholders, thereby intensifying the agency problem that exists between holders of a controlling interest and external shareholders (see Hauser et al, 1996).

The costs to the corporation arising from the existence of the agency problem can be divided into two groups.⁴ The first includes all the costs to shareholders which derive from asymmetry of information and conflicts of interest between them and the CEO. Costs of this kind could be expressed by action taken by the CEO which is not at the optimum level required of him in order to further the interests of the shareholders. Baumol (1967) claims that the CEO generally acts to increase the welfare of the shareholders, but could seek the minimum level of profits that would satisfy them, beyond that utilizing the profits for his own benefit. The limited ability of the CEO to tolerate risk compared with that of the shareholders, and their different points of view with regard to the risk dispersal that accompanies the company's activity, constitute additional sources of conflicts of interest between the two. The CEO's ability to disperse risk is restricted to the politico-business environment in which the corporation operates, in contrast with the shareholders, who aspire to disperse risk via their investment portfolio.

The second group of costs includes the shareholders' direct costs incurred in reducing damage to them due to the existence of the agency problem. These costs include *inter alia* that of establishing and maintaining a system of monitoring and supervising the senior executives, the direct costs of a mechanism of reporting to the owners, the costs to the investors of seeking and gathering and information, and costs arising from the need to interpret the signals provided by the CEO with regard to his performance. According to the substitutability between the direct and indirect costs (Figure 1), a rise in direct control will serve to reduce the costs due to

Figure 1
Optimum Extent of Monitoring



⁴ Jensen and Mecklin (1976) define another cost to the corporation arising from the existence of the agency problem, namely, the cost due to the CEO's desire to limit the damage his decisions might cause to the shareholders.

lack of supervision and the agency problem.⁵ It is worthwhile for shareholders to invest in direct monitoring as long as the utility from increasing the level of control and reducing the agency problem (reducing agency costs) is higher than that required to obtain the same level of supervision. The optimal level of supervision will be obtained at the point where the marginal and direct cost is equal to the marginal utility of increasing control and reducing agency costs.⁶ The main question addressed in this article is the extent to which the CEO's compensation is sensitive to the corporation's performance, and which factors affect his compensation. The compensation policy pertaining to the CEO and the senior executives is examined *inter alia* in relation to the means of internally and externally monitoring his activities, constituting an alternative to linking compensation to performance in dealing with the agency problem by the shareholders.

The article is divided into five parts. In Part 1 we present the hypotheses, Part 2 presents the model and the variables, in Part 3 we describe the sample and the data, Part 4 gives the statistical estimation and its results, and Part 5 contains our conclusions and recommendations for future research on the subject.

2. HYPOTHESES

The principal hypotheses we examine are the following:

1. The sensitivity of senior executives' remuneration in the Israeli market to the performance of the corporations they manage is limited.
2. Both the level of the CEO's compensation and its sensitivity to the corporation's performance are inversely related to the existence of internal and external supervisory mechanisms, which constitute an efficient alternative to supervising the CEO's performance by means of a performance-sensitive contract.

The working hypotheses regarding the direction of influence and level of statistical significance for each variable chosen to explain the variance of the CEO's compensation are presented in Table 1 and are based on an extensive review of the literature, some of which is given in the third column. A brief account of the connection between the variable and compensation policy is presented in the fourth column. A fuller discussion of the variables and the literature is given below.

⁵ Although most studies support both the substitutability between external and internal supervisory mechanisms, and that between these mechanisms and the sensitivity of wages and performance, some evidence indicates that there is complementarity between some supervisory elements. Thus, for example, Holmstrom and Tirole (1993) addressed the relation between market supervisory mechanisms and the formulation of a performance-sensitive contract, claiming that neither could operate on its own, and there was interaction between them in an effective CEO supervisory system. In addition, Childambaran and John (1999) use a theoretical model to describe the possibility of complementarity between a performance-sensitive contract and institutional investors, in a situation of asymmetrical information, with regard to the possibilities of investing in the company open to the CEO and the shareholders. Empirical support for this view is provided by Hartzell and Starks (2000).

⁶ Nonetheless, increasing the extent of supervision could in certain cases reduce the level of sensitivity and complicate the decision-making process in the corporation while impairing both the CEO's output and the corporation's performance.

Table 1
Review of Literature, and Hypotheses Regarding Type of Influence and Level of Significance of Variables Chosen to Explain Variance of CEO’s Salary¹

Variable or group of variables	Forecast wage elasticity	Evidence of use of variable analysis of CEO’s salary or of effect on agency problem between owners and CEO	Comments
1 Size variable Ln(Asst)	$H_0: \beta_1 > 0$ $H_1: \beta_1 \leq 0$	Cosh (1975), Finkelstein and Hambricks (1989), Conyon and Leech (1994), Goldberg and Idson (1995), Hauser et al. (1996).	Size of company serves as main estimate of complexity of management and relative importance of CEO’s decisions.
2 Performance indices Ln(Ebit), Ln(Eps97), Ln(Eps96), Ln(Stock-Ind)	$H_0: \beta_{2-5} > 0$ $H_1: \beta_{2-5} \leq 0$	Jensen and Murphy (1990), Rosen (1992), Hubbard and Gilson and Vetsuypens (1993), Palia (1994), Main, Bruce and Buck (1996), Hauser et al. (1996).	Main estimate of changes in shareholders’ welfare. System of incentives based primarily on CEO’s success in increasing company’s resources.
3 Operational efficiency ² Ln(Salesemp)	$H_0: \beta_6 > 0$ $H_1: \beta_6 \leq 0$	Jensen (1986).	Compensation for downsizing and better utilization of company’s resources.
4 Financial leverage Ln(Leverage)	$H_0: \beta_7 < 0$ $H_1: \beta_7 \geq 0$	Jensen (1986), Friend and Lang (1988), Dempsey, Laber and Rozeff (1999), Gaver & Gaver (1993), Crutchley et al. (1999).	Supervision by banks and other lenders as alternative to performance-sensitive contract.
5 Distribution of dividend Dummy(LnDiv)	$H_0: \beta_8 < 0$ $H_1: \beta_8 \geq 0$	Gaver & Gaver (1993), Rozeff (1982), Eastbrook (1984), Dempsey, Laber and Rozeff (1993), Crutchley et al. (1999), Hauser et al. (1996).	Reduction of equity, renewed raising of capital as alternative means of supervision of CEO. Ways of withdrawing profits as alternative to salary for holders of controlling interest, and reduction of free cash flow.
6 CEO-owners Dummy(LnCEO)	$H_0: \beta_9 > 0$ $H_1: \beta_9 \leq 0$	Auerbach and Siegfried (1974), Smith and Watts (1992), Joskow, Rose and Shepard (1993), Hubbard and Palia (1994).	Salary constitutes return on investment, hence is expected to be higher. However, reduction of agency problem and of need for performance-sensitive salary as means of supervision.

Table 1 (continued)

Variable or group of variables	Evidence of use of variable analysis of CEO's salary or of effect on agency problem between owners and CEO	Comments
7 Percentage held Ln(Ownprec)	Forecast wage elasticity $H_0: \beta_{10} < 0$ $H_1: \beta_{10} \geq 0$	Alternative supervisory mechanism: when ownership is more centralized, supervision is greater. However, possibility of withdrawing profits is also greater.
8 Institutional investors Ln(Funds)	$H_0: \beta_{11} < 0$ $H_1: \beta_{11} \geq 0$	Increased supervision of CEO, both directly via active intervention and indirectly via threat to sell shares and send negative signal to capital market, thereby hampering future efforts to raise capital.
9 Industry Dummy(LnIndustry)	$H_0: \beta_{12} \neq 0$ $H_1: \beta_{12} = 0$	Different wage policy in different industries according to business and legal environment, competition, threat of hostile takeover, and sophistication and saving in each industry.
10 Age of company Ln(Compage)	$H_0: \beta_{13} > 0$ $H_1: \beta_{13} \leq 0$	Age of company is estimate of its stage in business cycle, growth rate, investment policy risk, etc.
11 Period since company has gone public Ln(Publicage)	$H_0: \beta_{14} > 0$ $H_1: \beta_{14} \leq 0$	If a company is a public corporation it is required to submit reports and be open to public scrutiny. The effect of this on wage policy is a function of the intensity of the scrutiny and time.
12 Age of CEO Ln(CEOage)	$H_0: \beta_{15} > 0$ $H_1: \beta_{15} \leq 0$	An estimate of human capital, including remuneration for experience as CEO, business ties, personal reputation, etc.
13 CEO's seniority in company	$H_0: \beta_{16} < 0$ $H_1: \beta_{16} \geq 0$	The CEO moves from one company to another, in order to obtain higher remuneration, reaping the benefits of his past successes.

^a The table reviews the use made in the literature of each of our variables. The first column gives the explanatory variables, the second the hypotheses regarding the effect of each variable, based on a review of the theoretical and empirical literature, some of which is presented in the third column. The last column summarizes the relation between the variable and the corporation's wage policy.

^b Operational efficiency is estimated via the ratio of annual sales to number of employees.

3. THE MODEL AND THE VARIABLES

Our examination of policy regarding CEO remuneration is based on the following model:

$$f \left(\begin{array}{ccccc} \text{Size} & \text{Performance} & \text{Ownership and} & \text{Financial} & \text{CEO's} \\ \text{variables} & \text{variables} & \text{industry} & \text{policy} & \text{character-} \\ & & \text{structure} & & \text{istics} \end{array} \right) = \text{CEO's compensation}$$

The corporation's compensation policy and the link between compensation and performance are examined with respect to five main groups of independent variables, reflecting the corporation's business activity, ownership structure, financial policy, the industry to which it belongs, and variables describing the CEO, which could also explain some of the variance in salaries.

CEO compensation

The dependent variable is the natural logarithm of the CEO's total remuneration in 1997, as reported in the statement submitted by the corporation's board of directors under section 123a of the Companies Ordinance. The CEO's remuneration includes his net compensation plus associated emoluments, e.g., pension fund and severance remuneration contributions, as well as additional benefits such as a company car, etc. It does not include contributions and remuneration of a nonrecurring nature, such as severance remuneration. Part of the CEO's remuneration is non-financial, and hence is not expressed in the financial statement.

Jensen and Murphy (1990) claim that a CEO's nonfinancial benefits, such as power, respect, prestige, etc., serve as an incentive for the CEO only to the extent that they are linked to the corporation's business performance. Hence, the assumption in this case is that the CEO's nonfinancial remuneration is expressed by the size and performance variables.

We have chosen not to include the options granted to CEOs in the independent variable, primarily because the empirical evidence suggests that the factors that influence a CEO's compensation differ from those that affect remuneration that includes options. In the context of this evidence, examining remuneration including options could be misleading, leading to imprecise conclusions about the effect of the external and internal mechanisms for supervising the CEO's decisions, and even distorting conclusions regarding the nature of the connection between the corporation's performance and the CEO's compensation. Finkelstein and Hambricks (1989) examine the influence of different variables on both the CEO's total remuneration (wage-associated benefits and options) and compensation alone, and find that some variables are significantly correlated with compensation, but only slightly and not significantly correlated with total remuneration. Further evidence is provided by Brian, O'Reilly and Crystal (1994), who report inverse relations between the effect of the variables characterizing the CEO and his compensation excluding options, and between their influence on the CEO's remuneration including options. According to Mcknight (1996), a CEO's compensation should be divided up into the basic compensation and annual bonuses and other components, because the results of his empirical study show that in some situations important variables, such as the corporation's size, have a significant effect on the CEO's compensation, but only a partial one on annual bonuses and other components.

Additional reasons for excluding options from the calculation of the CEO's remuneration relate to the supervision of the way options are priced, as in most cases these are not tradable options, and to the problem of gathering precise data, such as the exercise date, strike price, and other figures needed in order to efficiently price options. Furthermore, in many cases the market value of the shares does not reflect the corporation's real value, and is influenced by many factors which the CEO cannot control.⁷ Thus, for example, in a situation in which the entire market trend is upwards, the CEO could conceivably benefit from a far higher remuneration than he deserves, considering his performance and efforts on behalf of the shareholders. On the other hand, when the market is falling, options of this kind could evaporate in a short space of time and lose all value as an incentive.⁸ The present article could serve as the basis for a comparative study of the factors affecting a CEO's total remuneration and those impacting on his compensation in public corporations in Israel.

The independent variables

We have divided the variables chosen to explain the variance of the policy regarding the CEO's remuneration into the following five groups: variables representing the results of the corporation's business activity, those representing the corporation's size, those representing the corporation's ownership structure and industry, those describing the corporation's financial policy, and those describing the CEO.

The company's performance

The first group includes five performance indices, four of them accounting indices based on the financial statements and representing the corporation's accounting profitability and operating efficiency.⁹ The fifth index reflects the performance of the corporation's shares in the market, comparing this with the annual return in the relevant industry. Our basic assumption is that shareholders' main aim is to maximize the corporation's value while increasing operational efficiency. Consequently, the group of variables representing the corporation's reported business activity, together with the index of relative return, provides the main estimate of a change in shareholders' welfare as a result of the CEO's activities.¹⁰

⁷ For further discussion of this subject, see Hall and Liebman (1998).

⁸ This contention is reinforced by the sharp falls in world stock markets, following the bursting of the high-tech bubble, and falls in capital markets in general, as well as the terrorist attacks in Israel and abroad. These grave events could not be controlled by the CEO yet impair profits and leave him without a real incentive to act in order to advance the interests of the shareholders. For further discussion, see Conyon and Gregg (1994) and Gregg et al (1995).

⁹ The principal argument against using indices based on financial statements relates to the fact that they are subject—albeit only partly—to the CEO's direct influence, and also refer to the short term, whereas the object of shareholders is to maximize the firm's value in the long run. For further discussion, see Lambert and Larcker (1987) and Sloan (1993).

¹⁰ The CEO's employment contract is a result-oriented one according to which the shareholders do not examine his performance but rather focus on examining the results of those activities which also depend to a great extent on external events. The importance of the CEO's activities and their contribution to the corporation's profitability is examined *inter alia* by analyzing incidents in which the CEO is replaced and it is reported that this has a significant effect on the market price of the corporation's shares. See, for example, Warner, Watts and Wruck (1988)..

The group of performance variables occupies a central position in the analysis of a corporation's compensation policy. Empirical studies generally reveal a positive correlation, albeit not always a statistically significant one, between a corporation's performance and the CEO's compensation. In most cases the correlation is weak and does not adequately motivate the CEO to promote the shareholders' interests. For example, in the comparative study undertaken for a sample of 220 companies in the UK and 915 companies in the US in 1989, Brian, O'Reilly and Crystal (1994) find sensitivity of 0.087 for the CEO's compensation relative to profitability in the US, and 0.122 in the UK. Gilson and Vetsuypens (1993) find a direct relation between poor corporate performance and reduction of the CEO's remuneration, and report that poor results led to the replacement of about one third of the CEOs, while those that remained suffered an average 36 percent compensation cut. Further empirical results are provided by Conyon and Gregg (1994), Rosen (1992), and Mcknight (1996).

Five variables are examined in this group. The first is the natural logarithm of operating profit in 1997, where financing costs are excluded. The second variable is the natural logarithm of earnings per share in 1997, where profits from activities of a nonrecurring nature and exceptional events are excluded. The third variable examines the natural logarithm of earnings per share in 1996, in terms of 1997 NIS, under the assumption that the CEO's compensation in that year could serve as compensation for performance in the previous one. The fourth variable is the natural logarithm of the ratio between annual turnover and the number of employees in 1997, and expresses the corporation's operating efficiency. The fifth variable is the natural logarithm of the ratio between the annual return on the corporation's shares on the stock market and the return for the industry as a whole, as classified by the stock market.

Company size

The second group of variables estimates the company's size, as this is one of the most important components in examining the CEO's compensation. Company size serves as the main proxy for the complexity of the CEO's managerial ability and responsibility, the relative importance of his decisions, and also the corporation's standing within its industry and in the market in general. Most empirical studies find a positive, statistically significant relation between the CEO's compensation and variables representing company size, although in most cases this is weak and does not provide substantial motivation for the CEO to act in order to advance shareholders' interests. Thus, for example, Cosh's (1975) study of 1,500 UK companies in 1969–71 showed that if the company's assets rose from £ 10 million to £ 100 million this led on average to a relatively modest increase in the CEO's annual compensation—from £ 16,740 to £ 25,900. In a study encompassing all Israel's public corporations in 1994, Hauser et al (1996) estimate sensitivity of 0.28 in the CEO's compensation to company size; this result is in line with empirical studies in the UK and the US, which also estimate the sensitivity of the CEO's compensation to the size variables as 0.2–0.3 (see also Finkelstein and Hambrick, 1989; and Conyon and Gregg, 1994).

Two variables were examined as estimators of the effect of size on policy regarding the CEO's compensation. The first was the natural logarithm of the total assets available to the company in 1997, and the second was the natural logarithm of the number of employees in the company at the end of 1997.

Financial policy

The increased sensitivity of the CEO's compensation to the company's performance is an important tool for coping with the agency problem but not the only one as the CEO's decisions are subject to control by various bodies inside and outside the corporation. The third group of variables examines the corporation's financial policy as an alternative means of control, assuming substitutability between the means of supervision and performance-sensitivity as mechanisms of control and of reducing agency costs. In other words, the assumption is that the need to formulate a performance-sensitive contract as a method of supervision declines as the means of controlling the CEO's decisions by other means rises.

The first variable in this group is the natural logarithm of the company's financial leverage, calculated by dividing its total liabilities by its equity in 1997. An important source of monitoring the activity of a corporation in general, and of its CEO in particular, is that effected by its creditors, including banks, corporate bond-holders, etc.¹¹ Friend and Lang (1988) find a direct relation between increased leverage and reduced agency costs in a company. Jensen (1986) reports a negative and statistically significant correlation between both financial leverage and the CEO's compensation, and financial leverage and the sensitivity of the CEO's compensation to corporate performance. His main contention is that a rise in a company's financial leverage increases control over it by its creditors and hence reduces the need for compensation for the CEO that is sensitive to the company's performance. Israel's capital market is characterized by a concentrated banking system which controls a large part of the capital available to firms. Yosha and Yaffe (1996) claim that the level of the banks' supervision and involvement in credit to companies has risen in recent years because in the past the banks served as a channel for government lending, and so the fact that they were large creditors did not serve as an incentive for them to monitor the CEO's activities. Because of increased competition between the banks and reduced government involvement, the banks' considerations are more of a business nature, and hence their monitoring of the CEO can be expected to increase as financial leverage rises.¹²

The second variable in this group is a dummy variable that takes the value $Ln(2)$ if the company has paid a dividend or decided to do so in 1997, and $Ln(1)$ otherwise. The corporation's dividend policy is examined by means of two aspects which have a similar effect on compensation policy. First, the dividend policy constitutes an alternative means of control to the policy regarding the CEO's compensation. Non-remuneration of a dividend and retention of profits by the corporation increases liquidity and reduces the need of the company in general, and the CEO in particular, to attempt to raise capital via the stock or bonds market, and hence *inter alia* lowers supervision over the CEO's activities and decisions. Thus, for example, Rozeff (1982) reports a decline in agency costs in companies which remuneration

¹¹ For a comparison between financing via the stock markets and from banks regarding means of control, availability of information, and other differences, see Yosha and Yaffe (1996).

¹² Jensen and Meckling (1976) present the agency costs to the company due to the existence of debt. They claim that it is in the interests of the CEO (and the shareholders, who are on the same side in this respect) to operate at a higher level of risk than creditors *ex post*, and hence the CEO is likely to voluntarily suggest that his actions and ability to cause damage be limited *ex ante*. It may also be assumed that the greater the leverage, the greater the agency costs to creditors, and hence the level of supervision they (or the company's creditors) exercise over the company's activities in general, and those of the CEO in particular, will rise.

dividends.¹³ Second, policy regarding the CEO's compensation could serve as a substitute for dividend policy as a means of withdrawing profits by major shareholders in the corporation. Hauser et al (1996) report a substitution relation between the CEO's compensation and dividend policy as a means of withdrawing profits by holders of a controlling interest in the corporation. The decision regarding which method to use is a function of the ability and motivation of the major shareholders to withdraw profits solely by means of compensation instead of distributing them to all the shareholders, thereby exploiting minority shareholders. Empirical support for this is provided by Gaver and Gaver (1993), who find that in companies which are expanding there is a negative relation between the CEO's compensation and dividend distribution.

Ownership structure

The company's ownership structure influences the agency problem between shareholders and the CEO in two ways. First, by defining the depth of the problem, so that, for example, the larger the proportion of shares in the company held by the CEO, the smaller the distinction between ownership and management and the greater the part played by the CEO (as a shareholder) in the direct cost (or profit) of his decisions, *inter alia* via changes in the value of his holdings. In this case, the agency problem is smaller, so that the need to formulate a performance-sensitive employment contract also declines. Second, the ownership structure defines the incentive of each shareholder to monitor the activities of the company in general, and of the CEO in particular, thus providing an estimation of the level of direct supervision as an alternative to formulating a performance-sensitive contract.

There are five variables in this group. The first is a dummy variable that takes the value $\ln(2)$ in companies whose CEO is connected with the controlling shareholders, and $\ln(1)$ otherwise. Using this variable it is possible to examine whether the CEO is a professional, whose compensation represents compensation solely for his decisions, or is directly or indirectly connected with the holders of a controlling interest. If the latter is the case, it is reasonable to assume that for the holders of the controlling interest the CEO's compensation represents an alternative to a dividend, and a way of withdrawing profits. Goldberg and Idson (1995) report a positive albeit non-significant relation between the CEO's compensation and the dummy variable linking the CEO with the holders of the controlling interest. At the same time, when the CEO is connected to the holders of the controlling interest personal loyalty and the extra-professional association (e.g., family ties) replace the need for monitoring, and so the compensation and its sensitivity may be expected to be lower. Our view is that in the centralized control structure that characterizes many of Israel's corporations the most reasonable assumption to make is that there is a positive correlation between the CEO's compensation and his connection with the holders of the controlling interest.

The second variable examines the company's ownership structure, and is calculated by means of the natural logarithm of the sum of the percentage of share capital held by holders of the controlling interest.¹⁴ One of the principal means of supervising the CEO's activities is

¹³ Additional empirical support, using later samples and industry adjustment, is provided by Dempsey, Laber and Rozeff (1993) and Crutchley et al (1999).

¹⁴ The holder of a controlling interest is defined in the Securities Law, 5729-1968 as someone who directly or indirectly holds 5 percent or more of a firm's equity or voting power, and anyone who is entitled to appoint a company director, the director himself, or the CEO.

direct control by the owners and their representatives on the company's board of directors, constituting part of the process of decision-making and monitoring the company. The extent of direct supervision of the CEO is affected by the ownership structure and the composition of the board of directors.¹⁵ Jensen and Murphy (1990) claim that closer supervision by the board of directors constitutes an alternative means of control to a performance-sensitive employment contract. De Alessi (1973) contends that the wider distribution of shares causes the cost of acquiring information to exceed its utility for each small shareholder. He asserts that wider dispersal is accompanied by a decline in direct monitoring of the CEO's activities by the owners, as well as by a lower likelihood that the CEO will be dismissed in the wake of the company's poor performance, and this could cause the CEO to increase his personal welfare at the expense of the shareholders. In a study of the 500 largest firms in the US in 1980, Goldberg and Idson (1995) examine the relation between the CEO's compensation and the company's ownership structure, and find an inverse relation between the extent of centralization and the CEO's total remuneration. The claim of substitutability between centralization of ownership as a mechanism of control and the CEO's compensation is borne out by other studies, e.g., Santerre and Leun (1986) and Dyl (1988). However, other studies, such as Lichtenberg and Pushner (1992), show that a rise in the extent of ownership in the hands of stakeholders isolates the company from market forces and reduces its ability to cope with unexpected crises.¹⁶ Note, too, that in a more centralized structure the CEO's compensation is likely to constitute a means of withdrawing profits from the company by the major shareholders without sharing them with the other shareholders.¹⁷

The third—and last—variable for examining the company's ownership structure is the natural logarithm of the proportion of share capital held by funds. Monitoring the CEO by the shareholders is hampered by the 'hitch-hiker' problem, i.e., an investor who seeks to monitor the CEO in order to improve the company's performance will bear a large part of the costs involved on his own but will share the profits (from the reduction of agency costs) with all the other shareholders. This problem limits the ability and motivation to deploy mechanisms for controlling the CEO to large investors.¹⁸ Institutional investors constitute a large group of investors (with a high level of motivation) with the capacity to deploy mechanisms of controlling and monitoring the activities of the CEO. Two main strategies define the response of institutional investors to poor performance by the CEO and the company in which they have shares.

The first strategy is to act as a passive investor and sell their holdings in the market. Supervision of the CEO is indirect in this case, as the threat to sell shares and reduce their market price, as well as the threat not to buy new share issues, sends a negative signal to the

¹⁵ The importance of the composition of the board of directors, as a means of control, for improving performance has been examined in many studies, the results of which are not unequivocal. Thus, for example, Mace (1971) and Brickley and James (1987) find a significant correlation between the composition of the board of directors and the company's performance, while Baysinger and Butler (1985) do not.

¹⁶ According to this approach (managerial entrenchment theory), a rise in the extent of ownership in the hands of the CEO could lead to an increase in agency costs, as it isolates the CEO from the external threats of the market. Empirical support for this may be found in Schooley and Barney (1994).

¹⁷ Hauser et al (1996) find a non-linear relation between the extent of centralization and policy regarding the CEO's salary; according to this the higher the centralization the greater the ability of the shareholders to withdraw profits by salaries, but at the same time it also reduces their motivation to do this, relative to the alternative decision to pay a dividend.

¹⁸ See, for example, Shleifer and Vishny (1986) and Huddart (1993).

market regarding the company's activity and prevents it from acting to raise capital. The second strategy is to act as an active investor, in an attempt to control and influence the company's policy. In recent years institutional investors appear to have expanded their active involvement, both by directly supervising the activities of companies in which they have shares and by exerting political pressure to change the regulatory environment defining their rights as shareholders.¹⁹

Crutchley et al (1999) and Bathala, Moon and Rao (1994) find that institutional investors are liable to serve as a substitute for expanding the proportion of holdings in the hands of the CEO and increasing financial leverage by monitoring the agency problem. Interesting evidence from the Japanese capital market is provided by Lichtenberg and Pushner (1992), who claim that, as a mechanism for monitoring the agency problem, active intervention by institutional investors replaces the external threat of a hostile takeover, which barely exists, for reasons which are unique to that market. Hartzell and Starks (2000) find a negative correlation between the proportion of holdings in the hands of institutional investors and the level of the CEO's compensation. However, they claim that the positive relation between the proportion of holdings held by institutional investors and the sensitivity of the CEO's compensation to the company's performance also attests to complementarity between them in reducing agency costs to the company.²⁰

Under section 77 of the Mutual Funds Law of 1993, mutual funds in Israel must vote on the salaries of senior executives and submit a report of this to their members and the Securities Authority.²¹ Magen (1997) analyzes the results of the votes of representatives of the Israeli funds regarding about 400 proposals not classified as ordinary over a period of nine months, and finds that 41.3 percent of them deal directly with the CEO's remuneration. He also finds that the rate of non-participation by the funds in votes regarding senior executives' remuneration was particularly high and reached 54.4 percent. Further empirical evidence of the activity of the funds in Israel's capital market is provided by Rosberg (1997), who points to the reduction of agency costs as a result of the funds' increased involvement in monitoring companies following the implementation of the Mutual Funds Law.

The company and the business environment

The fourth group of variables examines the company and its business environment, and includes several mechanisms for monitoring the CEO's decisions. Some of these are external, such as monitoring by the industry, while others, such as supervision by the shareholders or their representatives, are internal.

The first variable in this group is the natural logarithm of the number of years since the company was founded. Gaver and Gaver (1993) find that the policy regarding the CEO's compensation, the policy of dividend distribution, and the control structure differs in new (growth) companies from that in veteran ones. They report a negative correlation between the

¹⁹ For a discussion of the forms of intervention, institutional investors' considerations, and the efficacy of forms of involvement, see Pound (1992), Wahal (1996), and Del-Guercio and Hawkins (1999).

²⁰ Murphy (1995) offers a slightly different explanation, i.e., that the demand by funds to reduce the CEO's salary will be countered by a justified demand by the CEO to reduce the level of risk, namely, to lower the sensitivity to performance of his salary.

²¹ The law defines the obligation to participate in subjects which could affect the interests of the mutual fund's members, stressing that this may be the case in transactions with stakeholders.

age of a company and the CEO's compensation, as new companies generally remunerate their CEOs more. The second variable examines the natural logarithm of the number of years in which the company is incorporated as a public corporation. A company which goes public must submit periodical reports of the results of its business activities and each transaction with a party at interest or any other substantial activity, and is hence subject to public supervision. The hypothesis we examine concerns the effect of public supervision over time, and whether the sensitivity of the CEO's compensation to the company's performance is related directly to the level of control and the length of time in which the company has been exposed to public scrutiny.²²

The third variable is a dummy variable that defines companies according to the accepted by-industry distribution, as designated by the TASE (Tel Aviv Stock Exchange). The agency problem between the shareholders and the CEO is expected to be at a different level for different corporations, in accordance with their technological level and the risk with which they operate. Hence, the by-industry definition, which describes the company's business and legal environment, can provide an estimate of the expected level of the agency problem. Demsets and Lehn (1985), for example, find that the agency problem between shareholders and the CEO is expected to be graver in industries in which the level of risk is higher and the level of sophistication required of the CEO is greater, and also in industries in which the CEO's potential nonfinancial consumption is larger. The industry also defines the company's external mechanisms of controlling the CEO's decisions, such as the level of competition, the threat of a hostile takeover, or the extent of supervision by the authorities. The extent of centralization in the industry and the existence of entry barriers are examined by Auerbach and Siegfried (1974) as an estimate of the level of competition within which the company operates, and which they claim constitutes a mechanism for controlling the CEO's decisions. Smith and Watts (1992) report that both the CEO's compensation and its sensitivity to performance are higher in high-tech industries. Further complementarity is found between mechanisms of supervision by Joskow, Rose and Shepard (1993), who report that in regulated firms the CEO's compensation is lower, as is its sensitivity to performance. Hubbard and Palia (1995), who examine 147 banks at the end of the 1980s, also find that in unregulated banks CEO's salaries are higher, as is their sensitivity to performance. Conyon and Gregg (1994) focus on the likelihood of a merger and hostile takeover for companies in various industries in the wake of poor performance as another source of controlling a CEO's activities.

Characteristics of the CEO

The last group contains three variables which characterize the CEO; his age and seniority in the company, and the nature of the relation between the CEO and the owners. By means of the last variable we can examine whether some of his compensation in effect constitutes the withdrawal of profits from the company by the owners of a controlling interest at the expense of the members of the public who are shareholders. Bartlett and Miller (1988) examine other variables which are characteristic of the CEO, such as gender and education, but we have chosen not to use them to explain compensation variance because most of the CEOs in our sample are men with university degrees.

²² As Richard Bridan, chairman of the American SEC, put it: "The best protection against abuses in executive compensation is a simple weapon—the cleansing power of sunlight." For an empirical example, see Marilyn et al (1997), who find a significant relation between public scrutiny (as expressed in negative press reports) and the CEO's salary, as well as between it and the sensitivity of his salary to performance.

The first variable is the natural logarithm of the CEO's age, representing an estimate of the experience and human capital he brings to the job. Joskow, Rose and Shepard (1993) find a positive and significant correlation between the CEO's age and his compensation. Another aspect of this is presented by Jensen and Murphy (1990), who link the probability of dismissal following poor performance to the CEO's age. They find that there is a significant and positive correlation between the probability of dismissal and the corporation's performance at ages above 60 and below 50. In the 50–60 age-group they do not manage to find a significant relation between the probability of dismissal and performance. In other words, the threat of dismissal constitutes an alternative incentive to compensation policy for young CEOs (under 50) who still have to prove themselves, and for old CEOs (over 60), who are nearer pensionable age and hence easier to dismiss.

The second variable in this group is the natural logarithm of the number of years the CEO has worked in the company. Empirical studies which examined the effect of the CEO's seniority in the corporation on his compensation, e.g., Barro and Barro (1990) and Murphy (1986), report a significant and negative correlation between the number of years a CEO has worked in a company and his compensation. The explanation they offer is that the CEO chooses to move from one corporation to another in order to improve his compensation and benefit from his past successes. A CEO who chooses to remain in the same company for a long time, on the other hand, appears to prefer a modicum of security to the risk associated with moving between corporations, but remunerations for this by earning a lower compensation. Further empirical support for this is provided by Brian, O'Reilly and Crystal (1994), who compare CEOs' salaries in the UK and the US and find that there is a significant negative correlation between the number of years the CEO has worked in a company and his total remuneration, and that this is (–0.0052) in the US and (–0.0075) in the UK.

4. THE DATA AND THE SAMPLE

Amendment 123a of the Companies Law, which obliges public corporations in Israel to submit detailed reports of the compensation paid to the five most senior executives, paved the way for putting the subject of CEOs' salaries on the public agenda. In recent years the financial sections of the newspapers have concerned themselves to a great extent with CEOs' salaries, examining them and relating them to the corporations' performance. Thus, for example, a list of CEOs of public corporations who earn over NIS 1 million annually is published each year under the heading 'The One-Million Club'. In contrast with most research on CEOs' salaries,²³ our study examines only those corporations which choose to remunerate the price of public exposure that accompanies belonging to this category. The holders of the controlling interest and the CEOs of these corporations, which represent all the principal industries and are not necessarily the largest or the most profitable, are subject to public scrutiny, and this justifies high salaries only if they are linked to the corporation's performance.²⁴ Hence, we have chosen

²³ The exception to this is Marilyn et al (1997), who examine a time series confined to the upper echelon of public corporation CEOs earning more than \$ 1 million.

²⁴ In section 162(m) of the SEC regulations dating from 1993 the US Congress affirmed that a CEO's remuneration would be recognized as tax-deductible only up to \$ 1 million. CEO compensation that exceeds this level would be tax-deductible only if a contractual agreement is proved between it and the corporation's performance. From the CEO's viewpoint, higher compensation will be demanded when the risk (i.e., performance-sensitive salary) increases (see Murphy, 1995).

to restrict our analysis only to the upper echelon of CEOs, whose basic compensation is NIS 1 million a year. In our view, the public interest²⁵ and scrutiny of compensation levels,²⁶ requires a separate analysis of both the link between compensation and performance, and that between internal and external mechanisms for monitoring the agency problem. The CEO's attitude to risk and the inability to foresee every natural situation, which characterizes every imperfect contract, such as that between shareholders and the CEO, defines a situation in which most contracts include a substantive constant component. This constitutes the lower limit of compensation in cases where performance is poor,²⁷ and the account will be settled with the CEO not via direct compensation but via the mechanism of the market by damaging his reputation and future remuneration.

Out of some 630 companies traded on the TASE in 1997, a total of 199 (32 percent) were public corporations whose CEO earns more than NIS 1 million annually. The sample included 186 public corporations traded on the TASE whose CEO earns over NIS 1 million and whose full particulars were available.²⁸ The principal source of the data is the corporations' financial statements, supplemented by TASE reports and the databases of Business Data Corp. and Dunn and Bradstreet, for purposes of data comparison and completion. We solved the problem of uniformity in companies' statements as regards compensation data by establishing a uniform reporting basis. In some companies the data reported at current values were adjusted as end-1997 NIS, in accordance with the change in the CPI.

Table 2 presents the distribution of CEOs' compensation and the five top executives, the corporation's total assets, the proportion of shares in the hands of the public, the CEO's average seniority in the corporation, and the average number of years since the company went public, by industry. Our findings show that the highest average CEO's compensation is in the investment in manufacturing and miscellaneous industry, which includes mainly the large conglomerates (four corporations in all), whereas the return on capital in the industry (3.7 percent) is significantly below the average of all the companies in the sample—12.3 percent. The CEO's compensation is also exceptionally high in the commercial banking industry (an average of NIS 2.29 million) and in chemicals (NIS 1.99 million on average) compared with the other industries and the general average (NIS 1.65 million). Table 2 also describes the inter-industry variance as regards the proportion of holdings in the hands of the public, ranging from the lowest level of 11–13 percent in the services, hotels, and mortgage banks to the highest (albeit still significantly below the level in the US and many of the European stock markets) of some 30 percent in vehicles, agriculture, computers, and commercial banks. The table also shows the variance in the number of years the CEO has worked in the company, the highest being an

²⁵ The purpose of including the definition in section 123a is to expose the recipients of the highest salaries. It is difficult to assume that there would be any public interest in CEOs' salaries, even if their sensitivity to performance was negligible, if these were low and not ostentatious. However, this does not substantially affect the economic aspect of the subject or the importance of the CEO and his effect on the company's performance, and hence the importance of establishing a system of performance-sensitive remuneration as a way of reducing the agency problem.

²⁶ Marilyn et al (1997) find that the main issue in public scrutiny of CEO remuneration is salary level, e.g., institutional investors act to reduce the CEO's salary at the expense of its sensitivity to performance.

²⁷ The hypothesis which derives from this is that the sensitivity of low salaries to performance is expected to be low. Hence, a comprehensive estimation will produce an average estimate, which would constitute an underestimate for recipients of high salaries and an overestimate for recipients of low salaries.

²⁸ The missing particulars for companies excluded from the sample concerned mainly personnel and salaries. Thus, for example, in some corporations the CEO was replaced during the year, so that the reported salary included compensation or other payments of a nonrecurring nature, and it was difficult to identify them and separate them from the CEO's annual salary. The full list of corporations appears in Appendix 1.

Table 2
Distribution of Data by Principal Industry

The table gives the mean (standard deviation in parentheses) CEO salary, wage of the five senior executives, assets, number of employees, return on capital, and proportion of ownership held by the public for each company, as well as the CEO's seniority and the number of years the company has been public, in each principal industry.

	Mortgage banks	Commercial banks	Investment in manufacturing and misc.	Investment firms	Insurance firms and agencies	Oil exploration ^c	Agriculture ^d	Textiles and clothing	Construction products ^e	Chemical products, rubber and plastics	Food and tobacco	Computers and computer services	Electrical equipment, electronics and optics	Hotels and tourism services	Commerce	Metal and its products	Real estate, construction and development	Wood, paper products and printing	Services
CEO's salary ^a	1.45 (0.35)	2.29 (0.85)	4.51 (5.24)	1.73 (0.88)	1.76 (0.83)	1.47	1.04	1.28 (0.32)	1.06	1.99 (2.31)	1.80 (0.71)	1.36 (0.17)	1.61 (0.91)	1.23 (0.06)	1.33 (0.30)	1.43 (0.16)	1.47 (0.46)	1.37 (0.31)	1.86 (0.53)
Five senior executives ^a	0.75 (0.21)	1.36 (0.53)	2.72 (3.1)	1.04 (0.44)	0.98 (0.42)	0.55	0.58	0.65 (0.18)	0.78	1.15 (0.96)	0.95 (0.48)	0.90 (0.17)	1.00 (0.58)	0.94 (0.31)	0.79 (0.33)	0.83 (0.12)	0.81 (0.23)	0.68 (0.16)	0.83 (0.21)
Assets ^a	6,519 (8,367)	50,632 (65,220)	1,440 (1,908)	1,972 (4,604)	5,047 (5,466)	142	374	278 (255)	597	1,777 (2,975)	417 (485)	216 (216)	804 (1,462)	417 (495)	274 (648)	302 (171)	569 (695)	189 (127)	804 (837)
Employees	266 (235)	3,815 (5,153)	9,190 (10,522)	234 (972)	531 (430)	10	850	1,289 (1,767)	600	1,527 (2,473)	1,208 (1,471)	658 (768)	1,442 (2,216)	993 (1,283)	518 (1,583)	349 (224)	284 (753)	348 (255)	639 (421)
Return on capital ^b	9.1 (5.2)	9.4 (3.9)	3.7 (19.1)	10.7 (10.6)	11.3 (6.5)	6.5	1.2	13.1 (12.7)	7.0	13.9 (7.1)	9.0 (6.4)	25.1 (18.1)	16.4 (20.9)	17.4 (25.1)	14.7 (13.8)	5.4 (8.7)	8.5 (15.6)	12 (17.2)	24.7 (25.1)
Proportion held by public ^b	13.3 (7.4)	33.2 (13.0)	21.5 (10.8)	25.7 (17.7)	16.3 (10.5)	14.0	27.0	23.4 (17.0)	14.0	24.9 (19.1)	22.9 (14.1)	28.9 (20.8)	26.8 (13.1)	11.0 (7.9)	22.1 (9.4)	21.2 (8.0)	18.4 (22.3)	17.6 (7.2)	12.8 (8.7)
CEO's seniority in company	4.8 (2.4)	5.9 (3.1)	11.8 (7.5)	8.1 (6.5)	9.8 (7.4)	8.0	3.0	9.8 (6.6)	10.0	8.6 (8.3)	8.7 (9.7)	8.4 (4.1)	9.4 (7.9)	11.0 (14.7)	13.8 (9.3)	4.5 (1.8)	11.6 (8.5)	10.4 (6.3)	6.9 (2.7)

Table 2 (continued)

No. of years as public company	28.0 (14.7)	26.4 (11.2)	13.5 (14.1)	17.1 (12.2)	12.3 (6.0)	9.0 -	35.0 -	14.9 (10.0)	16.0 -	9.6 (13.0)	13.4 (11.8)	6.7 (3.9)	10.4 (7.1)	9.7 (7.1)	7.5 (5.0)	13.7 (11.8)	11.5 (10.5)	8.3 (3.2)	9.5 (12.1)
No. of companies in sample	4	8	4	34	8	1	1	10	1	14	9	7	16	3	17	6	43	5	8
No. of companies in industry	12	12	17	90	14	13	2	24	12	37	30	34	57	21	40	38	120	21	36

^a Data on salaries and assets are in adjusted NIS million.

^b Data on return on capital and proportion of shares held by public are given as percentages.

^c In these industries it was not possible to calculate the standard deviation because the sample consisted of only one company.

average of 14 years in commerce, compared with of only 4.5 years in the metals industry. The largest number of corporations remunerating their CEOs over NIS 1 million was found in investment (34 companies, constituting 38 percent of all the companies in the industry) and real estate (43 companies, constituting 36 percent of the industry). In addition, in the commercial banking industry some 67 percent of companies paid their CEOs salaries that exceeded NIS 1 million in 1997.

Table 3
Average Salary and Other Variables in the Entire Sample, by Connection Between CEO and Holders of Controlling Interest, and by Company's Dividend Policy in 1997

The table gives the mean (and median in parentheses) of the variables for the entire sample of the 186 companies for which we had full particulars. The first column gives the average for all the corporations. The second and third columns divide the sample into companies whose CEO is directly or indirectly connected with the company's principal shareholders. The next two columns divide the total sample according to the companies' dividend policy.

	All companies	CEO not connected with holders of controlling interest	CEO is connected with holders of controlling interest	Companies pay dividend	Companies do not pay dividend
Total salary: CEO ^a	1.653 (1.38)	1.684 (1.39)	1.634 (1.37)	1.784 (1.38)	1.505 (1.35)
Average of five senior executives ^a	0.948 (0.81)	1.021 (0.86)	0.899 (0.8)	1.026 (0.87)	0.859 (0.77)
Proportion of operating profit as CEO's salary	16.4% (9.8%)	8.3% (4.1%)	21.8% (12.9%)	14.0% (7.9%)	19.3% (12.6%)
Company size					
Sales ^a	636 (146)	1,174 (334)	281 (126)	920 (194)	314 (128)
No. of employees	955 (181)	1,825 (409)	380 (122)	1,340 (235)	517 (150)
Profitability and operating efficiency					
Operating profit ^a	63.0 (15.0)	123.7 (28.9)	22.9 (11.1)	93.2 (19.2)	28.6 (11.5)
Earnings per share, 1996 ^b	4.30 (0.71)	8.8 (1.1)	1.3 (0.7)	7.0 (1.1)	1.2 (0.4)
Earnings per share, 1997 ^b	4.99 (0.85)	9.1 (0.8)	2.3 (0.9)	7.6 (1.1)	2.0 (0.4)
Return on capital	12.0% (10.0%)	11.2% (8.0%)	12.5% (10.8%)	15.3% (13.3%)	8.2% (6.7%)
Annual earnings per share divided by industry return	1.05 (0.81)	0.91 (0.67)	1.13 (0.92)	1.14 (0.9)	0.93 (0.59)
Sales per employee	9.76 (0.76)	18.89 (0.68)	3.73 (0.81)	12.55 (0.79)	6.59 (0.72)

Table 3 (continued)

	All companies	CEO not connected with holders of controlling interest	CEO is connected with holders of controlling interest	Companies pay dividend	Companies do not pay dividend
Financial policy					
Financial leverage	3.41 (1.32)	4.63 (1.36)	2.60 (1.29)	2.92 (1.18)	3.97 (1.81)
Percentage of companies paying dividend	53.2%	55.4%	51.8%		
Company characteristics					
Age of company ^c	28.7 (26.5)	35.7 (35.5)	24.0 (21.0)	28.4 (28.5)	29.0 (25.5)
Years as public company	12.3 (6.5)	16.8 (15.5)	9.4 (5.5)	12.2 (5.5)	12.4 (6.5)
Proportion held by public	21.7% (20.0%)	22.0% (19.2%)	21.5% (20.4%)	20.0% (18.1%)	23.5% (21.0%)
Characteristics of CEO					
Age ^c	52.6 (51.5)	52.1 (51.0)	53.0 (52.0)	53.7 (52.5)	51.5 (50.5)
Years in company ^c	9.1 (6.5)	6.0 (4.5)	11.2 (8.5)	9.2 (6.5)	9.1 (6.5)
No. of corporations	186	74	112	99	87

^a Figures are in December 1997 NIS million.

^b Data on earnings per share are in December 1997 NIS.

^c Data are in years (in the absence of a precise figure, we assume that all the events occurred within six months).

The means (and medians) of selected variables are presented in Table 3. The entire sample comprises 199 companies, for 186 of which we managed to collect full particulars. The average annual compensation of the CEOs of all the companies in the sample was NIS 1.65 million in 1997, while the average annual compensation of the five senior executives (including the CEO) was NIS 0.95 million. On average, the CEO's compensation constitutes 16.4 percent of the corporation's operating profit before financing expenditure, and this proportion is particularly high in companies where the CEO is related to the holders of the controlling interest. The proportion of shares held by parties at interest was 78.3 percent for all the companies in the sample, 4.7 percent of it by funds. The shares of all the corporations in the sample yielded an average annual return in 1997 that was about 4 percent above the industry average, even though 37 companies (20 percent of the sample) reported a negative annual return. In addition, the return on capital for all the corporations in the sample averaged 12.3

percent. In about 60 percent of the companies in the sample there was a connection between the CEO and the holders of the controlling interest, which went beyond customary business ties. We also found that 53.5 percent of all the companies in the sample paid a dividend in 1997, although only 11 companies (6 percent of the sample) reported losses in that year.

The most outstanding finding that emerges from comparing the first two columns in the table is that companies which employ a professional CEO rather than one who is connected with the holders of a controlling interest are on average larger (average annual sales turnover of NIS 1,174 million vis-à-vis NIS 281 million), more profitable (average operating profit of NIS 123.7 million compared with NIS 22.9 million), and display greater operating efficiency (annual sales per employee ratio of NIS 18.9 million rather than NIS 3.7 million). Consequently, one would expect to find marked differences at the level of salaries too, but in fact there was very little difference between the two groups. Notwithstanding, the proportion of operating profit that the CEO's compensation represents is low in companies with a professional CEO, accounting for 8.3 percent, as against 21.8 percent in companies whose CEO is related to the holders of a controlling interest. The proportion of corporations distributing a dividend does not differ significantly between the two groups, and averages about 53 percent. The results relating to the proportion of the operating profit represented by the CEO's compensation and the dividend policy provide additional support for the contention regarding the ability (and motivation) of the major shareholders in a company to withdraw profits by means of the remuneration paid to the CEO. Furthermore, companies with a professional CEO who is not connected with the holders of a controlling interest have been public corporations for a longer time (an average of 16.8 years, compared with 9.4 years) and are more leveraged financially (financial leverage of 4.63, compared with 2.6). It is also possible to discern a higher CEO replacement rate in these companies (the CEO's seniority in these companies averaged 5 years less than in the others). At the same time, in corporations where the CEO is connected with the major shareholders, the earnings per share ratio was 13 percent higher on average than the industry return, while in companies with a professional CEO this was lower on average than that for the industry as a whole. In addition, the findings attest to a substantial difference (20 percent) between the two kinds of corporations in the proportion of shares held by the public.

The most outstanding finding that emerges from a comparison of the third and fourth columns is that companies which remunerate a dividend are larger (average annual sales turnover of NIS 920 million compared with NIS 314 million) and more profitable (average operating profit of NIS 93.2 million compared with NIS 28.6 million) than companies which do not. We also find—unsurprisingly—that these companies are less leveraged (financial leverage of 2.92 compared with 3.97 in companies that did not remunerate a dividend). Because they do not distribute profits there is less need to raise capital by borrowing, and hence their equity increases. An examination of the policy regarding the CEO's compensation reveals an interesting picture; in companies which distributed a dividend in 1997 the CEO's compensation accounted for a smaller proportion of the operating profit than in companies which did not (it accounted for 14 percent of operating profit in the first kind of company compared with 19.3 percent in the other kind). These results provide support for the hypothesis regarding the substitutability between dividend policy, financial policy (leverage), and compensation policy as supervisory mechanisms.

5. THE ESTIMATION METHOD

On the basis of the hypotheses, the following model was estimated:

$$\begin{aligned} \text{Ln}(\text{wage}) = & \beta_0 + \beta_1 \text{Ln}(\text{Asst}) + \beta_2 \text{Ln}(\text{Ebit}) + \beta_3 \text{Ln}(\text{Eps97}) + \beta_4 \text{Ln}(\text{Eps96}) \\ & + \beta_5 \text{Ln}(\text{Stock-Ind}) + \beta_6 \text{Ln}(\text{Salesemp}) + \beta_7 \text{Ln}(\text{Leverage}) + \beta_8 \text{Ln}(\text{Div}) \\ & + \beta_9 \text{Ln}(\text{CEO}) + \beta_{10} \text{Ln}(\text{Ownprec}) + \beta_{11} \text{Ln}(\text{Funds}) + \beta_{12} \text{Ln}(\text{Industry}) \\ & + \beta_{13} \text{Ln}(\text{Compage}) + \beta_{14} \text{Ln}(\text{Publicage}) + \beta_{15} \text{Ln}(\text{CEOage}) \\ & + \beta_{16} \text{Ln}(\text{Senior}) + \varepsilon_1 \end{aligned}$$

Description of variables (natural logarithm of variable)

Dependent variable: Ln(wage) = CEO's total wage

1. Ln(Asst) = company's total assets in 1997.
2. Ln(Ebit) = operating profit in 1997, before operating expenditure.
3. Ln(Eps97) = earnings per share in 1997.
4. Ln(Eps96) = earnings per share in 1996.
5. Ln(Stock-Ind) = ratio of annual return per share to annual return in relevant industry.
6. Ln(Salesemp) = ratio of annual sales to number of employees.
7. Ln(Leverage) = company's financial leverage, calculated from the ratio of its total liabilities to its equity.
8. Ln(Div) = dummy variable for dividend policy.
9. Ln(CEO) = dummy variable for whether CEO is connected with holders of controlling interest.
10. Ln(Ownprec) = proportion of share capital held by parties at interest.
11. Ln(Funds) = proportion of share capital held by funds.
12. Ln(Industry) = industry in which company operates, as defined by TASE.
13. Ln(Compage) = age of company (in years).
14. Ln(Publicage) = number of years that company is incorporated as public company.
15. Ln(CEOage) = age of CEO.
16. Ln(Senior) = number of years CEO has worked in company.

We examined the distribution of the error term ε_1 , and the hypothesis that the distribution is normal was not rejected, since over 98 percent of the actual errors were found in the -1.96 to $+1.96$ range. The homoskedacity hypothesis was rejected on the basis of two tests, Park and Goldteld-Quandth at the 5 percent significance level. The above model was consequently estimated using the GLS method.²⁹

²⁹ Dividing the sample on the basis of the level of the dependent variable (the CEO's salary), omission of 17 observations at the center, and estimation of two regressions for the low wage levels ($ESS_2 = 6.336$), the statistic that was calculated on the basis of the Goldteld-Quandth test was as follows: $ESS_2/ESS_1 \sim F_{(68,68)}$ is statistically significant at the 1 percent significance level, so that the null hypothesis of heteroskedacity cannot be rejected. We therefore reweighted the matrix of data in accordance with the number of employees, using the weighted least-squares estimation procedure. For a discussion of the process and the estimation problems arising from heteroskedacity, see Pindyck and Rubinfeld (1976).

Table 4
Report on Estimation Results for the Two Dependent Variables: CEO's Salary and Mean Salary of Five Senior Executives

The table gives the independent variables as well as the results of the model, as obtained from the GLS estimation in relation to the two dependent variables: CEO's salary and mean salary of the five most senior executives (numbers in parentheses are t-values).

Independent variable		Dependent variable	
Variable	Description (natural log)	LnWage	LnTop5
1. Constant	Constant	-0.0283 (-1.159)	0.0191 (0.691)
2. LnAsst	Total assets	0.0923 ^c (2.749)	0.0916 ^b (2.405)
3. LnEbit	Operating profit	0.3252 ^c (6.457)	0.2630 ^c (4.608)
4. LnEps97	Earnings per share, 1997	-0.0619 (-1.234)	-0.0448 (-0.789)
5. LnEps96	Earnings per share, 1996	0.0928 (1.043)	0.0508 (0.504)
6. LnStock-Ind	Annual return on share <i>divided by</i> industry return	0.1975 ^c (2.910)	0.1405 ^a (1.827)
7. LnSalesemp	Sales per employee	-0.0259 (-0.942)	0.0456 (1.46)
8. LnLeverage	Financial leverage	-0.0391 ^b (-2.069)	-0.0280 (1.304)
9. LnDiv	Dividend (dummy variable)	-0.1510 ^b (-2.120)	-0.2191 ^c (-2.714)
10. LnCEO	CEO-owners (dummy variable)	0.2956 ^c (3.287)	0.1712 ^a (1.679)
11. LnOwnprec	Proportion held by parties at interest	-0.2715 ^a (-1.662)	-0.3494 ^a (-1.887)
12. LnFund	Proportion held by funds	-0.9768 ^b (-2.115)	-0.2849 (-0.544)
13. LnIndustry	Industry (dummy variable)	0.0213 (0.528)	-0.0414 (-0.905)
14. LnCompage	Age of company	0.0269 (0.648)	0.0174 (0.37)
15. LnPublicage	No. of years company is incorporated as public company	-0.044 (-1.064)	-0.0888 ^a (-1.875)
16. LnCEOage	Age of CEO	0.6233 ^c (5.12)	0.5778 ^c (4.184)
17. LnSenior	CEO's seniority in company	-0.0586 ^a (-1.728)	-0.0513 (-1.333)

^a Significant at 10 percent level.

^b Significant at 5 percent level.

^c Significant at 1 percent level.

6. EMPIRICAL RESULTS AND CONCLUSIONS

According to the model shown in Table 4,³⁰ and in common with most studies in the field, the variables for the company's size and performance play an important part in explaining the variance in the CEO's compensation. The effect of the corporation's size as an estimate of the complexity and responsibility accompanying the CEO's task was found to be positive and statistically significant. The sensitivity of the CEO's compensation in relation to size was 0.0923, so that a NIS 100 million increase in assets (up by 3.3 percent over the average of assets in the sample) is accompanied by a slight NIS 5,000 rise in the CEO's annual wage. This estimate of sensitivity is lower than that found in other empirical studies in Israel (sensitivity of 0.2–0.3). The effect of the performance variables as an estimate of changes in the welfare of shareholders was also found to be positive and significant, at the 1 percent level. The sensitivity of wages relative to the performance variable, comparing the return on shares relative with in the industry in general, was found to be positive and significant at the 0.975 level, indicating an average 2 percent increase in the CEO's compensation for a 10 percent rise in the annual return on the company's shares.

The sensitivity of the CEO's compensation relative to operating profit is 0.3252, so that an average annual rise of 10 percent in operating profit is accompanied by an average annual compensation increase of 3.25 percent (i.e., a NIS 10 million rise in operating profit is accompanied by a NIS 85,326 increase in the CEO's annual compensation). The estimated wage sensitivity relative to performance is higher than that reported in similar studies. Thus, for example, in a study of US companies, Rosen (1992) finds sensitivity of 0.17 relative to performance variables. Conyon and Leech (1993) report sensitivity of 0.11 relative to operating profit in a sample of 470 UK companies. Hauser et al (1996), whose sample includes all Israel's public corporations in 1994, find sensitivity of 0.143 for the CEO's compensation relative to performance. The differences could stem from the fact that our sample includes only the upper echelon of executives, while at lower compensation levels the sensitivity relative to performance is expected to be lower, as wages evidently incorporate a constant element that expresses *inter alia* the CEO's risk-aversion and his employment alternatives. A large part of the difference may also be attributed to the different times to which the samples refer.

Consistent with our second main hypothesis—as well as with the hypotheses derived from it regarding each of the variables for the mechanisms for monitoring the CEO, financial leverage—the company's dividend policy, and the proportion of shares held by the funds, all of which serve as alternatives to compensation in supervising the CEO, were found to have a negative and statistically significant effect at the 5 percent level. Thus, for example, according to our model, a 10 percent increase in financial leverage is accompanied by a 0.39 percent decline in the CEO's compensation, and a 1 percent rise in the percentage of holdings in the hands of funds is accompanied by a significant 0.98 percent drop in the CEO's compensation. A negative relation was also found between the decision to remunerate a dividend and a

³⁰ Beyond the general estimation, the model was also estimated by means of a stepwise regression, and this produced statistically significant results at the 1 percent level, and t-values (in parentheses) of the following model:

$$\text{Lnwage} = 0.364 \text{ Ln(Ebit)} + 0.261 \text{ Ln(Stockto-Ind)} - 1.132 \text{ Ln(Funds)} + 0.781 \text{ Ln(Ceoage)}$$

(10.99)	(4.26)	(-2.86)	(8.61)
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change in the CEO's compensation; if a company distributes a dividend, the CEO's compensation will be 15 percent lower than in one that does not remunerate a dividend, *ceteris paribus*. As regards the influence of the other methods of control, such as the industry in which the firm operates and the proportion of shares held by stakeholders, we did not manage to reject the relevant null hypothesis at the 5 percent significance level. The proportion of shares held by parties at interest was found to have a negative effect at the 10 percent significance level.

The variables describing the CEO were found to have a statistically significant effect. There was a positive correlation significant at the 1 percent level between the CEO's age and his compensation. Wage sensitivity estimated relative to the CEO's age is 0.623, so that an average increase of one year in his age is accompanied by a NIS 19,540 rise in his annual compensation. As expected, on the other hand, an increase in the number of years he has been working in the company is accompanied by a decline in his compensation. A positive and significant relation was found between the variable linking the CEO with the holders of a controlling interest in the company. The sensitivity of wages to the dummy variable linking the CEO with the major shareholders is 0.296, so that the compensation of a CEO who is connected with the holders of a controlling interest will be about 30 percent higher than that of a professional CEO, *ceteris paribus*. This connection provides empirical evidence of the fact that the holders of a controlling interest do in fact use compensation policy as a way of withdrawing profits, *inter alia* at the expense of the other shareholders.

The model estimated for the mean compensation of the five top executives in a company, the results of which are shown in Table 4, provides support for the variables for profitability, dividend, and the CEO's age at the 1 percent significance level.³¹ Wage sensitivity estimated relative to operating profit is 0.263, so that a \$ 10 million increase in operating profit is accompanied by a NIS 39,575 rise in the average annual compensation of the five senior executives, attesting to an average NIS 28,137 increase in the compensation of each of the four most senior executives, as the average growth in compensation to the CEO is NIS 85,326 a year. The sensitivity of the average remuneration to the CEO following the change in profitability is three times as large as that of the senior executives below him. Estimated wage sensitivity vis-à-vis the dividend dummy variable is (-0.22), i.e., when the company remunerates a dividend the mean compensation of the five senior executives falls by 2.2 percent. The variable for the CEO's age was also found to have a positive and significant effect at the 1 percent level on the mean compensation of the five senior executives. This relation may be attributed to a great extent to the fact that the CEO's age provides an estimate of the average age of the five senior executives. In addition, there is a positive and significant

³¹ The model was also estimated for the mean salary of the five senior executives as a dependent variable in a stepwise regression, and was found to support the model below at the 1 percent significance level and on the basis of t-values (in parentheses):

$$\text{Lntop5} = 0.674 \text{ Ln(Asst)} + 0.31 \text{ Ln(Ebit)} + 0.2605 \text{ Ln(Stock-Ind)} - 0.260 \text{ Ln(Div)} + 0.579 \text{ Ln(Ceage)}$$

(2.83)	(6.15)	(3.755)	(-3.58)	(5.72)
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According to the model, the variables which have a significant effect on the mean salary of the five senior executives are: size and profitability (accounts and finance), dividend policy, and CEO's age as a proxy for the age of the five senior executives and human capital.

relation at the 5 percent level between the mean compensation of the five senior executives and the size variable, i.e., a NIS 100 million increase in the company's assets is accompanied by a NIS 2,431 rise in the average annual compensation. There was a positive relation significant at the 10 percent level between the mean compensation of the five senior executives and the variable for the relation between the return on the share and the annual return in the industry, as well as between it and the dummy variable for the connection between the CEO and the major shareholders. A negative relation at the same significance level was found for the proportion of shares held by parties at interest and the amount of time since the company went public, i.e., is subject to public scrutiny.

7. CONCLUSION

This study examines the policy regarding the wages of CEOs in the group of public companies in Israel which remunerate the highest salaries, as part of the overall policy of monitoring the activities of the CEO and contending with the agency problem. In contrast with most previous studies in this field, compensation policy with respect to the CEO and the five most senior executives was reviewed only for the upper echelon of recipients in 1997. Our main findings support the hypothesis that there is a positive and significant relation between the CEO's compensation and performance which, in contrast with previous studies, is based on both financial statements and the correlation between the return on shares and that of the industry as a whole. The estimated wage sensitivity is significantly higher than that reported in previous studies, and indicates that a 10 percent increase in a firm's operating profit is accompanied by a 3.25 percent rise in the CEO's compensation. Nevertheless, estimated wage sensitivity relative to firm size is significantly smaller than that reported in previous studies.

The policy regarding the CEO's remuneration was examined in the context of the existence of internal and external mechanisms for supervising the CEO, which constitute an alternative to formulating a performance-sensitive employment contract, enabling the company to contend with the agency problem. Against this backdrop, four alternative monitoring mechanisms were found to have a significant effect. The first is direct control by the stakeholders in a firm, whereby a rise in the proportion of their holdings increases their interest in it, and hence is expected to increase their supervision in comparison with a dispersed ownership structure. The second is supervision by institutional funds which have invested in the corporation. This may be implemented indirectly, by selling holdings and influencing the share price, or directly, utilizing their connection with the company's directors and attempting to affect the company's policy from within. The third way of exercising control, the effect of which on compensation policy was found to be significant, was monitoring by the company's creditors. The closer the relation between external and internal financing, the greater the financial risk to the company, and hence to its creditors; since the latter are likely to be adversely affected by the increase in risk, they tighten external control over the company. The fourth and last control mechanism, whose influence on compensation policy was found to be statistically significant, is the firm's dividend policy. Distribution of a dividend obliges the CEO to ask the investors to express their confidence in the firm by re-investing in it when the need for additional finance arises, and this increases their control over his activities.

Our study provides evidence for the effect of a concentrated ownership structure, such as that which characterizes Israel's capital market (an average of 78.3 percent of the shares in the sample are in the hands of parties at interest) on policy regarding the wages of the CEO. In about 60 percent of companies there was a connection between the CEO and the holders of a controlling interest in the company which went beyond customary business ties. The relation between the CEO's compensation and operating profit in these companies was 21.7 percent, which is 2.6 percent higher than that between compensation and operating profit in companies where no such connection exists. One of the conclusions to be drawn from our statistical analysis is that, *ceteris paribus*, the CEO's compensation in companies with a connection between him and the major shareholders is expected to be some 30 percent higher than in corporations where the connection is purely professional. This finding bears out the substitutability that exists in companies where the CEO is connected with the holders of a controlling interest between the policy regarding the CEO's compensation and the dividend policy as ways of withdrawing profits by major shareholders.

The limitation of our study is that it examines compensation policy for a cross-section in only one year; in our view there is room for further research, both cross-sectional and over time, examining CEOs' salaries over several years, subject to all the restrictions mentioned earlier as regards methods and reliability of measurement, and full disclosure of the data.

Appendix Table Selected Data on all Companies in 1997 Sample

The by-industry distribution is in accordance with the TASE classification, and the name of the industry appears in the legend at the end of the table. The data on wages, sales, and operating profit are in NIS million. Return on capital and the proportion of shares in the hands of parties at interest are given as percentages. The dividend figure takes the value 2 if the company paid a dividend in 1997, and 1 otherwise. The figure for CEO-owners takes the value 2 if there is a connection, and 1 otherwise.

Company name	Industry	CEO's salary	Mean salary of five senior executives		Sales	Operating profit	Returns on share relative to industry return		Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	CEO-owners
			CEO's salary	of five senior executives			relative to industry return	on capital, 1997				
1. Adanim Mortgage Bank Ltd.	1	1.05	0.53	0.53	26	15.5	0.43	13.6%	14.4%	96%	2	1
2. Jerusalem Development and Mortgage Bank	1	1.91	0.97	0.97	50	26.1	0.45	7.1%	7.2%	85%	2	1
3. Carmel Mortgage Bank	1	1.42	0.64	0.64	20	5.1	0.89	2.6%	-1.5	78%	2	1
4. Tefahot Mortgage Bank	1	1.41	0.89	0.89	274	276.4	0.56	12.9%	14.6%	88%	2	1
5. Maritime Bank of Israel	2	1.50	0.72	0.72	22	4.1	0.27	3.1%	-1.2%	47%	1	1
6. Bank Hapoalim	2	2.29	1.57	1.57	3,939	1,079	1.46	12.5%	11.0%	73%	1	1
7. Israel General Bank	2	1.86	1.07	1.07	54	33.7	0.43	7.3%	5.4%	75%	1	1
8. Bank Leumi	2	2.32	1.59	1.59	4,396	1,541	0.86	16.1%	8.2%	59%	2	1
9. Trade Bank	2	1.11	0.63	0.63	19	5.1	-0.29	6.7%	2.9%	53%	1	1
10. First International Bank	2	3.88	2.13	2.13	859	438.4	0.89	10.5%	9.2%	53%	1	1
11. Koor Industries Ltd	3	12.32	7.34	7.34	12,606	987.5	1.03	13.3%	19.8%	69%	2	1
12. Clal Industries and Investments	3	1.41	0.87	0.87	241	65.1	0.79	1.5%	3.1%	76%	2	1
13. Caprice Jewelry Ltd	3	1.53	1.20	1.20	134	3.8	0.72	21.9%	36.4%	75%	2	2
14. Edgar Investments and Development	4	1.32	0.49	0.49	51	16.9	1.04	9.5%	5.3%	74%	2	2
15. Ordan Industries Ltd	4	1.25	0.72	0.72	409	12.6	10.6	5.2%	8.2%	70%	1	1
16. IDB Holdings	4	2.05	1.59	1.59	1,478	18.1	1.01	8.2%	3.6%	81%	2	2
17. IDB Development	4	1.21	0.78	0.78	1,478	44.1	1.08	10.2%	4.4%	88%	2	2
18. Elico Holdings Ltd	4	3.59	1.48	1.48	3,045	117.1	0.62	8.6%	11.0%	82%	2	2
19. Analyst EMS Management Services	4	1.18	0.84	0.84	38	24.6	2.81	26.5%	9.4%	81%	2	2

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	Dividend	CEO-owners
20. Eckerstein, Zvi Ltd	4	1.05	0.96	257	15.9	0.01	2.3%	9.4%	81%	2	2
21. Dubram Sharett & Co.	4	1.46	0.91	22	14.1	1.59	31.9%	-2.9%	58%	2	2
22. Dunbar Ltd	4	1.62	1.15	67	35.3	1.67	17.6%	12.5%	61%	1	2
23. Israel Co. Ltd	4	1.42	1.49	3,435	72.9	1.44	1.2%	2.1%	81%	1	1
24. Wolfson, Clore, Mayer	4	1.02	0.60	117	13.9	-0.24	4.2%	2.6%	89%	1	1
25. Hachsharat Hayishuv Ltd	4	5.40	2.38	1,163	42.8	1.32	3.4%	2.5%	75%	1	2
26. Discount Investments Ltd	4	2.31	1.33	768	660.2	1.04	21.9%	8.1%	72%	2	1
27. Meir Ezra and Sons	4	1.63	0.88	344	16.1	10.7	-5.8%	-9.9%	51%	1	2
28. Joel Jerusalem Oil Exploration Ltd	4	1.24	1.04	15	3.2	0.17	0.8%	13.5%	79%	1	1
29. Clal (Israel) Ltd	4	3.04	2.28	8,899	346.7	0.60	0.4%	4.3%	88%	2	1
30. Lieder Issues and Securities	4	2.50	1.36	32	19.2	3.32	26.9%	-2.3%	64%	2	2
31. Mivtah Shamir Holdings Ltd	4	2.09	1.25	38	14.4	2.99	13.0%	8.4%	67%	1	2
32. Miloumor Ltd	4	1.89	0.91	280	62.3	0.71	29.8%	46.0%	83%	1	2
33. Noga Electrotechnica Ltd	4	1.14	0.71	95	6.8	1.72	13.3%	18.1%	69%	1	2
34. Nechushtan Investments Co. Ltd	4	1.15	1.04	99	-2.2	0.14	-11.1%	37.7%	70%	1	2
35. Sahar Securities Ltd	4	1.16	0.55	15	4.6	2.60	10.1%	-5.6%	81%	1	2
36. Poalim Investments	4	2.39	1.38	397	15.1	0.41	28.3%	8.6%	84%	2	2
37. Tzur Shamir Holdings	4	1.34	0.98	217	23.1	2.35	3.2%	3.2%	69%	2	2
38. Tzafrir Engineers Ltd	4	1.15	1.15	24	1.1	0.12	1.2%	1.7%	88%	2	2
39. Gellern Investment Group	4	1.11	0.93	26	3.5	1.16	8.5%	6.5%	86%	2	2
40. Kamur Ltd	4	1.26	0.64	194	7.9	1.97	11.6%	2.4%	90%	2	2
41. Cardin Investments Ltd	4	1.35	0.73	295	16.1	0.57	8.1%	8.0%	79%	1	2
42. G.A.P. Fund Holdings	4	1.77	0.73	141	10.7	2.73	16.1%	9.3%	70%	1	2
43. Tom Holdings Ltd	4	1.14	0.57	2	0.5	1.78	15.2%	7.0%	73%	2	2
44. Taya Investments Ltd	4	1.38	0.48	99	9.3	2.35	3.2%	-5.8%	80%	1	2

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	Dividend	CEO-owners
45. Ayalon Holdings Ltd	5	1.90	1.01	467	22.2	0.33	15.4%	18.7%	89%	1	2
46. Dolev Insurance Company	5	1.23	0.72	428	5.8	0.48	6.0%	19.9%	91%	1	1
47. Hadar Insurance Company	5	1.40	0.85	851	29.2	0.40	9.1%	-18.2%	83%	1	1
48. Phoenix Israel Insurance Company	5	1.88	1.10	2,788	137.7	1.83	15.9%	2.4%	92%	2	1
49. Harel Insurance Investments Ltd	5	1.28	1.02	1,878	132.2	0.60	15.6%	17.3%	82%	2	1
50. Clal Insurance Ltd.	5	3.70	1.91	3,888	199.7	0.72	13.7%	21.7%	77%	2	1
51. Mivtach Shamir Holdings Ltd	5	1.31	0.62	35	16.5	1.12	16.6%	17.4%	97%	2	2
52. Zion Holdings Ltd	5	1.39	0.63	656	11.9	0.59	-1.7%	0.5%	62%	1	2
53. Naphta Explorations	6	1.47	0.55	8	-3.2	-0.02	6.5%	-1.3%	86%	1	1
54. Mehadrin Ltd	7	1.04	0.58	287	-8.3	0.19	-1.2%	9.9%	71%	2	1
55. A. Vardinon Ltd	8	1.17	0.54	103	7.5	2.37	17.0%	-6.4%	78%	1	2
56. Offis Textile Ltd	8	1.02	0.43	130	15.5	1.71	44.4%	23.8%	88%	2	1
57. Argaman Industries Ltd	8	1.13	0.63	29	2.9	0.50	1.2%	-2.8%	31%	1	1
58. Gibor Sport Holdings Ltd	8	1.60	0.60	67	14.7	1.53	21.0%	19.9%	86%	2	2
59. Delta-Galil Industries Ltd	8	2.09	1.07	1,168	64.7	0.95	14.3%	4.8%	84%	2	1
60. Tiv Textile Group Ltd	8	1.21	0.67	132	9.0	0.74	10.4%	8.1%	87%	2	2
61. Lodzia-Rotex Investments Ltd	8	1.06	0.43	187	2.1	1.06	5.0%	2.4%	70%	1	2
62. Polgat Ltd	8	1.21	0.64	638	11.5	-0.26	3.3%	2.6%	81%	1	1
63. Castro Model Ltd	8	1.12	0.71	141	8.7	0.69	7.7%	13.1%	86%	2	1
64. Kitan Concern Ltd	8	1.21	0.78	721	28.6	0.56	6.4%	-1.5%	75%	1	1
65. Ytong Industries Ltd	9	1.06	0.78	332	47.2	1.13	7.0%	7.9%	86%	2	1
66. Univercol H. Hoffman Ltd	10	1.00	0.68	42	6.3	0.96	10.2%	7.8%	93%	2	2
67. Dor Chemicals Ltd	10	2.59	0.80	107	12.7	-0.49	9.8%	3.5%	91%	2	1

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives			Operating profit	Returns			Proportion held by parties at interest	Dividend	CEO-owners
			CEO's salary	Senior executives	Sales		on share relative to industry return	on capital, 1997	on capital, 1996			
69. Teva-Pharmaceutical Industries Ltd	10	2.29	1.54	3,949	540.7	0.08	19.0%	18.2%	17%	2	1	
70. Technoplast Industries Ltd	10	1.05	0.57	79	8.1	-0.57	22.0%	60.8%	68%	2	2	
71. Tambour Ltd	10	1.15	1.08	631	44.1	0.29	6.7%	6.7%	94%	2	2	
72. Israel Chemicals	10	9.83	4.34	5,961	653.5	1.73	13.0%	9.7%	73%	2	2	
73. Israel Petrochemical Enterprises Ltd	10	1.36	1.36	530	108.1	1.20	14.0%	10.4%	72%	2	1	
74. C.D.I. Compact Disc International	10	1.15	0.61	37	3.1	-0.26	6.9%	5.3%	82%	2	2	
75. Rimoni Industries Ltd	10	1.07	0.95	27	7.4	1.77	26.1%	19.9%	76%	2	2	
76. Rokah Pharmaceutical Industries Ltd	10	1.10	0.62	120	5.9	-0.53	4.7%	1.7%	83%	1	2	
77. Adumim Chemicals	11	1.60	0.59	24	0.7	0.61	4.1%	7.2%	67%	1	2	
78. Osem Investments Ltd	11	3.44	1.85	1,389	49.1	0.18	7.5%	41.4%	85%	2	2	
79. Zanolac Ltd	11	1.24	0.50	72	7.9	0.63	6.0%	6.8%	53%	1	1	
80. Tempo, Beer Industries Ltd	11	1.98	0.94	554	15.5	1.41	2.2%	-4.2%	96%	1	2	
81. Noropolak International	11	1.13	0.70	190	10.7	0.24	9.8%	8.4%	93%	2	2	
82. Elite Industries Ltd	11	2.34	1.57	1,899	92.5	1.50	8.0%	2.9%	68%	1	1	
83. Frutarom Industries Ltd	11	1.45	1.19	256	17.1	3.41	15.5%	10.4%	73%	1	2	
84. Tzam Food Products (Israel) Ltd	11	1.50	0.61	263	26.6	7.28	22.7%	4.0%	87%	2	2	
85. Shemen Industries Ltd	11	1.58	0.64	336	17.3	1.36	4.9%	-1.3%	72%	1	1	
86. Applicom Software Industry	12	1.15	1.07	77	7.0	1.22	30.3%	38.0%	82%	1	2	
87. Techem High Tech Ltd	12	1.29	1.08	167	15.0	0.46	11.6%	8.8%	85%	2	1	
88. Liraz Systems Ltd	12	1.21	0.73	162	19.2	1.07	18.2%	11.7%	77%	2	1	
89. Israel Direct Computerization	12	1.39	0.70	119	6.2	0.22	13.8%	12.8%	86%	2	2	
90. Point of Sale Ltd	12	1.33	0.82	39	6.6	2.16	23.6%	4.0%	72%	1	2	
91. Formula Systems Ltd	12	1.48	0.82	540	45.9	1.69	63.5%	27.2%	26%	1	2	

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives			Operating profit	Returns on share relative to industry return		Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	Dividend	CEO-owners
			CEO's salary	senior executives	Sales		on share relative to industry return	on capital, 1997					
92. Tim Computers and Systems	12	1.66	1.05	306	20.1	0.45	14.4%	62.0%	70%	2	2	2	
93. Elbit	13	1.04	0.66	111	-36.9	1.18	-11.9%	-3.2%	62%	1	1	1	
94. Elbit Medical Imaging Ltd	13	1.99	1.10	493	10.5	0.84	2.6%	4.4%	60%	1	1	1	
95. Elbit Systems Ltd	13	1.08	0.69	372	31.2	1.14	28.5%	29.3%	50%	2	2	1	
96. Elco Industries Ltd	13	1.17	0.76	421	53.5	-0.04	15.7%	24.1%	95%	2	2	2	
97. Electronics Line Ltd	13	1.37	0.81	63	-3.5	-0.08	-7.1%	0.1%	90%	2	2	2	
98. Elron, Electronic Ind. Ltd	13	1.18	0.58	12	-13.9	0.74	13.3%	5.7%	65%	2	2	2	
99. Epcon Monitoring and Automatization	13	1.29	0.85	113	21.4	0.18	76.0%	32.5%	70%	2	2	1	
100. Degem Systems Ltd	13	4.88	3.08	128	14.1	1.01	17.4%	-29.9%	65%	1	2	2	
101. H. Mar Industries Ltd	13	1.61	0.92	136	13.3	0.47	11.8%	-3.7%	78%	2	2	2	
102. Clal Electronics Industry	13	1.38	0.68	2,961	119.2	0.90	15.9%	13.3%	86%	2	2	1	
103. Cyclone Aeronautical Products	13	1.67	1.15	122	8.3	0.01	15.1%	-43.3%	69%	1	1	1	
104. Feuchtwanger Industries	13	1.56	0.92	485	61.1	0.90	44.5%	34.1%	66%	2	2	2	
105. P.C.B. Ltd	13	1.62	0.86	141	-0.1	1.14	0.4%	5.4%	82%	1	1	2	
106. Taddea Technological Development and Automation Ltd	13	1.61	0.92	166	20.0	1.29	19.3%	16.2%	73%	2	2	2	
107. Tadiran Consumer Goods	13	1.03	1.03	534	7.0	-0.39	2.2%	6.7%	94%	1	1	1	
108. Tadiran Ltd	13	1.35	1.01	3,935	322.5	0.49	18.7%	37.5%	66%	2	2	1	
109. Issa Lines Ltd	14	1.26	0.65	279	12.4	14.86	46.0%	54.6%	95%	2	2	1	
110. Dan Hotels Corp. Ltd	14	1.27	1.27	462	13.9	-1.04	-1.2%	1.0%	92%	1	1	1	
111. Clal Tourism Ltd	14	1.16	0.91	197	4.9	0.75	7.5%	11.1%	80%	2	2	1	
112. Orsys Ltd	15	1.01	0.52	66	6.6	-0.15	12.0%	8.7%	89%	1	2	2	
113. Inter-Gama Investment Ltd	15	1.24	0.86	346	32.0	0.53	14.2%	9.0%	85%	2	2	2	
114. S.T.G. International Ltd	15	1.53	1.03	51	7.1	1.69	15.7%	19.7%	82%	1	2	2	
115. Willy-food Investments Ltd	15	1.09	0.52	102	9.8	1.63	54.1%	42.3%	64%	2	2	2	

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by interest parties at	Dividend	CEO-owners
116. Zoko Enterprises Ltd	15	2.05	1.04	103	5.7	-0.17	8.0%	11.1%	67%	1	2
117. H.G.I. Marketing and Distribution of Building Ltd	15	1.24	0.71	358	5.4	2.42	9.4%	-12.0%	76%	2	2
118. Telsys Ltd	15	1.65	1.33	87	15.1	0.73	22.1%	31.0%	79%	2	2
119. Ya'ad Industrial Representation Ltd	15	1.21	0.65	146	3.4	-0.30	0.3%	-4.7%	73%	2	2
120. M.Z.P.K. Ltd	15	1.39	0.54	76	9.8	0.11	19.5%	22.9%	74%	1	2
121. Mini Line Ltd	15	1.09	0.59	146	16.8	0.57	9.8%	13.7%	96%	1	2
122. Nisco Industries Ltd	15	1.03	0.80	154	15.0	1.95	10.4%	16.1%	79%	1	2
123. Suny Electronic Inc. Ltd	15	1.16	0.55	80	9.7	1.46	16.4%	17.5%	75%	2	2
124. Scoop Sahar Metals and Technical Services	15	1.67	0.57	133	11.7	-0.69	14.6%	13.6%	78%	1	2
125. Pinros Holdings Ltd	15	1.13	0.67	31	1.0	-0.72	-12.8%	14.4%	84%	1	2
126. Crystal Consumer Products Ltd	15	1.07	0.62	182	11.1	1.19	14.1%	0.5%	92%	1	2
127. Rapac Electronics Ltd	15	1.73	1.73	131	16.8	2.21	32.0%	13.8%	66%	2	2
128. Supersol Ltd	15	1.33	0.62	182	11.1	1.19	14.0%	0.5%	92%	1	2
129. Avrot Industries Ltd	16	1.48	0.80	79	11.5	3.89	21.6%	29.2%	76%	1	1
130. Ham-Let Metal Products	16	1.35	0.82	60	5.0	3.39	4.7%	0.8%	87%	1	2
131. Yehuda Iron Screens	16	1.60	0.94	357	9.8	-0.96	-4.9%	8.1%	90%	1	1
132. Kevalim, Cable and Electrical Wiring Company	16	1.15	0.74	336	30.8	1.34	4.4%	5.2%	69%	2	1
133. Pecker Ironworks Ltd	16	1.56	1.00	393	19.9	0.13	3.5%	1.4%	74%	1	2
134. Kaniel, Israel Box Co. Ltd	16	1.43	0.66	276	14.2	1.10	2.9%	2.0%	77%	2	1
135. A. Dori Engineering Works Co. Ltd	17	1.14	0.92	5.9	32.9	4.64	53.8%	42.7%	66%	1	2
136. A. Lieber-Subsoil Industrial Ltd	17	1.79	0.76	264	22.5	-0.05	4.2%	5.2%	89%	1	2
137. A. Branowitz	17	1.45	0.69	117	10.3	0.48	3.4%	11.9%	77%	2	2
138. Osip Investments and Development	17	1.01	0.66	105	53.3	0.37	24.3%	2.4%	82%	1	2

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	Dividend	CEO-owners
139. Oceana Advanced Industries Ltd	17	1.04	0.73	42	2.7	2.62	4.3%	-6.1%	72%	1	1
140. Azorim Invest., Develop. & Construction Co. Ltd	17	1.53	0.80	1,141	140.7	0.63	8.8%	10.6%	77%	2	1
141. Ilan Gat Engineers	17	1.27	0.55	29	-8.7	-0.02	-51.0%	21.6%	73%	1	2
142. Al-Rov (Israel) Ltd	17	1.58	0.68	69	18.9	0.84	8.5%	3.3%	90%	1	2
143. Arledan Investments Ltd	17	1.12	0.43	49	4.7	0.33	5.6%	3.1%	81%	2	2
144. Ashlad Ltd	17	1.09	0.71	141	34.9	-0.02	9.4%	3.5%	89%	1	2
145. Biri Barashi Earth Works Dev. Infrastructure & Roads Ltd	17	1.02	0.58	45	1.1	-0.29	0.3%	6.0%	80%	1	2
146. Ben Yakar Gat Engineering and Construction Company	17	1.03	0.85	339	16.4	1.22	3.2%	8.6%	73%	1	2
147. Barad Earthworks and Development Company	17	1.09	0.60	79	2.7	-0.32	4.5%	10.6%	89%	2	2
148. Gilboa Wood Industries	17	1.18	1.19	133	5.1	0.26	-5.9%	24.1%	86%	2	2
149. Dunkner Investments Ltd	17	2.16	1.12	538	4.7	-0.03	1.5%	26.1%	89%	1	1
150. Villar International Ltd	17	2.38	0.85	24	11.7	0.36	10.7%	9.7%	88%	1	2
151. Mario Laznik Construction Company	17	1.11	0.85	298	48.2	0.98	6.7%	25.5%	92%	1	1
152. Assets and Construction Company	17	1.47	0.86	416	141.1	0.96	8.1%	8.9%	86%	2	1
153. I. Moshkovitz Construction Company	17	1.39	1.18	136	4.6	0.95	-11.4%	6.5%	77%	1	2
154. Yehuda Stag and Sons	17	1.13	0.62	66	-0.5	0.11	-10.5%	11.7%	85%	1	2
155. Yuval Engineering Industries Ltd	17	1.07	0.60	45	-0.9	-0.23	1.8%	-9.6%	93%	1	2
156. Israelom, Real-Estate Corp.	17	1.05	0.75	40	7.6	0.00	3.6%	3.7%	82%	2	2
157. Isras Investment Co. Ltd	17	1.40	0.63	168	46.1	0.04	5.3%	10.1%	92%	1	1
158. Jerusalem Economics Corporation Ltd	17	1.54	1.30	99	6.3	1.46	9.9%	4.8%	81%	2	2

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by interest parties at	Dividend	CEO-owners
159. Lumir Holdings Ltd	17	1.09	0.57	39	6.3	1.46	9.9%	4.8%	81%	2	2
160. M.T.M.-Mivet Taasia & Mlacha Ltd	17	1.58	0.62	77	16.2	0.03	12.8%	14.2%	79%	1	2
161. Construction Stocks Ltd	17	2.43	1.39	63	11.2	0.83	10.8%	7.4%	69%	1	2
162. Industrial Building Corp. Ltd	17	1.20	0.88	204	115.5	1.76	6.1%	5.6%	81%	2	1
163. Magor Holdings Ltd	17	1.39	0.51	56	4.4	0.09	0.5%	35.6%	41%	1	2
164. Melisron Ltd	17	1.33	0.53	59	34.1	0.47	13.1%	27.7%	89%	2	2
165. Mordechai Aviv											
Taasrot Beniyah Ltd	17	2.37	0.83	149	36.9	1.54	36.3%	44.3%	88%	1	2
166. Nisba Holdings Ltd	17	1.24	0.77	125	40.5	-0.98	7.9%	5.7%	91%	1	1
167. Solomon Holdings Ltd	17	2.49	1.13	146	11.4	1.64	14.5%	31.9%	75%	2	2
168. Soler Boneh Building & Infrastructure Ltd	17	1.41	0.88	2,010	72.8	-0.08	44.4%	50.3%	90%	2	1
169. Secom (Israel) Ltd	17	1.20	0.63	99	16.9	0.30	7.2%	0.4%	78%	1	1
170. Pritzker Entrepreneurs Ltd	17	1.57	0.76	130	3.9	0.94	0.4%	16.8%	87%	2	2
171. Zvi Sarfati Investments and Constructions Ltd	17	2.26	1.23	122	23.0	1.00	22.3%	9.2%	95%	2	2
172. Cemental Ltd	17	2.10	1.19	470	25.8	1.56	13.7%	17.4%	75%	2	2
173. Rassco Rural and Urban Settlement Company	17	1.00	0.50	102	18.7	-0.44	12.3%	45.5%	76%	1	1
174. S.I. Shemtov Ltd	17	1.94	0.91	71	3.1	1.25	23.7%	-12.1%	82%	2	2
175. Shaked Netanel Construction Industries Ltd	17	1.15	0.79	205	3.3	-0.27	8.2%	26.0%	83%	1	2
176. Orda-Print Industries Ltd	18	1.49	0.53	47	9.8	4.14	36.3%	45.6%	75%	2	2
177. Bierman Industries Ltd	18	1.06	0.63	123	3.2	1.10	4.5%	0.7%	79%	2	2
178. Cargal Ltd	18	1.82	0.97	323	56.1	-0.14	7.1%	8.3%	94%	2	2
179. Sapan Industries and Investments Ltd	18	1.09	0.64	181	17.2	2.61	20.7%	11.7%	84%	1	1
180. Carmel Investments Group Ltd	19	1.41	1.04	3,090	93.9	0.88	6.5%	7.2%	94%	2	1

Appendix Table (cont.)

Company name	Industry	CEO's salary	Mean salary of five senior executives	Sales	Operating profit	Returns on share relative to industry return	Return on capital, 1997	Return on capital, 1996	Proportion held by parties at interest	Dividend	CEO-owners
181. Delek Israel Oil Company	19	1.75	0.99	3,994	180.5	1.46	12.2%	10.4%	92%	2	1
182. Danel (Adir Yeoshua) Ltd	19	2.83	0.71	202	25.5	3.08	29.0%	22.2%	77%	2	2
183. TransClal Trade Ltd	19	1.88	0.80	35	9.8	-0.22	14.1%	20.7%	92%	2	2
184. Knfaim-Arkia Holdings Ltd	19	1.36	0.83	669	98.2	2.62	20.0%	19.0%	94%	1	2
185. Maman-Cargo Terminals & Handling Ltd	19	2.00	0.98	235	28.0	-0.03	11.0%	13.2%	95%	2	1
186. Matav-Cable Systems Media Ltd	19	2.34	0.90	355	130.7	0.45	20.6%	34.4%	74%	2	2

Legend

1. Mortgage banks
2. Commercial banks
3. Investment in manufacturing
4. Investment firms
5. Insurance firms and agencies
6. Oil exploration
7. Agriculture
8. Textiles and clothing
9. Construction products
10. Chemical, rubber, and plastics products
11. Food and tobacco
12. Computers and computer services
13. Electrical, electronics and optical equipment
14. Hotel and tourism services
15. Commerce
16. Metal and its products
17. Real estate, construction and development
18. Wood and its products, paper and printing
19. Services

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