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An empirical investigation of the U.S. oil industry

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Abstract

We investigate the suggested substitutive relation between executive compensation and the disciplinary threat of takeover imposed by the market for corporate control. We complement other empirical studies on managerial compensation and corporate control mechanisms in three distinct ways. First, we concentrate on firms in the oil industry for which agency problems were especially severe in the 1980s. Due to the extensive generation of excess cash flow, product and factor market discipline was ineffective. Second, we obtain a unique data set drawn directly from proxy statements which accounts not only for salary and bonus but for the value of all stock-market based compensation held in the portfolio of a CEO. Our data set consists of 51 firms in the U.S. oil industry from 1977 to 1994. Third, we employ ex ante measures of the threat of takeover at the individual firm level which are superior to ex post measures like actual takeover occurrence or past incidence of takeovers in an industry. Results show that annual compensation and, to a much higher degree, stock-based managerial compensation increase after a firm becomes protected from a hostile takeover. However, clear-cut evidence that CEOs of protected firms receive higher compensation than those of firms considered susceptible to a takeover cannot be found.

JEL Classification: G3; G34; J33

Keywords: Executive Compensation; Takeovers; Compensation Contracting; Oil Industry

1. Introduction

Executive compensation strongly increased over the past 20 years, both with respect to actual levels as well as pay-to-performance sensitivity (Hall and Liebman, 1998). At the same time, an increasing number of firms have become effectively protected against hostile takeovers by means of poison pills and antitakeover charter amendments. Both executive compensation and the market for corporate control act as disciplinary forces to reduce agency costs between the owners of the firm and its managers. Payoffs from incentive contracts and the likelihood of a hostile takeover both crucially depend on the market price of the company's stock—the only performance measure that values the effect of managerial decisions on the future of the firm. Thus, both control forces address the same conflicts of interest between shareholders and management. They are also both costly to operate: risk-averse managers demand additional compensation for the increased risk they are exposed to, and raiders need to be compensated for their efforts to restructure the firm, suggesting a substitutive relation between these two control forces.

Three recent empirical studies also investigate this relation. Agrawal and Knoeber (1998) distinguish the *competition effect* and the *risk effect* of the threat of takeover. The competition effect (which we call the *incentive substitution effect*[1]) allows shareholders to reduce executive compensation in the presence of a greater threat of takeover. The risk effect makes managers demand a higher pay as a hostile takeover results in the loss of firm-specific human capital or implicitly deferred compensation. The authors estimate the effect of a firm's ex post exposure to a hostile takeover on the CEO's annual compensation (salary and bonus). Agrawal and Knoeber use cross-sectional data for 525 large firms in different industries for the year 1987. Their results indicate that—as a net effect—the threat of takeover is positively related to annual compensation. They conclude that the risk effect dominates the competition effect of the threat of takeover. In another study, Hubbard and Palia (1995) examine 147 banks over the decade of the 1980s. The authors investigate the effect of changes of interstate banking regulation on the level and structure of CEO compensation. With the deregulation in the 1980s, out-of-state banks have been allowed to acquire local banks, thus increasing the threat of takeover. Hubbard and Palia consider not only annual compensation, but also the value of equity owned in the bank plus the value of stock options granted to a CEO. They find evidence that the level of compensation is higher for banks exposed to a more competitive market for corporate control. Hubbard and Palia suggest a *managerial talent explanation* that competitive corporate control markets require more talented managers whose levels of compensation are consequently higher. Bertrand and Mullainathan (1998) investigate the effect of state antitakeover legislation on executive compensation. Using a cross-sectional panel of 611 firms over the period 1984 to 1991, they find that both the pay-for-performance sensitivity and the level of a CEO´s compensation increase after the adoption of state antitakeover

[1] We think that incentive substitution is the more appropriate term. In our view it is not increased competition that drives down executive compensation in the presence of takeover susceptibility as suggested by the term 'competition effect' but instead the substitutive relation between monetary incentives and the incentives induced by the threat of takeover.

legislation.

In our view, these studies suffer from a variety of drawbacks. Agrawal and Knoeber consider only annual compensation (salary and bonus). However, it is stock-based incentive compensation that accounts for most of the variation in executive wealth (Murphy, 1998). Furthermore, they use the incidence of actual hostile takeovers in a firm's industry during the preceding three years as a measure of the threat of takeover. As a proxy for the competitiveness of the corporate control market, Hubbard and Palia use a federal state's banking regulation while Bertrand and Mullainathan use a state's antitakeover legislation. We think, however, that these measures do not reflect the true susceptibility of an individual firm to a takeover. They neglect important variables at the firm level such as managerial stock ownership and the existence of a poison pill or some other antitakeover device. As disciplinary takeovers by definition address a firm-specific rather than an industry-specific phenomenon, this becomes even more relevant.[2] Moreover, the number of actual hostile takeovers is by no means a measure of the disciplinary effect of the market for corporate control, in much the same way as the number of crimes penalized is not a good measure of discipline exercised by the legal system. The opposite can be suggested as well: when the number of crimes committed is low legal discipline is highly effective.

Sample selection gives rise to yet another problem. Agrawal and Knoeber as well as Bertrand and Mullainathan investigate a heterogeneous sample of firms from different industries. But agency problems differ in different industries, and thus "there is a great deal of heterogeneity in pay practices across firms" (Murphy, 1998). Moreover, for firms in competitive industries executive compensation and the market for corporate control may not be the most effective control forces. Competition in product and factor markets may be already sufficient to ensure managerial discipline. Since the banking industry can be characterized as highly competitive, it is not clear that the evidence found by Hubbard and Palia is really driven by the interaction of executive pay and the market for corporate control.

In an attempt to overcome these drawbacks, we examine a sample of firms in a single industry. This approach seems more appropriate for providing insights into the relation between executive compensation and the threat of takeover. We have chosen the oil industry for the following three reasons. First, the oil industry is a relatively homogenous industry, and it is to be expected that agency problems and pay practices are comparable across firms. Second, due to radical economical changes in the late seventies, firms in the oil industry generated large amounts of free cash flows which should have been paid out to the shareholders rather than put in investment projects that yielded returns below their opportunity cost (Jensen, 1986). However, managers generally like to retain funds within the organization. Thus, agency problems between shareholders and management are particularly severe in

[2] Bertrand and Mullainathan (1998) do not account for already existing antitakeover charter amendments. However, antitakeover amendments to a firm´s charter may have the same effect as the various state antitakeover regulation laws. We therefore expect the adoption of a state antitakeover legislation to have no effect on executive compensation, if the firm already had a corresponding amendment in its charter.

this industry. Third, and most important, the generation of large amounts of free cash flow prevented the product and factor markets from exerting discipline on management (Jensen, 1986). It is therefore no surprise to notice that the oil industry was particularly hit by hostile takeovers in the 1980s.

Our data set encompasses 51 firms for the years 1977 to 1994. We collect data on all stock-based incentives (stock options, restricted stock, and managerial stock ownership) which allows us to construct measures that reflect the true intensity of managerial incentives. Measures of protection from the takeover market are derived from insider voting control, the poison pill defense, and various antitakeover charter amendments. We then examine the suggested relation between CEO compensation incentives and susceptibility of a firm to a hostile takeover using multiple regression analysis.

The results can be summarized as follows. First, we find evidence that annual compensation increases between five and ten percent when certain takeover defenses are adopted. This result is in contrast with the finding that incentives from stock-based compensation excluding managerial stock ownership increase by more than 400%. For example, this means that a CEO who held 40,000 stock options before the adoption of a takeover defense, holds 200,000 stock options afterwards. When including managerial stock ownership, stock-based incentives increase between 30 and 40% when a firm implements certain takeover defenses. Second, CEOs of firms that are isolated from the takeover market, however, do generally not enjoy stronger monetary incentives than CEOs of firms considered vulnerable to a hostile takeover. Additionally, the results show a negative relation between incentive compensation and a firm's financial leverage. In accordance with Smith and Warner (1992) as well as with Agrawal and Knoeber (1998) we show a positive relation between incentive compensation and a firm's market-to-book ratio, with the latter being a proxy for the firm's growth opportunities.

The remainder of this article is organized as follows. Section two presents the empirical approach and states the hypotheses about the relation between executive compensation and takeover susceptibility. Section three describes the data and how we obtain the sample from proxy statements. Section four gives the definition of the variables, and explains how we construct our ex ante measure of takeover susceptibility at the firm level. Section five describes the econometric methodology and presents the empirical results and discusses our findings in comparison to those of previous studies. Section six summarizes and concludes the paper.

2. Empirical approach and hypotheses

The extent to which a specific control force is operated is either decided within the firm or exogenous to the firm. For example, the fraction of a manager's incentive compensation to his fixed annual compensation is endogenous, the discipline from the product and factor markets is exogenous to the firm. Choices of internally selected mechanisms are expected to take into account any interrelations and

to maximize firm value. We make the following assumptions. The disciplinary function of the market for corporate control is partly determined internally, partly exogenous to the firm. Internal choices include the amount of inside stock ownership, the adoption of takeover defenses, and managerial effort in previous periods. External factors include the availability of financing of hostile takeover to a corporate raider, the number of raiders observing the firm etc. We further assume that that managerial employment schemes are optimal internal incentive contracts in the sense of agency theory, i.e., discipline from externally determined control forces is taken into account.

The causality and timing of the decision tree are as follows. At time one the firm's shareholders decide about the future exposure of the firm to the discipline of the market for corporate control. The subsequent analysis does not try to explain why it may be desirable to expose or isolate the firm from the takeover market. It is simply observed that firms vary in their exposure to the market for corporate control. What consequences do different levels of exposure have for the compensation contracts of CEOs? The adoption of a takeover defense decreases managerial discipline immediately. To restore managerial discipline, shareholders at time two may wish to increase or decrease incentive compensation. Note that for the hypotheses to follow, the decision about the discipline of the market for corporate control is treated as exogenous. On the other hand, the decision on incentive compensation is endogenous. Note also that the function of incentive compensation is solely to resolve conflicts of interest between shareholders and management. The function of incentive compensation as a means to attract and retain managers is assumed to play a subordinate role.

With this in mind, we expect CEOs of firms that become protected from hostile takeovers to receive higher incentive compensation: forgiven incentives from the now ineffective market for corporate control are restored by increased executive compensation due to the incentive substitution effect. Consequently, Hypothesis (1) is stated as follows:

Hypothesis (1)—Incentive substitution effect: The weaker the discipline of the takeover market on a firm's management is, the stronger must be the intensity of incentive compensation to restore incentives, and vice versa. A possible risk effect is dominated by the incentive substitution effect. Two testable implications can be derived. First, isolation of a firm from the disciplinary effect of the market for corporate control leads to an increase in the level and/or intensity of CEO incentive compensation [*Hypothesis (1a)*]. Second, managers of firms that are less exposed to the threat of a hostile takeover receive higher incentive compensation than managers of firms that are more susceptible to hostile takeovers [*Hypothesis (1b)*].

Matters are reversed if one assumes that the risk effect of the threat of takeover dominates the incentive substitution effect. Hypothesis (2) is formulated as follows:

Hypothesis (2)—Risk effect: The higher the risk of a hostile takeover, the greater must be a manager's compensation to make him accept that risk. The risk effect dominates the incentive substitution effect.

Again, two testable implications can be derived. First, isolation of a firm from the discipline of the market for corporate control leads to a decrease in the level and/or intensity of managerial incentive compensation [*Hypothesis (2a*)]. And second, managers of firms that are more susceptible to a hostile takeover receive higher incentive compensation than managers of firms that are more protected from the market for corporate control [*Hypothesis (2b*)].

The null hypothesis to Hypotheses (1) and (2) is that the effectiveness of the market for corporate control does not affect managerial incentive compensation. It is most important to note that under the notion of an exogenously determined exposure of the firm to the market for corporate control, managerial compensation contracts may well be an efficient answer to managerial moral hazard in the first place. That is, poison pills, antitakeover charter amendments and other management-entrenching measures may be the result of moral hazard while the resulting compensation contracts are then an efficient answer to these environments. Managers who are entrenched need more internal discipline, and increased incentives from compensation packages may well accomplish this. Consequently, there exist at least three different explanations for a positive relation between managerial entrenchment and management compensation. First, under efficient contracting, managers may demand a higher premium to their increased exposure of risk coming from the takeover markets. Second, entrenchment measures may be evidence of opportunistic managerial behavior, and compensation packages an efficient answer to them. And last, managers who have the power to adopt antitakeover measures are likely to have also the power to set their own compensation, and both may well be categorized as moral hazard. This study does not try to differentiate between these explanations. It rather addresses the question if there is a relation between the threat of takeover and executive incentive compensation, regardless of its original nature.

3. Data and sources

The sample of companies analyzed consists of the 51 largest publicly traded corporations as of May 1995 (measured by net sales) that are as of that time 1) incorporated in the U.S., 2) specified as companies within the oil industry (four-digit industry SIC Code 131-138 and 291), 3) traded on either the AMEX or the NYSE, and 4) for which data exist from 1980 on or before until 1994.[3] The sample period goes from 1977 to 1994 (i.e., the proxy seasons 1978 to 1995). The final data consist of 903 pooled cross-sectional and time-series observations, with compensation data for 131 different CEOs.[4] Because the firms are selected by size in 1995 (and not in 1977), the sample selection implies a bias both

[3] The list of companies was created with the Compact Disclosure SEC Database. For two companies, due to their special fiscal years, the 1994 compensation data were not available by mid 1995. A complete list of the companies examined with their respective CUSIP number and COMPUSTAT perm number can be found in the Appendix.

[4] Included in this number is one CEO whose employment contract was terminated and later was employed by another firm in the sample.

toward surviving and successful firms. However, this bias is believed to have no systematic impact on the data relations found.

The CEO compensation data are taken from the SEC corporate proxy statements. In these, firms are required to report the compensation of their five highest-paid officers and directors of the preceding year. The data consist of the annual compensation (base salary, annual bonus payments, directors' fees, and company contributions to thrift plans, savings plans etc.), stock-based incentive compensation (stock options, restricted stock), and managerial stock ownership. For all stock-based compensation contracts we collect data with respect to grants, holdings and payoffs resulting from exercising or vesting. Since CEOs are almost always among the five highest-paid officers of their firms before they become CEO, it is generally possible to get the incentive-relevant data on long-term incentive contracts for these years.[5] Other data collected include the age of the CEO, his job tenure as CEO, and additional positions held within the firm such as Chairman of the Board and President of the Company. Furthermore, it is assumed that effects of personal taxation across CEOs and time periods are small enough to be neglected. All compensation and other monetary variables have been deflated by the CPI to reflect 1994 constant dollars.

Company data are taken from two sources. Accounting data such as the book value of assets, debt, income, accounting return etc. are compiled from Standard & Poor's COMPUSTAT Expanded Annual File.[6] All stock market related data such as stock prices, dividends, stock splits etc. are taken from the University of Chicago's CRSP Monthly Stock Returns Tape.

Data believed to influence and reflect the effect of the market for corporate control on managerial discipline are collected from a variety of sources. For each firm, information on the adoption and existence of four different categories of corporate antitakeover charter amendments ("shark repellents") is gathered: 1) supermajority amendments, 2) fair-price amendments, 3) classified board provisions, and 4) the authorization of the Board of Directors to issue preferred stock. Among charter amendments, these four are generally believed to have the greatest deterring effect. Since charter amendments must be presented for shareholder approval, proxy statements indicate when a charter amendment was proposed. All firms have been thereafter contacted to check for existing amendments adopted before 1978 and to confirm the adoption indicated in the proxy statements. The list of Jarrell and Poulsen (1987) as well as various editions of Mergers & Acquisitions allowed some cross-checking. A historical record of all shareholder rights plans ("poison pills") installed between January 1, 1983 and November 30, 1995 is provided by Charles E. Simon & Co. (1996). The amounts of voting stock put in ESOPs (Employee Stock Ownership Plans) and other fiduciary trusts were either received directly from the firms or taken from the proxy statements. The SEC requires disclosure of any holdings exceeding five

[5] If a CEO is acquired from outside the firm, naturally he cannot possess any long-term incentive contracts from previous years. To establish immediate incentives, firms generally grant extraordinary high amounts of stock options and the like to the newly acquired CEO.

[6] Source: CRSP tapes at the University of Chicago Graduate School of Business.

percent of any class of security. When the data are not available from a company or said to be insignificantly small, and no report can be found in the proxy statement, the amount of stock held in ESOPs and other trusts is arbitrarily set at two percent of the outstanding stock.

For the federal states relevant to the sample firms, data on the following state antitakeover regulations are gathered: 1) control share acquisition laws, 2) business combination laws, 3) fair-price laws, 4) cash-out laws, 5) classified board laws, and 6) non-monetary considerations laws. This information is available from Winter et al. (1989) and various recent editions of Mergers & Acquisitions. For each firm, we derive the state of incorporation from corporate 10-K reports and the Compact Disclosure SEC Database as well as from proxy statements.

Finally, the aggregate holdings of voting securities in the hands of institutional investors such as investment funds, pension funds, insurance companies etc. can be found in the Standard & Poor's Stock Guide. To avoid any disturbing effects resulting from year-end transactions, the November month-end holdings are collected and corrected by any subsequent changes in capitalization if necessary.

4. Variable definitions and descriptive statistics

4.1. Compensation measures

Annual compensation is used to examine whether companies differ in the level of short-term incentive compensation. The SEC requires firms to disclose CEO salary and bonus. Since it is not mandatory to show each component separately, many firms decide to report only an aggregate amount. Consequently, annual compensation is defined as

$$SALBON_{it} \equiv SALARY_{it} + BONUS_{it} \tag{1}$$

where $SALBON_{it}$ denotes the present value (in 1994 dollars) of the annual compensation, $SALARY_{it}$ the present value of base salary, and $BONUS_{it}$ the present value of the annual bonus paid to the CEO of firm *i* at fiscal year *t*.

To construct a measure of the intensity of incentives from long-term incentive compensation, the following question is asked: how much does the value of stock-market-based incentive contracts held in the portfolio of a CEO change in absolute dollar terms if the underlying share price rises by a hypothetical one percent? With market-based incentive compensation consisting of stock options and restricted stock held in the portfolio of the CEO at fiscal year-end, this change in value of compensation contracts is defined as

$$SMBIC_{it} \equiv DOPT_{it} + DRS_{it} \tag{2}$$

where $SMBIC_{it}$ denotes the change in value of all stock-market-based incentive compensation in the portfolio of a CEO of firm i at time t, $DOPT_{it}$ the change in value of all stock options held in the portfolio, and DRS_{it} the change in value of all restricted shares held in the portfolio, all for change of one percent in the underlying stock market price. Following Murphy (1985), we apply a modified Black-Scholes formula for the valuation of stock options, which allows for continuously paid dividends. The value of N series t options at time t is given by

$$VOPT_{it,t} = N_{it}\left[P_{it}e^{-d_{it-1}T_{it}}\Phi(Z_{it}) - X_{it}e^{-r_tT_{it}}\Phi\left(Z_{it} - s_{it}\sqrt{T_{tt}}\right)\right] \tag{3}$$

where

N_{it} = number of series t options (from year t) held in the portfolio of the CEO of firm i at fiscal year-end t;

P_{it} = fair market value of the underlying of the underlying common stock of firm i at calendar year-end t;

X_{it} = exercise price of the stock option series t (corrected for any changes in capitalization, such as stock splits, etc.);

$F(.)$ = cumulative standard normal distribution function;

T_{it} = amount of time in months to expiration of the options series t; T=60 or T=120 for five- and ten-year options at the time of the grant, respectively;

r_t = average monthly continuously compounded risk-free interest rate, measured as $ln(1+R)/12$, where R is the annual five- and ten-year average market yield on U.S. Government Securities;[7]

d_{it-1} = dividend yield, defined as

$$\ln\left(1+\frac{DPS_{it-1}}{P_{it-1}}\right) \div \left\{\begin{matrix} months\ in \\ fiscal\ year \end{matrix}\right\};$$

where DPS_{it-1} denotes the total dividends per share paid out in calendar year t-1; following Murphy (1985), the dividend yield is estimated using the dividend ratio of the previous calendar year to avoid a mechanical relation between performance and the value of stock options;

[7] Source: Federal Reserve Bulletin, various monthly editions, and the Federal Reserve Board's Banking and Monetary Statistics.

q_{it}^2 = estimated monthly stock return variance for the 60-month period preceding the first day of the current fiscal year;

$$Z_{it}(P_{it}) = \frac{\ln\left(P_{it}/X_{it}\right) + \left[r_t - d_{it-1} + \left(s_{it}^2/2\right)\right] * T_{it}}{s_{it}\sqrt{T_{it}}}.$$

The usual assumptions underlying the Black-Scholes option valuation formula are made.[8] Using the above formula, the change in value of all stock options held in the portfolio of a CEO for a one percent change in the stock market price is calculated by

$$DOPT_{it} = \sum_{t=0}^{t}\left[VOPT_{it,t}\left(P = (1+d)P_{it}\right) - VOPT_{it,t}\left(P = P_{it}\right)\right] \tag{4}$$

where $d = 0.01$.

Sometimes, dividend equivalent contracts are attached to stock options to encounter CEO incentives to decrease dividends. Contrary to stand-alone dividend equivalent units which are not considered market-based incentive compensation, dividend equivalents attached to stock options are considered in the above valuation as they change the payoff function implied by the stock options.[9]

The change in value of restricted stock held in the CEO portfolio at calendar year-end, DRS_{it}, is measured as the change in market value of the stock, that is

$$DRS_{it} = (1+d)N_{it}P_{it} \tag{5}$$

where N_{it} is the number of restricted shares held in the portfolio of CEO i at fiscal year-end t, and P_{it} the calendar year-end closing price of the firm's common stock. A possible reduction in value resulting from the fact that the shares are restricted and subject to forfeiture under certain conditions must be neglected. This negligence can be justified by, first, that the occurrence of the conditions that leave the shares forfeited is to a high degree controlled by the CEO, and second, that restricted shares are almost

[8] A variety of problems goes along with the use of the Black-Scholes option valuation formula for executive stock warrants. First, and probably most important, underlying the use of incentive compensation is the idea that CEOs can influence the performance of the firm. However, if a CEO can influence the outcome of a firm, the Black-Scholes option formula underestimates the true value of an option. The same is true for the underlying stock price variance (Lambert and Larcker, 1985). Second, the Black-Scholes formula assumes that stock options are freely tradable which in effect they are not. Third, the valuation formula applied does not adjust for the dilution upon exercise of an option (in fact a warrant). Fourth, the fact that companies are required to publish only the total number of options granted and the average strike price, but not individual option grants, leads to an additional bias whose direction is not determinable. As can be easily checked, the valuation of the combined option grant slightly underestimates the sum of the values of the individual option grants. Overall, the direction of the bias is unclear. However, it seems reasonable to assume that it does not affect any regression results in a significant way, especially because most bias components are true for all firms and CEOs.

[9] For cases in which stock options carry dividend equivalents, the dividend ratio in the above valuation formula is set to zero to reflect the fact that dividends do not decrease the share price.

never forfeited.[10]

Of course, stock ownership gives market-based incentives to a CEO in much the same manner as stock options and restricted stock held in his portfolio. Jensen and Murphy (1990) find that CEOs on average receive the largest portion of their market-based incentives from ownership in the firm's stock. It is therefore natural to include the change in value of managerial stock ownership in the above incentive measure, i.e.,

$$TSMBI_{it} \equiv SMBIC_{it} + DMSTO_{it} \tag{6}$$

where $TSMBI_{it}$ denotes the change in value of total stock-market-based wealth of the CEO of firm i at time t, and $DMSTO_{it}$ the change in value of all restricted stock .

[INSERT TABLES 1-3 HERE]

Tables 1 to 3 show descriptive statistics for the three variables $SALBON_{it}$, $SMBIC_{it}$ and $TSMBI_{it}$. The data confirm what previous studies find for other samples. Annual compensation increased strongly in the 1980s. The rise from $816,800 in 1977 to $1,130,600 in 1994 represents a 40% increase in average real compensation. This increase is even stronger when taking firm size into account. Measured in real book value of total assets, average firm size decreased by more than ten percent between 1977 and 1994. The increase in average compensation is even higher for stock-based incentive compensation (excluding managerial stock ownership). In 1994, the average change in value of stock-based compensation contracts for a change in stock price by one percent is $84,600, as compared to $16,100 in 1977. Average incentives—as measured here—are more than five times higher in 1994 than in 1977. When considering incentives from all stock-based components in the portfolio of CEOs, the mean intensity of incentives—as measured here—remains more ore less the same throughout the sample period. In the years 1980, 1981, and 1983, incentives are extraordinarily strong. The reason is, stock prices increased sharply in these years, and higher stock prices mean higher absolute dollar increases for a given percentage increase. When CEOs care only about the increase in wealth measured in absolute real dollar terms, as implied by the definitions of $SMBIC_{it}$ and $TSMBI_{it}$, incentives to increase stock prices are by far the strongest by the end of 1980.

4.2. Takeover defenses

An efficient market for corporate control exerts discipline on management not primarily through hostile takeovers actually taking place, but insofar as management anticipates a forthcoming threat of takeover in case of moral hazard. It works much the same way as criminal law restrains people from committing crimes without the actual penalty being executed. Thus, the threat of a hostile takeover must be

[10] For a description of the procedure of how restricted stock grants and holdings were determined when not explicitly reported see Haid (1997).

distinguished from the actual takeover. It is the anticipation of a hostile takeover, and not the execution itself, that disciplines management. As the threat becomes stronger when management fails to act in the shareholder's best interest, management tries to keep away from moral hazard. Whether a firm is actually taken over or not is not important and does not tell anything about the discipline of the market for corporate control exercised on the firm's management before. Therefore, in this paper, the incidence of an actual takeover is not considered as a determinant of the effectiveness of the market for corporate control. Instead, the question is asked: how susceptible is a given firm to a hostile takeover in case of managerial incompetence or moral hazard? How easy can a takeover be executed if management acts in its own interest? It is this question that both management and a potential raider have to answer when determining their actions. For instance, a firm whose management owns a controlling majority of the firm's outstanding votes can simply not be taken over.

As noted above, there are a variety of instruments besides managerial stock ownership that are used by management to isolate the firm from the market for corporate control. The most important measures are poison pills, antitakeover charter amendments, and ESOPs. Table 4 shows the number of antitakeover charter amendments adopted by the firms in the sample, by type of amendment, for each year between 1977 and 1994. In parentheses is the aggregate number of firms that have implemented a specific amendment in their charter by that year. As mentioned before, similar defense measures can be adopted by state antitakeover regulation laws. These takeover defenses are taken into account in Table 4. Specifically, supermajority requirements and state business combination laws, fair price charter amendments and state fair price laws as well as cash-out laws are combined, respectively.[11]

[INSERT TABLE 4 HERE]

Several facts are worth being highlighted. By 1977, 31 firms had authorized their board to issue preferred stock. The fact that subsequently, most of these firms adopted other takeover defenses indicates that board authorizations to issue preferred stock may have serious drawbacks. Second, between 1983 and 1986, there is a sharp increase in the adoption of antitakeover charter amendments. Over this period, 36 of 51 firms adopted at least one antitakeover amendment or were incorporated in a state that adopted a respective takeover regulation law.

The popularity of adopting charter amendments sharply decreased after the introduction of shareholder rights plans (poison pills). Table 5 shows the number of poison pills adopted and in place for the sample firms between 1977 and 1994. It is widely believed that the success of the poison pills lies in their believed invincibility to takeover attempts as well as the fact that the adoption of a poison pill does not require shareholder approval.

[INSERT TABLE 5 HERE]

[11] None of the sample-relevant states adopted a classified board law. Control share acquisition laws were not considered.

Whether a firm can possibly be taken over is not easily observable. Many corporate raiders, however, must have a fairly good idea of the susceptibility of a firm to a hostile takeover. What determines the degree of protection from the market for corporate control? Since there is no single true measure of takeover protection, a variety of measures are defined and tested in the regressions to follow.

A firm whose management and board own a controlling majority of the firm's outstanding votes cannot be taken over. Thus, the dummy variable $VOTE_{it}$ was set to one if the sum of votes under control of the whole management (including shares in an ESOP) exceeded 30% of the firm's outstanding votes.[12]

Unfortunately, little is known about the effectiveness of various antitakeover devices, and much of it comes from anecdotal evidence. A supermajority requirement, for example, may be effective in preventing a raider from liquidating parts of the firm, but is unable to prevent him from taking over the firm. The fair price amendment is generally seen as the weakest measure. Two-tier tender offers are by no means necessary to a successful takeover. Anecdotal evidence indicates that classified boards also do not prevent hostile takeovers. Often, management and the board resign when confronted with a majority of stock in the hands of an unfriendly shareholders. And finally, the issuance of preferred stock may provoke shareholder opposition when confronted with the possibility of losing the gains that go along with a hostile takeover. Finally, few commentators question the effectiveness of poison pills although hostile takeovers were successful even in cases when a poison pill was installed. For practical purposes, all takeover defenses are examined. The dummy variables $PPILL_{it}$, $SMAJ_{it}$, $FAIRPR_{it}$, $CLBOARD_{it}$, and $AUTHPREF_{it}$ are set to one if firm i has in effect the defense at time t, and to zero otherwise.

Since adequate financing of a hostile takeover may be difficult to get, a firm's size is often considered an effective deterrent to a hostile takeover. Consequently, the dummy variable $SIZE_{it}$ is set equal to one if the capitalization of the firm's common stock in a specific year exceeds an arbitrary $25 billion, measured in real dollars of 1994.

For the construction of the various takeover defense regimes, it is assumed that a firm can take on only two states. It is either susceptible to a hostile takeover or not-susceptible. That is, no in-between degrees of susceptibility are defined. With the exception of $VOTE_{it}$ and $SMAJ_{it}$ (which reinforce each other's effectiveness), it is reasonable to assume that there is no positive reinforcement or interaction between the various takeover defenses.

[INSERT TABLE 6 HERE]

[12] The control of less than 50% of the outstanding votes is sufficient to guarantee isolation from the takeover market. First of all, not all shareholders exercise their rights to vote at shareholder meetings regularly. Second, management might easily compete with a hostile raider in the bidding for the number of remaining shares sufficient to guarantee independence.

In Table 6, the antitakeover regimes of columns 1 to 7 are defined according to the dummy variables above. In addition to that, also combinations of these takeover defenses are considered. The dummy variables in columns 8 to 13 are set to one if a firm had in effect either a poison pill or one of the other antitakeover deterrents, one for each variable. And finally, variables 14 to 17 combine the poison pill, the management voting control condition, and one of the four antitakeover charter amendments.

4.3. Some selected explanatory variables and correlation coefficients

Some variables that are used in the regressions to follow must be explained. The variable $BKASSET_{it}$, measured in billions of dollars, denotes the book value of a firm's total assets, i.e., the sum of the firm's liabilities and stockholders' equity (COMPUSTAT item 6). It is used as a proxy for firm size. The variables AGE_{it} and $TENURE_{it}$ are a CEO's age and job tenure as CEO, measured in years. The percentage of a manager's stock ownership to the firm's total outstanding shares of common stock is represented by the variable $MSTO_{it}$. Restricted stock holdings are excluded. $ACCTRET_{it}$ and $STKRET_{it}$ denote a firm's accounting return and stock return, respectively. $ACCTRET_{it}$ is defined as

$$ACCTRET_{it} \equiv \frac{INC_{it} + INT_{it}}{P_{it} * SHOUT_{it} + STD_{it} + LTD_{it} + PREF_{it}} \tag{7}$$

where INC_{it} denotes firm i's income before extraordinary items (COMPUSTAT data item 18), INT_{it} the interest expenses (item 15), P_{it} the fiscal year-end closing price of the firm's common stock (item 99), $SHOUT_{it}$ the shares of common stock outstanding at fiscal year-end (item 25), STD_{it} the firm´s debt in current liabilities (item 34), LTD_{it} the firm's total long-term debt (item 9), and $PREF_{it}$ the carrying value of the firm´s outstanding preferred stock. In some regressions, stock return, denoted by $STKRET_{it}$, was used as an explanatory variable. The stock return is defined as

$$STKRET_{it} \equiv \left[\prod_{m=1, m \in t}^{12} \frac{P_{im} + DPS_{im}}{P_{im-1}} \right] - 1 \tag{8}$$

where P_{im} and DPS_{im} are the closing stock price of firm i's common stock at the end of month m in year t and the dividends-per-share paid in month m, adjusted for stock dividends, stock splits, and other changes in the firm's capitalization. Note that accounting return is defined over both a firm's income and interest expenses to creditors and bondholders, stock return refers solely to stockholders. Note also that $ACCTRET_{it}$ is defined for the fiscal years of the firms, $STKRET_{it}$ for the calendar year. This discrepancy, which cannot be avoided, adds some noise to the regressions. The variable $MTBR_{it}$ denotes firm i's fiscal year-end market-to-book ratio for year t, defined as

$$MTBR_{it} \equiv \frac{P_{it} * SHOUT_{it} + STD_{it} + LTD_{it} + PREF_{it}}{BKASSET_{it}} \tag{9}$$

where all variables are defined as described above. The market-to-book ratio can be interpreted as a proxy for the growth opportunities of the firm. Let $CASH_{it}$ represent the firm's cash and short-term investments at fiscal year-end *t*, and all other variables defined as above. Firm *i*'s financial leverage is then defined as

$$LVGE_{it} \equiv \frac{STD_{it} + LTD_{it} - CASH_{it}}{BKASSET_{it}} \tag{10}$$

Finally, the variable $VINST_{it}$ is defined as a firm's percentage of votes controlled by institutional investors. Included are all votes from preferred stock outstanding. The number of votes is derived from the number of shares held by banks, investment firms, insurance firms, college endowments, and "13F" money managers, as given by the Standard & Poor's Investor´s Guide. Summary statistics of all these variables can be found in the Appendix.

[INSERT TABLE 7 HERE]

Table 7 presents Pearson, polyserial, and polychoric correlation coefficients for the variables used in the following regression analyses. Several correlation coefficients are worth being mentioned. Annual compensation and stock-market-based incentives, as defined above, are positively correlated. Both annual compensation and stock-market-based incentive compensation are negatively correlated with the percentage of shares outstanding held by the CEO, denoted by $MSTO_{it}$ (item 8), suggesting that incentive compensation and managerial stock ownership are substitutive instruments for providing monetary incentives. Not surprisingly, all compensation and incentive variables are positively correlated with firm size, measured by $BKASSET_{it}$ (item 7). $MSTO_{it}$ and $DMSTO_{it}$ (item 9), which measures absolute dollar incentives from stock ownership, are both positively correlated with CEO job tenure, suggesting that with longer job tenure managers generally succeed in accumulating ownership in the firm's stock. The correlation of institutional stock ownership ($VINST_{it}$, item 14) and other variables is interesting. $VINST_{it}$ is positively correlated with both annual compensation and stock-based incentive compensation. Assuming institutional shareholders know better what is in their self-interest, this could mean that stronger incentive compensation contracts actually help resolving agency problems rather than being a form of managerial moral hazard. Also noteworthy is the negative correlation between $MSTO_{it}$ and $VINST_{it}$. A possible explanation could be that institutional stock ownership is an effective substitute for managerial stock ownership. A look at the correlation coefficients between the various takeover defense variables and company data does not reveal a strong correlation. Note, however, the negative correlation coefficients between any of the takeover defenses and the percentage of shares held by the CEO. Clearly, the signs of the coefficients are to be expected, since firms with high CEO stock ownership hardly engage in costly takeover defenses. Also interesting are the positive correlations between $PPILL_{it}$, $SMAJ_{it}$, $FAIRPR_{it}$, $CLBOARD_{it}$, and $AUTHPREF_{it}$ (measures 15 to 19). They point to the tendency of the firms in the sample to adopt more than one defensive measure against takeovers.

5. Econometric methodology and results

5.1. Econometric methodology

Our data combines time-series and cross-sections, with n=51 firms over T=18 time periods. Pooling yields 903 observations over which we perform as a first step OLS regressions. We allow for different intercepts for each firm and time period. This procedure is generally referred to as *fixed effects* for firms and years. After the first-step OLS regressions, we look at the residuals obtained and test for groupwise heteroskedasticity (different variances of the error terms across firms) and firm-specific autocorrelation (correlation of the error terms within each firm). We test for autocorrelation applying the familiar Durbin-Watson statistic, adjusted for the fact that the sample consists of 51 groups instead of one single time-series. When autocorrelation is found we perform a second-step feasible generalized least square regression (FGLS) by transforming the data using the Prais-Winston transformation. In a third step (or second if autocorrelation was not found) we allow for groupwise heteroskedasticity. To test for groupwise heteroskedasticity we apply a likelihood ratio test. The obtained estimates from the third-step FGLS regression are unbiased, consistent, and efficient.

We interpret the adoption of an antitakeover device as a voluntary event planned and executed by the management and/or the shareholders of a firm. Following the arguments outlined above, the implementation of an antitakeover device causes a shift from one equilibrium state to another as CEO compensation contracts are adapted to the new environment. We assume that this change takes place immediately. Compensation contracts can be immediately changed, and it is reasonable to assume that management and the Board of Directors have enough time to plan on both the adoption of takeover defenses and the change in management compensation.

Takeover defenses have a causal effect on the terms of a CEO's compensation contract for as long as they are in place. When the defense is removed, the firm again becomes susceptible to takeovers, and, under efficient contracting, the effect on managerial compensation also disappears. Thus, the adoption of a takeover defense is thought to have a non-permanent effect on the structuring of CEO incentive contracts. This assumption is perfectly in line with the arguments made above.

Finally, it is assumed that a given change in a firm's susceptibility to a takeover has the same uniform effect on the structure of all compensation contracts of the firms in the sample. Moreover, it is assumed that this effect is not affected by any other characteristics of the firm or the CEO in question (e.g., firm size or the age of the CEO). This assumption, although strong, does not seem to be unrealistic.

We allow the event to have an additive change in the level of the compensation measure. We achieve this by defining a dummy variable p_{it} that is set to one if the firm is well-protected from the market for

corporate control, and zero otherwise. The adoption adds a constant term to the compensation measure of the respective firm.

An important benefit from pooling time-series and cross-section data is the ability to control for unobservable firm-specific effects by allowing a different intercept for each firm. These fixed effects for firms represent unobserved differences across individuals that are constant over time, and can be thought of as summarizing the effects of all unmeasured, stable characteristics of firms on the respective compensation measure. An omitted-variables problem may be especially severe for the incentive compensation measures associated with long-term incentive plans and managerial stock ownership as defined above. Some firms, for whatever reason, may grant their CEOs more stock options than others. Moreover, managerial stock ownership may be the result of the CEO being the founder of the firm. Unless there is a variable defined which captures that effect, the estimation results may be severely biased. Technically, the fixed-effects-for-firms model is estimated by specifying a dummy variable for each firm. For the model to be identified, one of the dummy variables or the original intercept term must then be set to zero. Similarly, we adjust for for unobservable time effects by defining a dummy variable for each year (less one), allowing for an arbitrary function of time. We perform all regressions with fixed effects for both firms and years.

5.2. Regressions on annual compensation (SALBON)

Table 8 shows our first regression results. Regressions (1) and (2) investigate whether the adoption of takeover defenses leads to changes in the level of annual compensation (base salary plus bonus) paid to a CEO. In the most general form, the following log-linear regression equation is estimated:

$$\begin{aligned} SALBON_{it} = {} & INTERCEPT + b_1 BKASSET_{it} + b_2 AGE_{it} + b_3 AGE_{it}^2 \\ & + b_4 TENURE_{it} + b_5 TENURE_{it}^2 + b_6 CHAIRM_{it} + b_7 MSTO_{it} \\ & + b_8 ACCTRET_{1t} + \ldots + b_{58} ACCTRET_{51t} + b_{59} MTBR_{1t} + \ldots \\ & + b_{109} MTBR_{51t} + b_{110} LVGE_{it} + b_{111} PROTECT_{it} + b_{112} VINST_{it} \\ & + FIRM2 + \ldots + FIRM51 + YEAR78 + \ldots + YEAR94 + e_{it} \end{aligned} \tag{11}$$

$SALBON_{it}$ denotes the annual compensation paid to the CEO of firm *i* for fiscal year *t*, *INTERCEPT* an intercept term, $BKASSET_{it}$ the book value of the firm´s assets, AGE_{it} the age of the CEO, $TENURE_{it}$ the CEO's job tenure, $CHAIRM_{it}$ a dummy variable set to one if the CEO also holds the position of the Chairman of the Board, $MSTO_{it}$ the fraction of shares outstanding owned by the CEO, $ACCTRET_{it}$ the accounting return, $MTBR_{it}$ the market-to-book ratio, and $LVGE_{it}$ the leverage. $PROTECT_{it}$ is a dummy variable set equal to one if firm *i* is considered protected from the market for corporate control, and $VINST_{it}$ denotes the fraction of votes outstanding controlled by institutional shareholders. In addition, *FIRM02* to *FIRM51* represent fixed effects for the firms, *YEAR78* to *YEAR94* fixed effects for the years. The variables $SALBON_{it}$, AGE_{it}, $TENURE_{it}$, and $BKASSET_{it}$ are transformed to their natural logarithm.

Note that in Regression (1), $ACCTRET_{it}$ and $MTBR_{it}$ are allowed to be individual for each firm. The regressions are estimated with fixed effects for both firms and years. Table 9 shows coefficient estimates for all 17 different protection regimes defined in Table 6.[13]

[INSERT TABLES 8 & 9 HERE]

Theory suggests a positive relation between base salary and the age and tenure of a CEO.[14] The slopes on all four coefficients in Regressions (1) and (2) are significant at the one percent significance level. The estimates show that, other things being equal, an increase in CEO age by one year means for a thirty-year-old CEO an increase in annual compensation of 5.8%, for a forty-year-old CEO an increase of 2.6%, for a fifty-year-old CEO an increase of 1.0%, and for a sixty-year-old CEO an increase of 0.1%. An additional year of age for a seventy-year-old CEO causes annual compensation to decrease by 0.4%. Similarly, an increase of one year in job tenure means an increase in CEO annual compensation of 11.1% for the first year, 4.5% for the second, 2.3% for the third, 1.4% for the fourth, and 0.8% for the fifth year. For a CEO having held his position for ten years, an additional year means a decrease in base salary of about 0.1%.

One expects an increase in annual compensation if the CEO of a firm also holds the position of the Chairman of the Board. This expectation is confirmed by the regression results. The coefficient on $CHAIRM_{it}$, which is statistically significant at the one percent level, implies a 6.2% higher annual compensation for Chairman-CEOs as compared to non-Chairman CEOs.

Previous studies found elasticities of CEO annual compensation with respect to firm size between 0.2 to 0.3 when firm size is most often measured by revenues of the firm.[15] The estimate of 0.35 received here is comparable to these. A one percent increase in the book value of a firm's assets results in a 0.35% increase in annual compensation for this firm's CEO.

The fraction of shares outstanding owned by the CEO is included in the regressions to check whether a CEO's stock ownership affects his annual compensation.[16] A higher managerial stock ownership presumably means a higher portion of a CEO´s wealth at firm-specific risk. Thus, the sign of the

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[13] Each coefficient is estimated in a separate regression. For reasons of space, the coefficients estimates for the other explanatory variables are omitted in Table 9.Overall, they do not differ from the estimates shown in Table 8. The likelihood ratio test statistic of 290.4 indicates that the null hypothesis of homoscedasticity can be rejected at the one percent significance level.

[14] To allow for diminishing increases in base salary with age and tenure, the squared terms of these two variables are included in the regression equation, with negative signs for their coefficient expected.

[15] See for example Rosen (1990).

[16] If both annual compensation and managerial stock ownership provide incentives to increase effort, a negative coefficient for *MSTO* would reflect a substitutive relation between these two variables. A higher stake in the firm allows a reduction in risky incentive compensation. In the extreme, a CEO may even forego a formal annual bonus plan. On the other hand, a CEO with a high fractional stock ownership can use his power to negotiate for himself a higher annual compensation, whether fixed or variable. Alternatively, one also expects a positive influence if annual compensation performs the function of insurance against unfortunate outcomes.

coefficient for $MSTO_{it}$ is of an empirical matter. The coefficient and t-value estimated for MSTO indicate that the fractional stock ownership of a CEO has no influence on the level of his annual compensation.

Because annual compensation is a measure of ex post compensation, its level depends also on performance measures of the firm. Therefore, accounting return and the market-to-book ratio are included in the regressions. Consistent with the observation that in formal bonus plans, annual bonuses are positively related to accounting measures, one expects positive signs for the coefficients of $ACCTRET_{it}$ and $MTBR_{it}$. If, however, the function of annual bonus payments is mainly to provide insurance against bad outcomes that are exogenous to the firm's CEO, then negative signs for $ACCTRET_{it}$ or $MTBR_{it}$ would be expected. Similarly, implicit bonus contracts may provide for reductions in annual bonuses in case of high gains from stock options exercises. Therefore, coefficients are not forced to be negative.[17] Consistent with the incentive explanation of annual compensation, most of the coefficient estimates for $ACCTRET_{it}$ and $MTBR_{it}$ are positive.[18] The median coefficient for the market-to-book ratio is 0.29, with a maximum of 2.34 and a minimum estimation of -1.41. The median estimate implies a 2.9% increase in CEO compensation for an increase of ten percentage points in the market-to-book ratio. It is likely that for some firms the simultaneous estimation of two, presumably correlated performance measures leads to one coefficient being negative, and the other one picking up the positive pay-performance correlation. The coefficients for both $ACCTRET_{it}$ and $MTBR_{it}$ are negative for only three firms.

Assume that high annual compensation generally means strong incentives, and low annual compensation weak incentives. Then, if a firm's outstanding debt exerts discipline on a CEO, one would expect a negative slope of firm leverage on annual compensation, because both control forces are costly. A high leverage of the firm, on the other hand, increases the employment risk of a CEO. Therefore, he demands a higher risk premium. The sign of the coefficient for $LVGE_{it}$ is therefore of an empirical matter. The estimate for $LVGE_{it}$ in Regression (1), which is highly significant, implies that an increase in leverage—defined as the book value of the firm's outstanding debt to the book value of its assets in place—by ten percentage points leads to a 3.7% reduction in CEO compensation. Assuming that annual

[17] Note that the coefficients for these two variables are allowed to be individual for each firm in Eq. (11), which occurred at the cost of 102 degrees of freedom. With different slopes for each firm, the coefficients of the other explanatory variables effectively measure up- and downward shifts of the estimated function between annual compensation and the firm performance variables $ACCTRET_{it}$ and $MTBR_{it}$. For reasons of space, the estimation results for these two variables are not shown in Table 8.

[18] For $ACCTRET_{it}$, 41 are positive, 16 thereof significantly at the five percent significance level (nine at the one percent significance level). Of the ten coefficient estimates that are negative, only two were significant at the five percent significance level. The median coefficient estimate is 1.27, with four estimations, 10.8, 10.4, 6.2, and -12.0 that may be considered bad estimations. The median estimate implies an 13.5% increase in annual compensation for an increase in accounting return by ten percentage points. Similarly, 43 of the 51 coefficients for MTBR are positive, 18 thereof significantly at the five percent significance level. Of the eight negative coefficients, none were significant at the five percent significance level.

compensation is a proxy for incentives, this is consistent with the hypothesis of a substitutive relation between leverage as one disciplinary force and compensation as another.

Institutional investors are often regarded as more sophisticated shareholders with stronger incentives to monitor management. They are assumed to know better what is in their interest and how to enforce it. If higher annual compensation resolves agency problems more efficiently, one expects higher levels of compensation for firms with higher institutional ownership. By contrast, if high levels of annual compensation represent a form of managerial moral hazard, one would expect a negative correlation between the presence of institutional owners and CEO annual compensation. The coefficient for $VINST_{it}$ in Regression (1) is extremely small and insignificant.

The protection measure used in Regressions (1) and (2) is measure 15 of Table 6. Coefficients for all 17 different measures of protection of Table 6 are shown in Table 9, each one estimated in a separate regression. The highest coefficient for $PROTECT_{it}$ in Regression (1) is 0.075 (measure 3), implying that the CEO of a firm that adopts a fair-price amendment receives an increase in annual compensation of 7.8%. This estimate is significant at the one percent significance level. A board authorization to issue preferred stock results in a pay increase of 6.2% (significant at the five percentlevel). The CEO of a firm that adopts either a fair-price amendment or a poison pill, or whose inside shareholders establish a controlling majority of 30% or more of the firm's votes, on average, is paid five percent more annual compensation than before. Firms that only adopt a fair-price amendment or a poison pill, on average, pay their CEO 6.3% more annual compensation (measure 9). None of the coefficients of the other protection regimes reaches the five percent significance level.

The coefficients for the fixed effects for the firms and years are omitted in Table 8. In Regression (1), the coefficients for the fixed firm effects are insignificant in all but two cases.[19]

Regression (2) is similar to Regression (1), except that the coefficients for $ACCTRET_{it}$ and $MTBR_{it}$ are now forced to be the same for all firms. Regression (4) is the one to look at. The assumption of common coefficients is likely to be unrealistic, but assumed by all purely cross-sectional empirical examinations. One actually estimates average effects of $ACCTRET_{it}$ and $MTBR_{it}$ on executive compensation. Regressions with common coefficients for $ACCTRET_{it}$ and $MTBR_{it}$ are mainly conducted for reasons of comparison. The coefficients for AGE_{it}, $TENURE_{it}$, $CHAIRM_{it}$, and $BKASSET_{it}$ have essentially the same effect on annual compensation as in Regression (1). CEO stock ownership remains insignificant. However, the coefficients for $ACCTRET_{it}$ and $MTBR_{it}$ are highly significant. Increases in accounting return and the market-to-book ratio of ten percentage points result in higher CEO

[19] However, the fixed effects for the years are highly significant for the years 1979 and 1980 as well as the years 1988 to 1996. The estimates for these years are -0.13, -0.17, and 0.21, 0.15, 0.18, 0.18, 0.16, 0.26, and 0.19, respectively. This means that the average compensation explained only by the years was 12.2% lower in 1979 than in 1977, and 15.6% in 1980. In 1993, it was almost thirty% higher than in 1977. These results indicate that a high portion of the increase of CEO annual compensation cannot be explained by the explanatory variables used in regression 1.

compensation of 4.4 and 1.6%, respectively. The coefficient for stock market return is not significant in Regression (2). The effect of $LVGE_{it}$ on CEO compensation becomes a little stronger. The coefficients for the various antitakeover regimes are essentially the same for Regressions (2) and (4). Again, a fair-price amendment causes CEO compensation to rise by 4.5%. The adoption of either a fair-price amendment or a poison pill leads to a 6.1% higher CEO compensation. Antitakeover regime 15, which is significant at the five percent level in Regression (1), just misses this significance level in Regression (2).[20]

In summary, the fair-price amendment and the poison pill combined with the fair-price amendment are the protection regimes that have the strongest positive effect on CEO annual compensation. The adoption of an authorization to issue preferred stock is significant in Regression (1), the one considered the most important. The adoption of either a fair-price amendment or a poison pill and the authorization of the Board of Directors to issue preferred stock both raise executive compensation significantly by a little more than six percent. The poison pill and the blank check authorization are generally thought to be the strongest antitakeover devices. Therefore, these results are consistent with the hypothesis of a substitutional relation between takeover market discipline and incentive compensation. However, the fair-price amendment, which has the strongest effect on CEO compensation, is generally considered the weakest of the takeover defenses. None of the protection regimes yields a negative, statistically significant coefficient. Thus, Hypothesis (1) which implies a negative effect of an adoption of a antitakeover amendment on CEO compensation, can be rejected for annual compensation.

5.3. Regressions on stock-based incentive compensation (SMBIC)

Empirical and anecdotal evidence indicates that the strongest incentives to provide optimal level of efforts and to act in the shareholder's interest are likely to come from stock-market-based incentive compensation, either from stock options or from restricted stock held in the portfolio of a CEO. Therefore, a second series of regressions is run on the variable $SMBIC_{it}$ which, as described above, is defined as the change in value of all stock-market-based incentive contracts (stock options, restricted stock) held in the portfolio of a CEO if the market price of the underlying stock changes by a hypothetical one percent. With $SMBIC_{it}$ as dependent variable, the following regression equation

$$\begin{aligned} SMBIC_{it} = {} & INTERCEPT + b_1 AGE_{it} + b_2 AGE_{it}^2 + b_3 TENURE_{it} \\ & + b_4 TENURE_{it}^2 + b_5 CHAIRM_{it} + b_6 BKASSET_{it} + b_7 MSTO_{it} \\ & + b_8 DMSTO_{it} + b_9 INTERACT_{it} + b_{10} MTBR_{it} + b_{11} LVGE_{it} \\ & + b_{12} VINST_{it} + b_{13} PROTECT_{it} + FIRM02 + \ldots + FIRM51 \\ & + YEAR78 + \ldots + YEAR94 + e_{it} \end{aligned} \tag{12}$$

[20] A look at the fixed firm effects reveals that in regression 2, contrary to regression 1, 42 of 50 coefficients are significant, most of them at the 1% significance level. This again indicates that it is favorable to allow the performance measures to be individual for each firm.

is estimated, where $SMBIC_{it}$ is defined as described above, $DMSTO_{it}$ denotes the respective change in value of the manager's stock ownership, and $INTERACT_{it}$ is the interaction term of $MSTO_{it}$ and $DMSTO_{it}$, i.e., $MSTO_{it}*DMSTO_{it}$. All other variables are defined as before.

Stock options as well as restricted stock grants are a form of ex ante compensation. Payoffs realized from exercising stock options and selling the shares depend on future market price performance. In addition, grants of stock options and restricted stock almost never, at least formally, dependent on past firm performance. Thus, no firm performance variable needs to be used as an explanatory variable in Eq. (12). Because the relation between the value of stock options and restricted stock and the underlying stock is the same for all options and restricted stock holdings, no variable is allowed to be individual for each firm. Table 8 shows in under Regression (3) the estimation results of Eq. (12).[21] As before, Table 9 shows the coefficients for all the 17 antitakeover regimes defined in Table 6, again omitting the coefficients for the other explanatory variables. All regressions are performed with fixed effects for firms and years.

As can be seen from Regression (3), all coefficients except the ones for the absolute dollar incentives from managerial stock ownership, $DMSTO_{it}$, as well as the interaction term between $MSTO_{it}$ and $DMSTO_{it}$, are significant, most of them at the one percent significance level. The coefficients for AGE_{it} imply increases of stock-based incentive compensation with age for younger and decreases for elderly CEOs. On average, an additional year in age for a 30 year old CEO leads to 22.5% more incentives from stock-based incentive contracts held in his portfolio; for a 40 year old CEO it is 3.5%, for a 50 year old -4.5%, for a 60 year old -8.6, and for a 70 year old CEO -10.7%. These results are somewhat stunning. They strongly indicate that younger CEOs receive greater grants of stock options and restricted stock, most likely to compensate for their presumably lower stock ownership. They also seem to indicate that the differential horizons problem is not very severe. An increase of one year in job tenure goes along with an average increase in stock-based incentives from contracts held in the portfolio of 30.8% for the first year, 10.9% for the second, 5.1% for the third, 2.5% for the fourth, and 1.1% for the fifth year. For a CEO having held his position for 10 years, an additional year means an average decrease in incentives of about 0.9%. These results strongly indicate that executives, when promoted to CEOs, receive a strong increase in stock-based incentive compensation. Interaction terms between AGE_{it} and $TENURE_{it}$ are statistically insignificant. A CEO who also becomes Chairman of the Board receives 28.4% stronger incentives from the stock-based incentive contracts held in his portfolio. This result strongly points to the existence and solution of the more severe agency problems that exist when the CEO also is the Chairman of the Board. In the latter case, discipline from supervision by the Board of Directors is likely to be very weak. Market-based incentive compensation contracts may be used as a remedy for that. Not surprisingly, because $SMBIC_{it}$ is defined in absolute dollars, CEOs of larger firms

[21] The likelihood ratio test statistic of 887.4 shows that groupwise heteroscedasticity is present. Therefore we perform a FGLS regression allowing for groupwise heteroscedasticity.

tend to get stronger incentives from their portfolios.[22] The strong negative coefficient for $MSTO_{it}$ represents the fact that some CEOs in the sample with high stock ownership stakes in the firm do not receive any stock-based incentive compensation. An increase of the market-to-book ratio by ten percentage points leads to 7.3% more incentives from stock-based incentive compensation contracts.[23] A ten percentage point increase in the leverage of the firm leads to a significant reduction in incentives from stock-based incentive compensation contracts of 13.7%, on average. And an increase of institutional stock ownership by ten percentage points goes along with an average increase of 22.0% in CEO incentives. This results suggest that incentive compensation and debt are substitutive control mechanisms, and that incentive compensation resolves conflicts of interest between shareholders and managers, if one assumes that institutional shareholders are more sophisticated shareholders with a better idea of what is beneficial to the firm's shareholders.[24]

The takeover protection measure selected for Regression (3) of Table 8 is measure 17 of Table 6, which assumes isolation from the market for corporate control if a firm has either a poison pill or a blank check authorization in effect or its management establishes a control of 30% or more of the firm's outstanding votes. The CEO of a firm becoming isolated from the takeover market discipline defined by this measure enjoys an increase in stock-based incentives from incentive compensation contracts of 413.3%! At first, this number seems unrealistically high. It means, for example, that a CEO who holds 40,000 stock options with a specific exercise price before the adoption, will hold 205,000 stock options afterwards. A look at Table 2 reveals that incentives as defined by $SMBIC_{it}$ for the whole sample are 5.3 times higher in 1994 than in 1977. Thus, the 413.3% increase is not as unrealistic. Looking at Table 9, the adoption of a poison pill results in 28.5% stronger incentives from market-based incentive compensation, the adoption of a classified board in a 48.5% decrease in incentives, and the authorization of the board to issue preferred stock in an increase of 357.4% in incentives, on average. Although the poison pill defense and inside stock ownership are considered the strongest takeover deterrents, none of these measures reaches the five percent significance level. Neither does any of the remaining coefficients.

A look at the coefficients for the fixed effects for the firms (which are omitted) shows that 44 of 50 variables are significant, most of them at the one percent significance level. The fact that they range from -10.9 to 13.8 strongly indicates that much of the cross-sectional variance in $SMBIC_{it}$ cannot be explained by the independent variables. The coefficients for the fixed effects for the years indicates that another portion of this variance can be explained by the years. From 1982 on, the dummy variables for

[22] The elasticity of incentives from stock-based incentive compensation with respect to firm size is 0.3, that is, a one percent increase in firm size increases CEO incentives, as measured here, by 0.39%. The elasticity here is almost equal to the elasticity of annual compensation with respect to firm size.

[23] Part of this correlation is likely to be mechanical, because a higher market-to-book ratio most likely implies a higher stock price which in turn leads to higher incentives as measured here.

[24] However, one may just as well assume collusion between institutional shareholders with management, or a dependency of the former on the latter, with essentially the same result, but a different interpretation.

the years are significant, all but one at the one percent level. An estimate of 0.89 for 1994 means that incentives from stock-based incentive compensation contracts explained solely by the time are 143.5% higher in 1994 than in the year 1977.

In summary, the effect of an authorization of the board to issue preferred stock clearly dominates the picture of Regression (3). A board authorization to issue preferred stock leads to CEO incentives from stock-based incentive contracts more than five times as much as before. The significantly negative coefficient for the adoption of a classified board is intriguing.

5.4. Regressions on total stock-based incentives (TSMBI)

Stock-based incentives are not only generated by stock options and restricted stock, but also by shareholdings CEOs have in their firm's stock. As Jensen and Murphy (1990) show, on average, the strongest incentives for CEOs come from their stakes in the firm's stock. Efficient contracting certainly takes incentives from managerial stock ownership into account.[25] Thus, regressions on total stock-market-based incentives are conducted with the regression equation

$$\begin{aligned} TSMBI_{it} = {} & INTERCEPT + b_1 AGE_{it} + b_2 AGE_{it}^2 + b_3 TENURE_{it} \\ & + b_4 TENURE_{it}^2 + b_5 CHAIRM_{it} + b_6 BKASSET_{it} + b_7 MTBR_{it} \\ & + b_8 LVGE_{it} + b_9 VINST_{it} + b_{10} PROTECT_{it} + FIRM02 + \ldots \\ & + FIRM51 + YEAR78 + \ldots + YEAR94 + e_{it} \end{aligned} \tag{13}$$

where $TSMBI_{it}$ denotes the change in value of all stock-based claims held in the portfolio of the CEO of firm *i* in year *t* if the underlying stock market price rises by a hypothetical one percent.[26] Note that in Eq. (12) above managerial stock ownership is interpreted as an exogenous variable. In Eq. (13) it is assumed to be a component of managerial compensation and as such endogenous. Regression (4) in Tables 8 and 9 shows the results of estimating Eq. (13). Because groupwise heteroskedasticity is found to be existent, Regression (4) is also a FGLS regression.[27]

The coefficients for AGE_{it} imply reductions in total stock-based incentives with age for younger CEOs, and increases in incentives with age for elderly CEOs. That is, other things being equal, an additional year of age implies a decrease of 5.6% in incentives for a 40 year old CEO. For a 50 year old CEO, the decrease is 2.3%, for a 60 year old 0.3%. An additional year of age for a 70 year old CEO means 0.9% more total stock-based incentives. Similarly, an additional year in job tenure implies for the first year 20.4%, for the second 13.5%, for the third 10.3%, and for the fifth 7.1% more total stock-based

[25] In fact, using an incentive measure that includes incentives from managerial stock ownership as dependent variable, and a CEO's age and tenure as independent variables implies the assumption that managerial stock ownership is a component of managerial incentives.

[26] Stock-based claims are incentive stock options holdings, restricted stock holdings, and managerial stock ownership. All other variables are defined as before.

[27] The likelihood ratio test statistic for groupwise heteroskedasticity is 568.9 for Regression (4).

incentives. After ten years of job tenure, an additional year implies 4.2% more incentives. Possible interaction terms between CEO age and job tenure are all statistically insignificant. The coefficient for $CHAIRM_{it}$ is surprising. CEOs in the sample who also become Chairman of the Board, enjoy an increase in total stock-based incentives of 80.4%. If one assumes that estimate to be realistic, it means that shareholders and managers perceive the greater extent of agency problems that goes along with a CEO holding also the position of the Chairman of the Board. A great part of the estimated effect for $CHAIRM_{it}$ may be due to the fact that an executive who becomes CEO and Chairman of the Board is likely to hold significantly more shares in the firm than an executive who becomes only CEO of the firm. Firm size is highly significant with respect to absolute dollar incentives. An elasticity of 0.43 implies that a one percent increase in firm size results in a 0.43% increase in total stock-based incentives. The 0.43 elasticity here is comparable to the ones for $SALBON_{it}$ and $SMBIC_{it}$ shown in Regressions (1) to (3). The coefficient for $MTBR_{it}$ means that an increase of ten percentage points in the market-to-book ratio goes along with a 15.3% increase in total stock-based incentives.[28] All other things being equal, an increase in financial leverage of the firm by ten percentage points leads to a reduction in total CEO stock-based incentives of 7.7%. This result is consistent with the hypothesis that debt financing and a CEO's monetary incentives are substitutive control mechanisms. An increase in institutional stock ownership by ten percentage points means an increase in total stock-based incentives of 7.7%. This result is consistent with the hypothesis that institutional investors are effective monitors of management. It is, however, also consistent with the hypothesis of collusive arrangements between institutional stockholders and management.

The coefficient for $PROTECT_{it}$ in Regression (4), 0.2, implies a 22.1% increase in total CEO stock-based incentives, as measured by $TSMBI_{it}$, when the firm becomes protected from the takeover market discipline, as measured by $PROTECT_{it}$.[29] Other protection variables exhibit significant effects on CEO incentives, as can be concluded from Table 9. The adoption of a supermajority requirement (measure 2 in Table 9) leads to a statistically significant increase in total CEO stock-based incentives of 24.4%. The adoption of a blank check authorization implies a 31.9% increase in incentives (measure 5). A CEO of a firm whose management acquires a 30% voting control over the firm receives an increase in stock-based incentives of 45.2%.[30]

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[28] Again, a great portion of this correlation is mechanical because a higher market-to-book ratio most likely implies a higher stock price which in turn leads to higher incentives.

[29] Under the definition of measure 16 of Table 6—the measure used in regression 4—a firm is considered protected when either a poison pill is in effect, the firm's Board of Directors is classified, or management controls more than thirty% of the firm's outstanding votes.

[30] This latter effect, however, is at least in part due to a mechanical relation between the variables. As a CEO acquires shares in the firm, thereby increasing total absolute market-based incentives, the fraction of shares held by insiders of the firm increases, which in turn eventually leads to a controlling insider stock ownership. However, as the t-value for measure 12 shows, this mechanical correlation is by no means sufficient to ensure statistical significance. The same is true for protection measure 7, firm size. This measure is set to one if a firm's market capitalization exceeds $25 billion in value. This happened for the firms in the sample in times of strong stock price appreciation. As the stock price rises, so do incentives as defined by $TSMBI_{it}$. Therefore there is also a mechanical relation between measure 7 of Table 9 and $TSMBI_{it}$.

The coefficients of the antitakeover regimes 14 to 17 all are significant at the one percent level. According to these estimates, the establishment of protection from the takeover market discipline leads to an increase in total CEO stock-based incentives between 16.2% and 34.8%. A comparison with the coefficients for measures 8 to 11 indicates that the influence of the potential mechanical correlation between insider voting control and $TSMBI_{it}$ mentioned above is not essential to the qualitative results. All but one coefficient—the one for measure nine—remain significant at the five percent level when taking out the effect of insider voting control. Nevertheless, the exclusion of the effect of insider voting control leads to reduction in the effect on CEO incentives.

As before, the presentation of the fixed effects for firms and years is omitted. The dummy variables for the fixed effects for firms are significant for about 50% of the firms, suggesting that a great part of the cross-sectional variation in $TSMBI_{it}$ cannot be explained by the independent variables. Most surprisingly, the value of the dummy variables for the fixed effects for years is negative for all years, declining more or less steadily from -0.08 for 1978 to -0.33 for 1993. From 1986 on, these estimates are significant at the one percent level. With all effects from the explanatory variables filtered out, this means that the remaining common trend consists of a reduction in total incentives.

In summary, the adoptions of a supermajority requirement or a board authorization to issue preferred stock go along with a significant increase in total market-based incentives as measured by $TSMBI_{it}$. The protection measure considered the strongest, the poison pill device, has no significant effect on total CEO incentives. The simultaneous consideration of the poison pill, the establishment of insider voting control, and any of the four antitakeover charter amendments yield highly significant results.

5.5. Cross-sectional comparison of incentive compensation measures

The results above allow to estimate the effect of a firm establishing isolation from takeover market discipline on managerial compensation and incentive measures [Hypotheses (1a) and (2a)]. They do not say anything about cross-sectional differences in the levels of the various compensation measures [Hypotheses (1b) and (2b)]. From the fact that the adoption of a takeover defense increases CEO compensation, it does not follow that this firm's CEO receives a higher compensation than CEOs of firms without that takeover defense. To compare incentive compensation across firms we solve Regression equations (1), (3), and (4) for the variance of the respective compensation measure unexplained by the dependent variables, which includes the firm dummy variable and the disturbance term, and add back the variance explained by $PROTECT_{it}$. This remaining portion, which we define as m_{it}, represents the variance in the respective compensation measures which ideally should be explained as much as possible by the firm susceptibility to hostile takeovers. Subsequently, this portion of a CEO's compensation which can be thought of as the abnormal portion was then compared to the mean and

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But the coefficient estimate for measure 13 reveals that this mechanical correlation is not sufficient to guarantee statistical significance.

median. If increased susceptibility of a firm to a hostile takeover disciplines management under efficient contracting we expect the intensity of CEO incentive compensation to be low as compared to the incentive compensation of CEOs whose firms are protected from the market for corporate control.

[INSERT TABLE 10 HERE]

Table 10 examines this question for the three compensation measures $SALBON_{it}$, $SMBIC_{it}$, and $TSMBI_{it}$. The upper part of Table 10 consists of comparisons of the individual m_{it}´s to the mean m, the lower part of comparisons of the individual m_{it}´s to the median m. For each compensation measure, there are two columns, (P,m_i>m), and (0,m_i<m). The first column, (P,m_i>μ), represents the fraction of firms that are considered protected from the market for corporate control (hence the P), and whose m_{it} exceeds the average or median m, to the number of firms considered protected. The second column, (0,m_i<m), represents the fraction of firms that are considered susceptible to the market for corporate control (hence the zero), and whose m_{it} is smaller than the mean or median m, to the number of firms considered unprotected. If there is a substitutive relation between the threat of takeover and the CEO's incentive compensation both fractions should be close to one. That is, CEOs of firms that are protected to hostile takeovers should receive higher incentive compensation, and CEOs of firms that are susceptible to hostile takeovers should receive lower incentive compensation than the mean or median CEO. Ideally, the variable $PROTECT_{it}$ explains this variance in incentive compensation. The column "Year" names the year for which the calculations are done, the column "N(P)" denotes the number of firms that are considered protected in that year, and the column "N(0)" the number of firms that are unprotected. For all years used in Table 10, the total number of firms is 51. We perform the calculation for a number of protection regimes.

Consider first annual compensation ($SALBON_{it}$). Firms with either a poison pill or insider voting control are probably the hardest to take over. Of the 29 firms in 1989 with either a poison pill or insider voting control, 17, or 59%, show a μ higher than the median μ. By contrast, the μ of 14 of 22 firms, or 64%, with no poison pill and no insider voting control is below the median μ. This specific result tends to support Hypothesis (1b) above. The dominating effect in Table 8 is the fair-price amendment. However, a look at the respective ratios in Table 10 reveals that in 1987, roughly one third of the firms with a fair-price amendment or insider voting control paid their CEOs higher annual compensation than the median firm, after having filtered out all explained variance. Similarly, only one third of the firms without a fair-price amendment and insider control paid their CEO less than the median firm. Thus, although the adoption of a fair-price amendment goes along with an increase in annual compensation, firms with a fair-price amendment in their charter by no means pay their CEOs a relatively higher salary. One may argue that the function of annual compensation is not primarily the provision of incentives, but of insurance against the consequences of a hostile takeover. At the beginning, we referred to this as the risk effect of the threat of takeover. As annual compensation is likely to perform both functions, we

observe only the net effect. With this in mind we are not surprised that we do not find clear-cut evidence for one or the other effect.

Consider next the ratios for stock-based incentive compensation, $SMBIC_{it}$. In 1987, 17 of 19 firms with a supermajority requirement or insider voting control show a m greater than the average m. And 16 of 32 firms without a supermajority amendment or voting control exhibit a m that is below the average. Thus, CEOs of firms with a supermajority amendment or insider voting control seemed to enjoy a greater incentive compensation than CEOs of other firms. From Table 9 it is known that the adoption of a classified board goes along with a significant reduction in CEO incentives from incentive compensation contracts. However, in 1987, the CEOs of a majority of the firms with a classified board enjoyed incentives from incentive compensation contracts stronger than the median, after having filtered out all explained variance. And the CEOs of a majority of the firms without a classified board have incentives less than the median. These result are even more distinct when including voting control. The authorization to issue preferred stock has by far the strongest effect on CEO incentive compensation in Table 9. In 1984, 24 of 41 firms with a blank check authorization or insider voting control exhibit a μ higher than the average μ, and seven out of ten with neither of these protection measures show a μ lower than average μ. These results—although in favor of Hypothesis (1b)—can be at best regarded as spurious.

Consider finally the ratios for stock-based incentive compensation, $TSMBI_{it}$. The results of Table 9 indicate that the adoption of a supermajority amendment, the authorization of preferred stock, or the establishment of insider voting control in connection with a poison pill and any of the antitakeover charter amendments lead to a significant increase in total CEO stock-based incentives. Table 10 shows that for most of the defense regimes, a majority of the firms with protection have a μ higher than the median μ, and a majority of the firms without protection have a μ lower than the median. In summary, the fact that most ratios in Table 10 exceed the 0.5 threshold tends to support the Hypotheses (1b) above. However, the evidence for the incentive substitution effect of the market for corporate control and compensation must be considered rather spurious than clear-cut.

6. Conclusion

This paper tries to give an answer to the question whether there exists a relation between the disciplinary effect of the market for corporate control and executive compensation. We analyze data for 51 large firms in the U.S. oil industry, an industry in which agency problems were especially severe in the 1980s. Our data set encompasses not only annual compensation, but all stock-based incentive compensation components which allows us to construct measures that reflect the true intensity of managerial incentives. In addition, we do not draw on actual takeover incidence to measure the exposure of a firm to the market for corporate control, but instead look at the individual firm level and construct measures

of protection from the takeover market which include insider voting control, the poison pill defense, and other takeover defenses.

Results can be summarized as follows. The adoption of certain takeover defenses leads to an average increase in CEO annual compensation between five and ten percent. For example, the adoption of a fair-price amendment leads to an increase in CEO annual compensation of seven percent. The authorization of the Board of Directors to issue preferred stock leads to an increase in annual compensation of six percent. The adoption of either a fair-price amendment or a poison pill, or the establishment of a control of thirty or more percent of the firm's outstanding votes by management leads to a significant increase of five percent in CEO annual compensation, on average. In light of the possibility that annual compensation serves as insurance for the higher risk of a hostile takeover, we actually measure the net of the incentive substitution effect and the risk effect. Consequently we are not surprised by the relatively small increase in annual compensation the adoption of a takeover defense causes.

Our data suggest that the strongest managerial incentives come from stock-based incentive contracts (stock options and restricted stock) held in the portfolio of a CEO. Thus, we expect a much greater impact of takeover defenses on these components of executive compensation. The adoption of either a poison pill or a blank check authorization, or the establishment of inside voting control goes along with an increase of more than 400% in CEO stock-based incentive contracts. However, the fact that CEO incentives from stock-based incentive contracts are lower by 50% after a firm classifies its board remains a puzzle.

Efficient contracting takes incentives from managerial stock ownership into account. We therefore also investigate the impact of the adoption of takeover defenses on total stock-based incentives to a CEO. We find statistically significant increases of total stock-based incentives between 15% and 35% when certain takeover defenses are implemented. The adoption of a supermajority requirement goes along with an increase in total stock-based compensation by 25%. The authorization of the board to issue preferred stock leads to an increase in total stock-based incentives of about 30%. And the adoption of either a poison pill or any of the major antitakeover charter amendments, or the establishment of voting control of the firm’s management leads to increases in total incentives between 15% and 35%. At first sight, some of these estimates look stunning. However, they are by no means implausible. Remember that CEO incentives from stock-based incentive compensation, as measured here, for the whole sample are 5.3 times higher in 1994 than in 1977. Overall, we conclude that for some takeover defenses the hypothesis that a decrease in takeover market discipline leads to an increase in incentive compensation is clearly supported.

The fact that the adoption of a takeover defense increases CEO compensation does not mean that this firm's CEO receives a higher compensation than CEOs of firms without that takeover defense.

Differences in incentive compensation could have existed before. Therefore, we examine cross-sectional differences in the levels of the various compensation as well, with variation explained by the independent variables filtered out. We expect that CEOs of firms that are protected from the disciplinary force of the market for corporate control receive higher incentive compensation than CEOs of firms that are susceptible to hostile takeovers. We find some evidence in favor of this hypothesis, but conclude that this evidence is at most spurious.

Our results support the findings of Bertrand and Mullainathan (1998), but contradict the evidence reported by Agrawal and Knoeber (1998) and Hubbard and Palia (1998). In Agrawal and Knoeber's (1998) study, the disciplinary effect of the market for corporate control is measured by the (industry-wide) threat of takeover. The probability of acquisition is estimated as the relative frequency of takeover in an industry. The authors note that the inclusion of various corporate takeover defenses do not affect the results of their regressions. The coefficients of these defenses, according to the authors, are all positive (as in this study), but a statistically significant effect on managerial compensation cannot be found. We suggest several reasons for the differences in results. First, Agrawal and Knoeber use data of firms from different industries. Agency problems between shareholders and management may differ across industries. It is unlikely that their control variables for growth opportunities and regulation capture all these differences. Second, they use cross-sectional data. The assumption of a common pay-performance sensitivity across all firms is unrealistic. Different firms have different bonus schemes. Third, the authors do not include a variable for insider stock ownership. Some firms may simply be impossible to be taken over. Finally, Agrawal and Knoeber regress only on a CEO's annual compensation. As shown already by Jensen and Murphy (1990), the strongest incentives usually come from stock ownership and stock-based incentive compensation. The use of annual compensation as a proxy for long-term incentive compensation is questionable especially in view of the fact that annual compensation can also function as insurance against unfavorable exogenous influences on a firm's performance.

In Hubbard and Palia's (1998) study, managers of banks in more competitive markets for corporate control receive greater annual and stock-based incentive compensation. There is an important difference between their study and ours. Most of the banks in their sample were exposed to restrictive interstate banking laws at the beginning of the sample period, and found themselves in deregulated environments by the end of it. In this study, depending on the protection measure, most firms were more susceptible at the beginning of the 1980s, and protected at the end. Few firms remove takeover defenses once they are implemented. For the banking industry, the market for corporate control became increasingly effective in the 1980s, for the oil industry it became more and more inefficient. Neither study can completely explain the upward time trend in compensation. A possible explanation may be that CEOs of firms who initially receive less compensation succeed in obtaining an increase in compensation by pointing to CEOs with higher compensation. This argument is perfectly consistent with the descriptions of the processes of CEO compensation that is given by Crystal (1992). Furthermore, Hubbard and Palia

use a federal state's banking regulation as proxy for the competitiveness of the market for corporate control. As this measure does not include any takeover defenses at the individual bank's level, it is possible that the measure used by the authors does not reflect the true susceptibility of a bank to a takeover. Nevertheless, the different results obtained by Hubbard and Palia and in this paper remains a puzzle to us.

Table 1—Descriptive Statistics for the Variable $SALBON_{it}$

The variable $SALBON_{it}$ is defined as the sum of base salary and annual bonus payments, regardless of whether deferred or paid out in cash or stock. All dollar amounts are stated in $1,000 of 1994 dollars.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	816.8	420.9	221.9	511.6	687.4	1,048.0	1,731.8	0.6825	-0.5644
1978	48	798.3	433.9	208.9	445.4	680.4	982.4	1,756.3	0.8617	-0.2602
1979	49	789.9	419.5	196.9	457.5	699.0	1,027.9	1,760.8	0.7949	-0.3650
1980	50	799.3	433.4	184.3	476.0	688.1	1,058.4	2,068.6	0.9128	0.3426
1981	51	829.0	409.8	181.7	519.5	731.2	1,174.5	2,073.0	0.8203	0.3437
1982	51	852.1	409.0	207.4	537.7	793.8	1,101.5	2,151.4	0.8699	0.8519
1983	51	815.6	393.1	208.7	496.8	749.3	996.2	1,795.2	0.7739	0.0538
1984	51	848.3	421.1	209.1	519.0	777.1	1,064.5	1,920.6	0.7994	-0.0051
1985	51	886.4	452.7	209.7	548.3	771.6	1,084.3	2,003.4	0.8537	-0.0020
1986	51	853.9	466.6	263.1	487.7	718.0	1,065.2	2,138.4	0.9262	0.1405
1987	51	895.2	515.1	214.1	519.7	752.2	1,120.2	2,630.1	1.1653	1.2552
1988	51	1,040.8	622.7	235.0	616.3	809.9	1,456.2	3,049.8	1.1017	0.9249
1989	51	1,020.6	570.8	237.5	583.4	873.8	1,285.2	2,772.0	0.9515	0.4988
1990	51	1,096.0	621.1	286.1	576.6	969.1	1,564.8	2,421.1	0.6679	-0.7016
1991	51	995.5	559.5	298.5	569.8	762.4	1,337.3	2,522.2	0.9860	0.2418
1992	51	993.0	606.7	255.6	549.9	787.9	1,309.2	2,922.0	1.1463	0.9996
1993	51	1,150.5	649.7	307.8	684.9	932.7	1,686.0	2,844.1	0.9031	0.1606
1994	49	1,130.6	778.7	300.0	600.9	867.6	1,522.6	4,399.9	1.9095	5.3497

Table 2—Descriptive Statistics For the Variable $SMBIC_{it}$

The variable $SMBIC_{it}$ is defined as the change in value of all stock-market-based long-term incentive compensation (i.e., incentive stock options and restricted stock) held in the portfolio of a CEO at fiscal year-end for a stock market price change of one percent. All dollar amounts are expressed in $1,000 of 1994 dollars.

Year	N	Mean	Standard deviation	Min.	Lower quartile	Median	Upper quartile	Max.	Skewness	Kurtosis
1977	44	16.1	28.3	0.0	0.0	4.4	21.2	150.5	3.0764	11.6201
1978	48	16.3	26.9	0.0	0.0	4.7	19.2	116.4	2.2386	4.6616
1979	49	22.2	37.7	0.0	0.0	6.3	21.5	154.4	2.3591	5.1553
1980	50	39.0	67.2	0.0	0.0	13.4	34.8	272.6	2.4005	5.0692
1981	51	30.4	48.5	0.0	0.0	14.7	31.1	192.8	2.3304	4.8242
1982	51	19.3	29.1	0.0	1.7	11.7	21.4	151.8	2.9651	10.1785
1983	51	18.3	20.5	0.0	2.4	12.7	24.1	89.7	1.7026	2.9116
1984	51	21.4	25.2	0.0	3.7	14.0	25.0	105.1	1.7474	2.5387
1985	51	22.6	27.6	0.0	3.7	11.4	31.8	107.3	1.6885	2.3582
1986	51	27.1	35.8	0.0	2.4	13.3	43.2	158.0	2.0862	4.6526
1987	51	28.2	34.6	0.0	4.1	13.0	37.1	146.3	1.8426	3.4450
1988	51	35.8	43.3	0.0	3.9	21.5	51.4	194.5	1.8609	3.7025
1989	51	64.0	82.5	0.0	13.9	42.8	95.8	465.0	2.9227	11.1816
1990	51	58.5	73.6	0.0	10.4	29.5	85.6	385.5	2.3842	7.2845
1991	51	58.0	83.0	0.0	4.6	28.3	62.7	406.7	2.4776	6.7660
1992	51	61.8	86.3	0.0	7.9	31.5	83.0	423.4	2.4465	6.6724
1993	51	74.8	101.7	0.0	9.4	32.6	100.9	423.6	2.1464	4.4095
1994	49	84.6	122.6	0.0	10.7	38.4	98.0	609.0	2.6667	8.1562

Table 3—Descriptive Statistics for the Variable $TSMBI_{it}$

The variable $TSMBI_{it}$ is defined as the change in value of all stock-market-based long-term incentive compensation contracts (i.e., incentive stock options and restricted stock) held in the portfolio of a CEO at fiscal year-end plus the change in value of his stock holdings for a stock market price change of one percent. All dollar amounts are expressed in $1,000 of 1994 dollars.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	359.4	901.6	2.8	21.7	62.3	210.0	4,327.9	3.8474	14.8151
1978	48	315.9	748.8	2.5	18.9	63.0	214.5	4,016.9	3.8496	15.5410
1979	49	581.6	1,425.8	2.1	28.2	88.4	324.3	7,203.6	3.6543	13.7278
1980	50	949.3	3,201.3	2.8	39.4	110.0	440.8	20,499.9	5.3054	30.2791
1981	51	403.5	1,442.4	2.1	35.0	75.4	265.8	10,103.9	6.3957	43.0641
1982	51	277.1	998.8	2.5	30.9	59.2	137.2	6,965.4	6.3308	42.3067
1983	51	348.8	1,458.6	3.0	21.6	59.1	126.1	10,254.8	6.5691	44.8674
1984	51	223.5	913.9	2.7	20.7	56.2	117.3	6,555.5	6.9197	48.7757
1985	51	221.8	762.8	5.2	24.8	57.8	123.8	5,354.5	6.3917	43.1205
1986	51	288.7	852.6	5.5	21.8	46.7	112.6	4,545.1	4.4113	19.3979
1987	51	266.6	786.6	4.2	21.5	50.7	128.0	4,062.6	4.5134	20.1531
1988	51	296.8	890.8	3.0	20.9	60.8	140.1	4,897.7	4.5793	20.9308
1989	51	434.4	1,446.6	4.8	40.5	74.3	197.2	7,676.5	4.7546	21.9343
1990	51	381.8	1,217.9	5.0	37.0	68.6	177.2	6,469.9	4.7090	21.6231
1991	51	374.2	1,081.8	4.4	27.9	59.7	176.7	5,774.0	4.3302	18.7602
1992	51	341.4	1,059.1	1.1	28.9	68.4	193.8	5,860.2	4.7558	22.2227
1993	51	397.2	1,158.0	1.3	37.5	85.7	229.1	6,349.5	4.6676	21.5384
1994	49	373.5	998.7	1.1	49.9	90.3	248.5	5,468.9	4.5415	20.5551

Table 4—Antitakeover Charter Amendments and State Regulation Laws 1977-1994

Antitakeover charter amendments and respective state regulation laws adopted and in effect for the sample firms, for each year in the period 1977 to 1994. Due to their similar effects, supermajority requirements and business combination laws as well as corporate fair price amendments, state fair price laws, and cash-out laws have been classed together, respectively. In parentheses is the total number of companies which had adopted the specific charter amendment by that year.

	Type of Amendment				
Year	Sup'majority/Business Combination	Fair Price (corp.&state)/ Cash-Out	Classified Board	Authorization of Preferred Stock	Total Becoming Effective
<77	(6)	(0)	(9)	(31)	(46)
1977	0 (6)	0 (0)	0 (9)	0 (31)	0
1978	0 (6)	0 (0)	1 (10)	2 (33)	3
1979	1 (7)	1 (1)	1 (11)	1 (34)	4
1980	0 (7)	0 (1)	1 (12)	3 (37)	4
1981	1 (8)	0 (1)	0 (12)	1 (38)	2
1982	0 (8)	1 (2)	0 (12)	0 (38)	1
1983	1 (9)	11 (13)	6 (18)	0 (38)	18
1984	1 (10)	5 (18)[a]	6 (24)	2 (40)	14
1985	2 (12)	8 (26)	5 (29)	4 (44)	19
1986	2 (14)	3 (29)	4 (33)	1 (45)	10
1987	0 (14)	0 (29)	0 (32)[b]	1 (46)	1
1988	32 (46)	0 (29)	0 (32)	0 (46)	32
1989	0 (46)	0 (29)	0 (32)	0 (46)	0
1990	1 (47)	0 (29)	0 (32)	1 (47)	2
1991	0 (47)	0 (29)	0 (32)	0 (47)	0
1992	1 (48)	0 (29)	0 (32)	0 (47)	1
1993	0 (48)	0 (29)	0 (32)	1 (48)	1
1994	0 (48)	0 (28)[b]	1 (33)	0 (48)	1

[a] One firm in the sample—*Sun Co. Inc.*—adopted a fair price amendment one year after the state it was incorporated in adopted one.

[b] Due to persistent shareholder action (see proxies 1988 to 1994), *Sonat Inc*. removed its fair price provision in 1994. In 1987, *Tosco Inc.* removed its board classification clause from its charter.

Sources: Direct contact with the companies, SEC proxy statements, Winter et al. (1989), and various editions of Mergers & Acquisitions.

Table 5—Poison Pills 1977-1994

This table shows the number of poison pills adopted and existing for the 51 firms in the sample, for each year in the period 1977 to 1994. In parentheses is the total number of companies which have adopted a shareholder rights plan by that year.

Year	Poison Pill	Year	Poison Pill
1977	0 (0)	1986	12 (17)
1978	0 (0)	1987	0 (17)
1979	0 (0)	1988	2 (19)
1980	0 (0)	1989	3 (22)
1981	0 (0)	1990	6 (28)
1982	0 (0)	1991	0 (28)
1983	0 (0)	1992	1 (29)
1984	0 (0)	1993	0 (29)
1985	5 (5)	1994	0 (29)[a]

[a] One firm in the sample, *Coastal Inc.* adopted a poison pill in early 1995.

Source: Simon & Co. (1995).

Table 6—Frequency per Year of Companies Considered Protected Under Various Defense Regimes

The table shows the frequency of companies considered well-protected from the takeover market under various regimes. The regimes are defined as follows: 1) Poison Pill; 2) Supermajority; 3) Fair Price; 4) Classified Board; 5) Board Authorization to Issue Preferred Stock; 6) Voting Control; 7) Size; 8) Pill or S'Majority; 9) Pill or Fair Price; 10) Pill or Cl.Board; 11) Pill or Auth. Pref.;12) Pill or Voting Control; 13) Pill or Size; 14) Pill or S'Majority or Voting Control; 15) Pill or Fair Price or Voting Control; 16) Pill or Cl.Board or Voting Control; 17) Pill or Auth.Pref. or Voting Control. The sample consists of 51 firms in all years. "Size" is set to one if the firm's common stock capitalization exceeds $25 billion (in 1994 dollars). "Voting Control" is set to one if the sum of votes in hands of the management and in the ESOP exceeds 30 percent of the firm's outstanding votes.

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1977	0	6	0	9	31	5	1	6	0	9	31	5	1	11	5	14	34
1978	0	6	0	10	33	6	1	6	0	10	33	6	1	11	6	15	36
1979	0	7	1	11	34	6	1	7	1	11	34	6	1	12	7	16	37
1980	0	7	1	12	37	6	5	7	1	12	37	6	5	12	7	17	38
1981	0	8	1	12	38	7	1	8	1	12	38	7	1	14	8	18	39
1982	0	8	2	12	38	6	1	8	2	12	38	6	1	13	8	17	39
1983	0	9	13	18	38	7	1	9	13	18	38	7	1	15	18	24	39
1984	0	10	18	24	40	8	1	10	18	24	40	8	1	17	23	30	41
1985	5	12	26	29	44	7	1	16	29	30	44	12	6	21	32	35	45
1986	17	14	29	33	45	8	2	27	37	38	46	25	19	33	41	44	47
1987	17	14	29	32	46	7	2	27	37	37	47	24	19	32	41	41	48
1988	19	46	29	32	46	8	2	47	37	38	47	27	21	49	41	43	48
1989	22	46	29	32	46	7	5	47	40	39	48	29	26	49	43	44	49
1990	28	47	29	32	47	7	5	48	43	40	49	35	32	49	46	45	49
1991	28	47	29	32	47	5	5	48	43	40	49	33	32	49	46	44	49
1992	29	48	29	32	47	7	4	49	44	40	49	35	33	50	47	44	49
1993	29	48	29	32	48	6	5	49	44	40	49	35	33	50	46	44	49
1994	29	48	28	33	48	5	5	49	44	41	49	34	33	50	46	44	49

Table 7—Correlation Coefficients Between Various Variables

This table shows Pearson, polyserial, and polychoric correlation coefficients. The numbers below correspond to the following variables: 1) *SALBON*; 2) *SMBIC*; 3) *TSMBI*; 4) *AGE*; 5) *TENURE*; 6) *CHAIRM*; 7) *BKASSET*; 8) *MSTO*; 9) *DMSTO*; 10) *ACCTRET*; 11) *STKRET*; 12) *MTBR*; 13) *LVGE*; 14) *VINST*; 15) *PPILL*; 16) *SMAJ*; 17) *FAIRPR*; 18) *CLBOARD*; 19) *AUTHPREF*. The variables are defined as described in the text. *N*=902.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1.00																		
2	0.41	1.00																	
3	0.23	-0.10	1.00																
4	0.15	-0.14	0.25	1.00															
5	-0.09	-0.24	0.44	0.45	1.00														
6	0.31	-0.09	0.41	0.42	0.53	1.00													
7	0.73	0.28	0.15	0.22	-0.26	0.24	1.00												
8	-0.22	-0.47	0.57	0.11	0.35	0.19	-0.27	1.00											
9	0.07	-0.30	0.85	0.30	0.49	0.39	0.04	0.55	1.00										
10	0.12	-0.05	0.08	0.03	-0.03	0.09	0.15	0.01	0.10	1.00									
11	0.00	-0.04	0.17	-0.03	0.05	0.00	-0.05	0.07	0.17	0.16	1.00								
12	0.00	0.10	0.15	-0.08	0.07	-0.19	-0.23	-0.09	0.11	-0.02	0.32	1.00							
13	-0.09	-0.06	0.02	-0.04	0.01	-0.13	-0.07	0.07	-0.01	-0.08	-0.06	0.10	1.00						
14	0.30	0.40	0.03	-0.06	-0.09	0.11	0.19	-0.33	-0.10	-0.12	-0.08	0.23	-0.10	1.00					
15	0.24	0.36	-0.18	0.07	-0.04	-0.01	-0.01	-0.29	-0.28	-0.18	-0.08	0.16	0.11	0.62	1.00				
16	0.02	0.27	-0.02	0.08	0.05	0.03	-0.22	-0.19	-0.10	-0.19	-0.04	0.33	0.01	0.43	0.66	1.00			
17	0.15	0.14	-0.04	0.02	-0.22	0.11	0.11	-0.15	-0.08	-0.13	-0.04	-0.10	0.13	0.30	0.28	0.49	1.00		
18	0.04	0.24	-0.15	0.04	-0.02	-0.13	-0.17	-0.31	-0.21	-0.21	-0.04	0.20	0.18	0.32	0.46	0.60	0.44	1.00	
19	-0.11	0.21	-0.16	-0.12	-0.01	0.22	-0.28	-0.16	-0.21	-0.23	-0.11	-0.21	0.16	0.24	0.43	0.37	0.58	0.51	1.00

Table 8—FGLS Regressions on $SALBON_{it}$, $SMBIC_{it}$, and $TSMBI_{it}$

The dependent variable in regressions (1) and (2) is log($SALBON_{it}$), in regression (3) log($SMBIC_{it}$), in regression (4) log($TSMBI_{it}$). The variables are defined as described in the text. All regressions were estimated by a two-step FGLS regression correcting for group-specific first-order autocorrelation and groupwise heteroscedasticity. All regressions were estimated with fixed effects for firms and years. In regression (1), the coefficients for $ACCTRET_{it}$ and $MTBR_{it}$ were allowed to be individual for each firm. In parentheses are absolute t-values. The variable $PROTECT_{it}$ is measure 15 of Table 9 in regressions (1) and (2), measure 17 in regression (3) and measure 16 in regression (4). Coefficient estimates for the year dummies are omitted. N=903.

	1	2		3	4
INTERCEPT	-17.57	-14.44	INTERCEPT	-121.24	43.83
	(3.24)	(2.85)		(3.17)	(4.10)
log(BKASSET)	0.35	0.35	log(BKASSET)	0.30	0.43
	(14.57)	(15.71)		(2.34)	(6.79)
log(AGE)	9.93	8.55	log(AGE)	64.09	-22.02
	(3.72)	(3.42)		(3.43)	(4.20)
$[\log(AGE)]^2$	-1.20	-1.05	$[\log(AGE)]^2$	-8.47	2.66
	(3.64)	(3.39)		(3.68)	(4.11)
log(TENURE)	0.18	0.18	log(TENURE)	0.47	0.24
	(7.75)	(7.91)		(2.84)	(3.94)
$[\log(TENURE)]^2$	-0.04	-0.04	$[\log(TENURE)]^2$	-0.12	0.04
	(5.11)	(4.88)		(1.98)	(1.87)
CHAIRM	0.06	0.07	CHAIRM	0.25	0.59
	(2.76)	(3.50)		(1.96)	(9.66)
MSTO	0.04	-0.03	MSTO	-36.29	-
	(0.12)	(0.10)		(5.82)	-
ACCTRET	*indiv.*	0.43	DMSTO	0.06	-
	indiv.	(4.91)		(1.51)	-
STKRET	-	0.03	INTERACT	-0.51	-
	-	(1.34)		(0.72)	-
MTBR	*indiv.*	0.21	MTBR	0.70	1.42
	indiv.	(6.02)		(3.68)	(17.19)
LVGE	-0.38	-0.41	LVGE	-1.47	-0.80
	(4.94)	(6.29)		(3.57)	(4.72)
VINST	0.08	0.15	VINST	1.99	0.74
	(0.97)	(2.16)		(4.96)	(4.02)
PROTECT	0.05	0.04	PROTECT	1.64	0.20
	(2.11)	(1.92)		(6.91)	(3.76)

Table 9—Coefficients Estimates for the Various Regimes, FGLS Regressions on $SALBON_{it}$, $SMBIC_{it}$, and $TOTSIC_{it}$

This table shows coefficient estimates for the various defense regimes defined in Table 6. Each coefficient below was estimated in a separate regression. The regressions (1) to (4) are described in Table 8 above. The estimates for the other coefficients are omitted. They are virtually unchanged to the ones shown in Table 8. In parentheses are absolute t-values. *N*=903.

No.	Regime	Regression 1		Regression 2		Regression 3		Regression 4	
1	Poison Pill	0.0270	(1.02)	0.0318	(1.48)	0.2507	(1.83)	0.0062	(0.12)
2	Supermajority	-0.0020	(0.07)	0.0130	(0.54)	0.1951	(1.34)	0.2185	(3.79)
3	Fair Price	0.0752	(2.92)	0.0444	(2.05)	-0.1974	(1.61)	0.0907	(1.54)
4	Classified Board	-0.0410	(1.45)	0.0261	(1.14)	-0.6644	(5.08)	0.0432	(0.75)
5	Auth. Pref. Stock	0.0605	(2.01)	0.0417	(1.63)	1.5203	(6.55)	0.2769	(4.58)
6	Voting Control	0.0337	(0.82)	0.0172	(0.45)	-0.3487	(1.53)	0.3730	(2.35)
7	Size	-0.0489	(1.04)	-0.0524	(1.75)	0.0331	(0.17)	0.2524	(2.49)
8	Pill or S´majority	0.0027	(0.10)	-0.0064	(0.27)	0.1357	(1.01)	0.1305	(2.28)
9	Pill or Fair Price	0.0612	(2.51)	0.0589	(2.60)	-0.1320	(1.01)	0.0156	(0.27)
10	Pill or Cl. Board	-0.0251	(1.02)	0.0159	(0.77)	-0.1366	(1.00)	0.1262	(2.26)
11	Pill or Auth.Pref.	0.0538	(1.83)	0.0455	(1.84)	1.2914	(6.17)	0.2243	(3.71)
12	Pill or Voting	0.0320	(1.37)	0.0320	(1.68)	0.0837	(0.70)	0.0799	(1.58)
13	Pill or Size	0.0258	(1.02)	0.0256	(1.26)	0.1869	(1.50)	0.0662	(1.27)
14	Pill or SM or Vote	0.0246	(0.99)	0.0181	(0.85)	0.0657	(0.52)	0.2826	(4.97)
15	Pill or FP or Vote	0.0489	(2.11)	0.0406	(1.92)	-0.1324	(1.02)	0.1498	(2.66)
16	Pill or CB or Vote	-0.0064	(0.27)	0.0207	(1.09)	-0.2046	(1.69)	0.2031	(3.76)
17	Pill or AP or Vote	0.0304	(0.97)	0.0437	(1.69)	1.6356	(6.91)	0.2987	(4.62)

Table 10—Cross-Sectional Comparison of Incentive Compensation and Incentives

The calculations in this table use the coefficient estimates from Table 8, regressions (1), (3), and (4). In columns "$P,\mu_i>\mu$" are shown the ratios of firms considered protected whose compensation measure net of explained variance exceeds the mean or median of the sample in the respective year. In columns "$0,\mu_i<\mu$" are shown the respective ratios of firms considered susceptible whose compensation measure is less than the respective mean or median of that year.

				Comparison to the Mean					
				SALBON		SMBIC		TSMBI	
Regime	Year	N (P)	N (0)	$P,\mu_i>\mu$	$0,\mu_i<\mu$	$P,\mu_i>\mu$	$0,\mu_i<\mu$	$P,\mu_i>\mu$	$0,\mu_i<\mu$
PPILL	1989	22	29	0.45	0.55	0.55	0.38	0.00	0.86
SMAJ	1987	14	37	0.36	0.51	0.86	0.43	0.07	0.86
FAIRPR	1987	29	22	0.34	0.41	0.55	0.23	0.14	0.91
CLBOARD	1987	32	19	0.50	0.63	0.72	0.47	0.09	0.84
AUTHPR	1984	40	11	0.58	0.73	0.58	0.64	0.10	0.91
VOTE CONTR.	1988	8	43	0.50	0.53	0.88	0.42	0.50	0.95
PP & VC	1989	29	22	0.52	0.64	0.62	0.45	0.10	0.95
SM & VC	1987	19	32	0.37	0.50	0.89	0.50	0.21	0.94
FP & VC	1987	33	18	0.33	0.33	0.61	0.28	0.18	1.00
CL & VC	1987	36	15	0.47	0.60	0.75	0.60	0.17	1.00
AP & VC	1984	41	10	0.56	0.70	0.59	0.70	0.12	1.00
				Comparison to the Median					
PPILL	1989	22	29	0.55	0.55	0.41	0.45	0.45	0.48
SMAJ	1987	14	37	0.43	0.49	0.64	0.57	0.57	0.54
FAIRPR	1987	29	22	0.38	0.36	0.38	0.36	0.45	0.45
CLBOARD	1987	32	19	0.56	0.63	0.53	0.58	0.50	0.53
AUTHPR	1984	40	11	0.55	0.73	0.53	0.64	0.55	0.73
VOTE CONTR.	1988	8	43	0.63	0.53	0.63	0.53	0.88	0.58
PP & VC	1989	29	22	0.59	0.64	0.48	0.50	0.55	0.59
SM & VC	1987	19	32	0.42	0.47	0.74	0.66	0.68	0.63
FP & VC	1987	33	18	0.36	0.28	0.45	0.44	0.52	0.56
CL & VC	1987	36	15	0.53	0.60	0.58	0.73	0.56	0.67
AP & VC	1984	41	10	0.54	0.70	0.54	0.70	0.56	0.80

Table 11—Descriptive Statistics for the Variable AGE_{it}

The variable AGE_{it} denotes the age of a firm‘s CEO at fiscal year-end, measured in years.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	57.2	7.1	41	54	58	61	79	0.3023	1.6556
1978	48	57.6	7.8	32	54	58	62	80	-0.3738	2.6644
1979	49	57.7	8.1	33	55	58	62	81	-0.1814	2.0037
1980	50	58.4	8.3	34	55	59	63	82	-0.1740	1.6500
1981	51	58.3	8.1	35	54	60	62	83	-0.0863	2.1079
1982	51	58.8	7.8	36	55	60	63	84	0.0200	2.6584
1983	51	58.3	7.7	37	53	61	63	85	0.0871	2.5194
1984	51	58.1	7.7	38	53	60	63	86	0.3168	2.5864
1985	51	59.1	8.1	39	53	61	64	87	0.3531	2.0835
1986	51	59.8	8.2	40	54	61	65	88	0.4722	2.0341
1987	51	59.0	8.3	41	54	59	64	89	0.6197	2.3607
1988	51	58.6	8.4	42	54	59	64	90	0.7456	2.7781
1989	51	58.7	8.5	43	54	58	62	91	1.0285	3.1394
1990	51	58.8	7.0	44	55	58	62	76	0.2012	0.0438
1991	51	59.4	7.0	45	55	59	63	77	0.3494	0.0895
1992	51	59.3	6.9	46	55	59	63	78	0.4537	0.5303
1993	51	59.9	7.2	47	55	60	63	79	0.4664	0.3873
1994	49	59.2	7.6	40	56	59	63	80	0.4301	1.0655

Table 12—Descriptive Statistics for the Variable $TENURE_{it}$

The variable $TENURE_{it}$ denotes the tenure of a firm‘s CEO in his position as CEO (i.e., the job tenure) at fiscal year-end, measured in years.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	9.5	8.5	1	4	7	15	39	1.5894	2.6916
1978	48	10.9	8.6	1	5	8	16	40	1.3396	1.7485
1979	49	11.1	8.8	1	4	9	16	41	1.3526	1.7846
1980	50	11.9	8.9	2	5	10	17	42	1.3520	1.7880
1981	51	10.7	8.7	1	4	8	18	35	0.9303	0.0707
1982	51	10.6	8.8	1	4	8	14	36	1.1250	0.5281
1983	51	9.8	9.2	1	3	8	13	37	1.2732	0.8680
1984	51	10.1	9.6	1	2	7	14	38	1.2637	0.7649
1985	51	11.5	11.1	1	3	7	16	47	1.3814	1.3778
1986	51	11.9	11.4	1	3	8	16	48	1.3280	1.1966
1987	51	10.8	10.9	1	2	5	17	41	1.1877	0.3901
1988	51	9.8	10.8	1	2	5	13	42	1.5688	1.5301
1989	51	9.9	10.8	1	3	5	14	43	1.5417	1.5378
1990	51	9.8	10.5	1	3	6	14	44	1.7543	2.4969
1991	51	10.5	10.7	1	3	6	15	45	1.7103	2.3383
1992	51	10.1	10.4	1	4	6	10	46	2.0268	3.7100
1993	51	11.3	11.3	1	4	7	11	47	1.8166	2.5496
1994	49	10.9	12.1	1	3	6	12	48	1.7755	2.3238

Table 13—Descriptive Statistics for the Variable $BKASSET_{it}$

The variable $BKASSET_{it}$ denotes the book value of a firms total assets as defined by COMPUSTAT (item no.6), i.e. the sum of the firm‘s liabilities and stockholders‘ equity. All dollar amounts are stated in millions of 1994 dollars.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	10,537.8	17,493.8	107.0	842.3	4,389.5	10,671.9	92,645.5	3.0439	11.0952
1978	48	9,905.0	16,832.5	174.2	927.5	4,132.2	9,998.1	91,808.0	3.1486	11.8768
1979	49	10,090.9	17,351.8	185.8	1,081.2	3,927.0	9,929.1	96,599.5	3.2845	12.9639
1980	50	10,360.9	17,757.9	205.7	1,155.0	4,072.5	10,762.8	98,290.5	3.2304	12.4302
1981	51	10,824.7	18,134.8	252.8	1,208.0	4,429.4	11,320.3	100,381.4	3.0986	11.7017
1982	51	11,269.0	17,839.4	266.7	1,291.0	4,730.4	13,075.9	95,694.0	2.8019	9.6350
1983	51	11,107.2	17,241.2	257.4	1,411.5	4,804.2	13,660.2	93,204.1	2.8084	9.7874
1984	51	11,655.0	18,333.5	231.2	1,347.7	4,688.8	14,515.4	90,025.6	2.5056	6.7652
1985	51	11,532.6	18,413.0	217.5	1,119.3	4,523.1	14,681.3	94,804.5	2.7144	8.3958
1986	51	10,938.0	17,768.9	162.3	919.6	4,213.4	13,727.2	94,130.0	2.8086	9.3801
1987	51	10,619.4	17,780.3	164.5	748.7	3,739.2	13,053.4	96,054.7	2.9367	10.4271
1988	51	10,133.1	16,865.5	167.2	824.8	3,690.3	10,803.3	92,309.1	2.9728	10.8870
1989	51	10,106.5	17,323.9	147.4	907.7	3,661.9	10,812.0	98,822.6	3.2719	13.4280
1990	51	10,032.5	17,179.8	167.1	927.2	3,648.1	10,910.0	98,021.3	3.2876	13.4900
1991	51	9,618.5	16,487.0	162.0	1,053.2	3,482.2	10,675.0	95,028.9	3.3757	14.1961
1992	51	9,299.4	15,703.7	166.8	1,015.0	3,336.5	11,152.2	89,630.1	3.2876	13.4549
1993	51	9,092.8	15,117.1	168.8	1,198.2	3,297.6	10,493.0	86,332.8	3.2760	13.3730
1994	49	9,392.2	15,375.5	182.4	1,478.1	3,530.7	10,534.6	87,862.0	3.3208	13.8445

Table 14—Descriptive Statistics for the Variable $MSTO_{it}$

The variable $MSTO_{it}$ is defined as the fraction of shares of common stock owned by the CEO of a firm at fiscal year-end. Excluded are holdings of restriced stock.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	0.0538	0.1353	0.0000	0.0002	0.0015	0.0190	0.6176	3.0780	9.1920
1978	48	0.0543	0.1314	0.0000	0.0003	0.0027	0.0180	0.6148	3.1629	9.9449
1979	49	0.0510	0.1285	0.0000	0.0003	0.0029	0.0156	0.6201	3.3110	10.9041
1980	50	0.0485	0.1278	0.0001	0.0004	0.0025	0.0143	0.6261	3.4612	11.8758
1981	51	0.0405	0.1185	0.0000	0.0004	0.0017	0.0119	0.6258	3.9301	15.7907
1982	51	0.0407	0.1181	0.0000	0.0004	0.0020	0.0114	0.6154	3.8695	15.2236
1983	51	0.0396	0.1172	0.0000	0.0002	0.0015	0.0091	0.6154	3.8930	15.4897
1984	51	0.0365	0.1158	0.0000	0.0003	0.0014	0.0095	0.6142	4.0781	16.7431
1985	51	0.0378	0.1159	0.0000	0.0003	0.0017	0.0092	0.6155	4.0432	16.5852
1986	51	0.0411	0.1180	0.0000	0.0003	0.0020	0.0080	0.6233	3.8606	15.4517
1987	51	0.0375	0.1168	0.0000	0.0002	0.0014	0.0076	0.6233	4.0529	16.7213
1988	51	0.0360	0.1172	0.0000	0.0003	0.0008	0.0043	0.6300	4.1188	17.2802
1989	51	0.0315	0.1048	0.0000	0.0003	0.0008	0.0050	0.6300	4.5325	22.5862
1990	51	0.0347	0.1072	0.0000	0.0004	0.0010	0.0050	0.6286	4.1915	19.7438
1991	51	0.0353	0.1086	0.0000	0.0003	0.0008	0.0060	0.6280	4.0860	18.6154
1992	51	0.0302	0.1034	0.0000	0.0003	0.0009	0.0037	0.6307	4.6850	24.1284
1993	51	0.0288	0.0928	0.0001	0.0004	0.0013	0.0067	0.5399	4.3273	20.2075
1994	49	0.0302	0.0952	0.0000	0.0004	0.0009	0.0063	0.5440	4.2406	19.3811

Table 15—Descriptive Statistics for the Variable $ACCTRET_{it}$

The variable $ACCTRET_{it}$ denotes a firm‘s fiscal year accounting return, defined as $INC_{it}+INT_{it}/(P_{it}*SHOUT_{it}+STD_{it}+LTD_{it}+PREF_{it})$, where INC_{it} represents the firm‘s income before extraordinary items (COMPUSTAT data item no.18), INT_{it} the interest expenses (item 15), P_{it} the fiscal year-end closing price of the firm‘s common stock (item 99), $SHOUT_{it}$ the shares of common stock outstanding at fiscal year-end (item 25), STD_{it} the firm‘s debt in current liabilities (item 34), LTD_{it} the firm‘s total long-term debt (item 9), and $PREF_{it}$ the carrying value of the firm‘s outstanding preferred stock (item 130).

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	49	0.1070	0.0227	0.0473	0.0963	0.1049	0.1198	0.1549	-0.2919	0.9526
1978	50	0.1112	0.0228	0.0474	0.0968	0.1114	0.1267	0.1678	-0.2824	0.9691
1979	50	0.1161	0.0515	-0.0518	0.0915	0.1050	0.1457	0.2533	0.1586	2.2028
1980	51	0.1035	0.0453	0.0465	0.0779	0.0990	0.1140	0.3329	2.8341	12.6464
1981	51	0.1298	0.0483	0.0311	0.1070	0.1214	0.1402	0.3187	1.5789	4.3256
1982	51	0.1188	0.0520	-0.1464	0.1030	0.1210	0.1441	0.2360	-2.4252	13.2263
1983	51	0.0831	0.0718	-0.3058	0.0659	0.0974	0.1184	0.1670	-3.5547	17.2547
1984	51	0.0927	0.0568	-0.1892	0.0775	0.1052	0.1235	0.1776	-2.9845	12.3204
1985	51	0.0402	0.1997	-1.2762	0.0377	0.0842	0.1057	0.1880	-5.9815	39.4713
1986	51	-0.0125	0.2159	-1.3137	-0.0207	0.0514	0.0820	0.1808	-4.7318	27.0262
1987	51	0.0564	0.0910	-0.3157	0.0598	0.0788	0.0939	0.2345	-2.0890	6.0622
1988	51	0.0749	0.0493	-0.0253	0.0451	0.0832	0.1058	0.1901	-0.1135	-0.0934
1989	51	0.0680	0.0332	-0.0412	0.0515	0.0728	0.0858	0.1411	-0.9390	2.1322
1990	51	0.0818	0.0408	-0.0496	0.0653	0.0833	0.0961	0.2084	-0.6264	4.3198
1991	51	0.0397	0.1032	-0.6437	0.0354	0.0570	0.0774	0.1123	-6.0480	40.2697
1992	51	0.0467	0.0371	-0.0761	0.0368	0.0544	0.0684	0.1074	-1.7271	3.2824
1993	51	0.0573	0.0378	-0.0255	0.0406	0.0557	0.0714	0.2231	1.5235	6.7177
1994	51	0.0573	0.0460	-0.1209	0.0434	0.0634	0.0766	0.2187	-1.0430	7.9777

Table 16—Descriptive Statistics for the Variable $STKRET_{it}$

The variable $STKRET_{it}$ denotes the annual stock market return of a firm‘s common stock, measured at calendar year-end, defined as $\Pi_{m=1,\ldots,12}[(P_{im}+DPS_{im})/P_{im-1}]-1$, where P_{im} is the closing month-end stock price and DPS_{im} the dividends-per-share paid for month *m*, both adjusted for stock dividends, stock splits, and other changes in stock capitalization.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	0.0573	0.3565	-0.4777	-0.0965	-0.0311	0.0734	1.4200	2.3089	6.1402
1978	48	0.0402	0.2059	-0.4173	-0.0743	0.0440	0.1453	0.6272	0.4224	0.8483
1979	49	0.9108	0.9371	-0.1126	0.4384	0.6557	1.1143	4.9176	2.5221	7.4774
1980	50	0.6174	0.5276	-0.4098	0.1899	0.5461	0.9993	2.2097	0.7549	0.8298
1981	51	-0.2100	0.1613	-0.4867	-0.3205	-0.2296	-0.0950	0.2924	0.5822	0.6691
1982	51	-0.1334	0.2253	-0.7079	-0.2606	-0.1747	0.0300	0.4052	0.0119	0.2672
1983	51	0.2687	0.2996	-0.5506	0.0941	0.2525	0.4796	1.0523	0.2048	0.9237
1984	51	-0.0071	0.2791	-0.8000	-0.1367	0.0201	0.1386	0.6548	-0.4629	1.0423
1985	51	0.2386	0.4902	-0.5135	0.0251	0.1735	0.3022	2.8750	3.3781	16.5906
1986	51	-0.0178	0.2952	-0.6667	-0.1692	-0.0570	0.1928	0.5934	-0.0803	-0.2013
1987	51	0.0597	0.2170	-0.4573	-0.0715	0.0550	0.1765	0.5161	-0.0578	0.0220
1988	51	0.2477	0.3045	-0.7187	0.0915	0.2111	0.3601	1.5556	1.2833	7.6057
1989	51	0.4628	0.3035	-0.5729	0.2995	0.4557	0.6086	1.3856	-0.2450	3.1511
1990	51	-0.0616	0.1628	-0.3750	-0.1902	-0.0440	0.0348	0.3599	0.2566	0.1609
1991	51	0.0339	0.3524	-0.6491	-0.2045	-0.0066	0.2321	0.9637	0.4900	0.2313
1992	51	0.0571	0.1884	-0.3959	-0.0195	0.0590	0.1500	0.5721	0.2121	1.1665
1993	51	0.1855	0.2163	-0.1220	0.0744	0.1395	0.2599	1.2391	2.8563	11.6687
1994	49	0.0131	0.1693	-0.3056	-0.0758	0.0213	0.0815	0.6818	1.0584	3.9106

Table 17—Descriptive Statistics for the Variable $MTBR_{it}$

The variable $MTBR_{it}$ denotes a firm‘s fiscal year-end market-to-book ratio, defined as $(P_{it}*SHOUT_{it}+STD_{it}+LTD_{it}+PREF_{it})/ASSETS_{it}$, where P_{it} denotes the fiscal year-end closing price of the firm‘s common stock (COMPUSTAT data item 99), $SHOUT_{it}$ the shares of common stock outstanding at fiscal year-end (item 25), STD_{it} the firm‘s debt in current liabilities (item 34), LTD_{it} the firm‘s total long-term debt (item 9), $PREF_{it}$ the carrying value of the firm‘s outstanding preferred stock (item 130), and $ASSETS_{it}$ the book value of the firm‘s total assets in place at fiscal year-end (item 6).

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	49	0.8578	0.3065	0.4595	0.6581	0.7845	0.9781	1.9088	1.4313	2.3447
1978	50	0.7994	0.2862	0.4035	0.6246	0.7231	0.9279	2.1117	2.1469	7.8457
1979	50	1.0076	0.4976	0.3686	0.6628	0.8623	1.1410	2.7432	1.7751	3.3194
1980	51	1.1661	0.5590	0.4013	0.7834	0.9718	1.3983	2.6579	1.0924	0.3840
1981	51	0.8206	0.3218	0.3054	0.6032	0.7443	0.9543	1.8137	0.9866	0.8753
1982	51	0.6776	0.1967	0.3367	0.5776	0.6534	0.8019	1.4092	0.8832	2.5847
1983	51	0.7531	0.2904	0.3822	0.6084	0.7050	0.8013	2.3533	3.5555	18.1940
1984	51	0.7170	0.2307	0.2203	0.6229	0.6915	0.7418	1.8945	2.6595	13.2781
1985	51	0.7440	0.2576	0.2287	0.6440	0.7068	0.8037	1.9421	2.1772	9.0744
1986	51	0.7967	0.2224	0.1668	0.6743	0.7578	0.8965	1.4528	0.5002	1.7493
1987	51	0.7956	0.2609	0.3108	0.6505	0.7430	0.9371	1.7255	1.4983	4.1871
1988	51	0.8135	0.2218	0.1452	0.6768	0.7920	0.9502	1.5669	0.3967	2.7088
1989	51	1.0183	0.2749	0.5281	0.8328	0.9664	1.1285	1.7698	1.0567	0.9732
1990	51	0.9179	0.2825	0.3219	0.7351	0.8622	1.0613	1.7104	0.9779	1.4634
1991	51	0.9133	0.3385	0.1606	0.7374	0.8822	1.0250	2.5745	2.3781	11.2350
1992	51	0.9364	0.3755	0.1491	0.7504	0.8906	1.0958	2.9188	2.8687	15.3948
1993	51	0.9758	0.3511	0.1635	0.8172	0.9510	1.1234	2.8418	2.6895	15.9160
1994	51	0.9268	0.2549	0.1666	0.8060	0.9208	1.0224	1.8926	0.3535	4.6417

Table 18—Descriptive Statistics for the Variable $LVGE_{it}$

The variable $LVGE_{it}$ denotes a firm´s fiscal year-end leverage, defined as $(STD_{it}+LTD_{it}-CASH_{it})/ASSETS_{it}$, where STD_{it} denotes the firm‘s debt in current liabilities (COMPUSTAT data item 34), LTD_{it} the firm‘s total long-term debt (item 9), $CASH_{it}$ the firm‘s cash and short-term investments (item 1), and $ASSETS_{it}$ the book value of the firm‘s total assets in place at fiscal year-end (item 6).

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	0.21	0.16	-0.29	0.12	0.23	0.34	0.46	-0.8947	0.9035
1978	48	0.22	0.16	-0.28	0.12	0.23	0.33	0.63	-0.4493	1.0199
1979	49	0.18	0.16	-0.23	0.07	0.18	0.30	0.53	-0.1127	-0.0913
1980	50	0.19	0.13	-0.13	0.09	0.21	0.29	0.44	-0.2627	-0.5218
1981	51	0.21	0.13	-0.08	0.10	0.22	0.30	0.55	0.2597	0.0338
1982	51	0.23	0.15	-0.13	0.12	0.23	0.35	0.62	0.0701	-0.0548
1983	51	0.22	0.17	-0.13	0.11	0.23	0.31	0.84	0.9356	2.5960
1984	51	0.24	0.17	-0.16	0.14	0.24	0.34	0.85	0.5931	2.5823
1985	51	0.26	0.19	-0.17	0.14	0.25	0.40	0.87	0.4121	1.3040
1986	51	0.28	0.18	-0.18	0.15	0.30	0.39	0.74	-0.2226	0.3007
1987	51	0.24	0.18	-0.09	0.10	0.23	0.34	0.90	0.6660	2.7057
1988	51	0.21	0.16	-0.20	0.14	0.24	0.32	0.47	-0.7701	0.1636
1989	51	0.25	0.14	-0.10	0.16	0.29	0.35	0.53	-0.5830	-0.1129
1990	51	0.24	0.15	-0.12	0.14	0.28	0.35	0.47	-0.4512	-0.6640
1991	51	0.26	0.16	-0.08	0.13	0.28	0.36	0.58	-0.3047	-0.5180
1992	51	0.26	0.16	-0.18	0.20	0.30	0.36	0.65	-0.8030	0.9254
1993	51	0.23	0.16	-0.19	0.13	0.27	0.35	0.58	-0.7587	0.4139
1994	49	0.25	0.16	-0.21	0.17	0.26	0.36	0.59	-0.4440	0.4548

Table 19—Descriptive Statistics for the Variable $VINST_{it}$

The variable $VINST_{it}$ is defined as firm‘s percentage of votes controlled by institutional investors. Included are all votes resulting from preferred stock outstanding. The number of votes was derived from the number of shares held by banks, investment firms, insurance firms, college endowments and "13F" money managers, as given by the *Standard & Poor´s* Investors Guide.

Year	N	Mean	Standard Deviation	Min.	Lower Quartile	Median	Upper Quartile	Max.	Skewness	Kurtosis
1977	44	0.19	0.12	0.00	0.07	0.20	0.29	0.42	-0.0117	-1.2012
1978	48	0.20	0.12	0.00	0.09	0.20	0.28	0.53	0.3556	-0.1564
1979	49	0.23	0.14	0.02	0.09	0.24	0.31	0.53	0.0548	-1.0257
1980	50	0.34	0.17	0.02	0.21	0.38	0.48	0.66	-0.3324	-1.0270
1981	51	0.34	0.17	0.04	0.22	0.37	0.47	0.65	-0.2843	-0.8749
1982	51	0.32	0.15	0.00	0.22	0.35	0.44	0.58	-0.4349	-0.7227
1983	51	0.33	0.15	0.00	0.20	0.34	0.43	0.62	-0.3860	-0.6828
1984	51	0.36	0.18	0.01	0.26	0.37	0.48	0.84	-0.0088	0.0727
1985	51	0.40	0.18	0.01	0.27	0.41	0.52	0.74	-0.2466	-0.5376
1986	51	0.39	0.17	0.02	0.29	0.40	0.51	0.73	-0.1724	-0.3708
1987	51	0.43	0.20	0.02	0.27	0.44	0.58	0.83	-0.1424	-0.7056
1988	51	0.44	0.20	0.03	0.27	0.44	0.58	0.83	-0.0947	-0.7081
1989	51	0.48	0.19	0.03	0.35	0.48	0.60	0.86	-0.1864	-0.5913
1990	51	0.50	0.18	0.03	0.40	0.53	0.65	0.77	-0.6127	-0.2873
1991	51	0.52	0.17	0.03	0.41	0.55	0.65	0.80	-0.6754	0.1220
1992	51	0.52	0.17	0.03	0.40	0.55	0.65	0.80	-0.7862	0.1139
1993	51	0.56	0.19	0.03	0.46	0.60	0.71	0.84	-0.9151	0.3270
1994	49	0.59	0.19	0.03	0.51	0.63	0.73	0.88	-0.8914	0.5657

Appendix

List of oil companies examined (in alphabetical order)

Company	Cusip No.	COMPU-STAT Perm.No.
Amerada Hess Corp.	0000235511	28484
Amoco Corp.		
(before 4/1985: Standard Oil Co. Ind.)	0000319051	19553
Apache Corp.	0000374111	39490
Atlantic Richfield Co.	0000488251	10604
Chevron Corp.		
(before 4/84: Standard Oil Co. California)	0001667511	14541
Coastal Corp.		
(before 1/80: Coastal Sts. Gas Corp.)	0001904411	38893
Columbia Gas System Inc.	0001976481	11340
Consolidated Natural Gas Co.	0002096151	21821
Crown Central Petroleum Corp.	0002282191	31042, 61532[31]
Diamond Shamrock Inc.		
(before 2/90: Diamond Shamrock R & M; before 5/87: Diamond Shamrock Corp.)	0002527471	24715 75053[32]
Dresser Industries Inc.	0002615971	19254
E.I. Du Pont De Nemours & Co.	0002635341	11703
Enron Corp.		
(before 3/80: Northern Nat. Gas Co.; before 4/86: Internorth Inc.)	0002935611	23317
ENSERCH Corp.	0002935671	25056
Exxon Corp.	0003022901	11850
Fina Inc.		
(before 4/91: American Petrofina Inc.)	00031734l1	29049
Freeport McMoran Inc.[33]	0003567141	62877
Great Lakes Chemical Corp.	0003905681	32379
Halliburton Co.	0004062161	23819
Holly Corp.	0004357581	32803
Howell Corp.	0004430511	58886

[31] Common Stock Cl. B.
[32] Untill 1987: Diamond Shamrock Corp.
[33] Only from 4/81 on.

K.N. Energy		
(before 3/83: Kansas Nebraska Natural Gas Inc.)	0004826201	51596
Kerr McGee Corp.	0004923861	25768
Laclede Gas Co.	0005055881	12781
Louisiana Land & Exploration Co.	0005462681	33814
Mapco Inc.	0005650971	43668
Mitchell Energy & Development Corp.	0006065921	55191
Mobil Corp.	0006070591	15966
Murphy Oil Corp.	0006267171	28345
Occidental Petroleum Corp.	0006745991	34833
ONEOK Inc.		
(before 12/80: Oklahoma Nat. Gas Co.)	0006826781	25232
Pennzoil Co.	0007099031	35211
Phillips Petroleum Co.	0007185071	13928
Rowan Cos.	0007793821	45495
Smith International Inc.	0008321101	45794
Sonat Inc.		
(before 1/82: Southern Nat. Res. Inc.)	0008354151	21514
Stone & Webster Inc.	0008615721	18198
Sun Co Inc.	0008667621	14656
Tesoro Petroleum Corp.	0008816091	37284
Texaco	0008816941	14736
Tidewater Inc.		
(before 8/77: Tidewater Marine Svc. Inc.)	0008864231	50606
Tosco Corp.	0008914901	61663
Transco Energy Co.		
(before 5/82: Transco Energy Co.; before 4/75: Transco Companies Inc.)	0008935321	58472
Union Pacific Corp.	0009078181	48725
Unocal Corp.		
(before 4/83: Union Oil Co. Calif.)	0009152891	14891
USX Corp.		
(5/91: USX Marathon Group Inc.; before 5/91: USX Corp.; before 7/86: United States Steel Corp.)	0009029051	15069
Valero Energy Corp.[34]	0009191381	61671
Wainoco Oil Corp.		
(before 12/76: Wainoco Oil Ltd.)	0009306761	56063
Western Co. of North America	0009580431	58085
Williams Companies Inc.	0009694571	38156
Witco Corp.		

[34] Only from 1/80 on.

(before 10/85: Witco Chemical Corp.)	0009773851	38375

References

Agrawal, A., and C.R. Knoeber, 1998. Managerial Compensation and the Threat of Takeover. Journal of Financial Economics 47, 219-239.

Bertrand, M., and S. Mullainathan, 1998. Executive Compensation and Incentives: The Impact of Takeover Legislation. Working Paper #404, Princeton University, October 1998.

Board of Governors of the Federal Reserve System, 1977-1994. Annual Statistical Digest. Various editions.

Charles E. Simon & Co., 1995. Corporate Anti-Takeover Defenses: The Poison Pill Device. Securities Law Series, prepared by J.M Bryan. Clark Boardman Callaghan, Deerfield, New York, Rochester.

Crystal, G.S., 1992. In Search of Excess: The Overcompensation of American Executives. Norton & Company, New York, London.

Haid, M., 1997. Incentive Compensation and the market for corporate control. Paul Haupt Publishers, Berne.

Hall, B. J., and J.B. Liebman, Are CEOs Really Paid Like Bureaucrats? The Quarterly Journal of Economics, August 1998.

Hubbard, R.G., and D. Palia, 1995. Executive Pay and Performance: Evidence From the U.S. Banking Industry. Journal of Financial Economics 39, 105-130.

Jarrell, G.A., and A.B. Poulsen, 1987. Shark Repellents and Stock Prices: The Effects of Antitakeover Amendments since 1980. Journal of Financial Economic, 19, 127-168.

Jensen, M.C., and K.J. Murphy, 1990. Performance Pay and Top-Management Incentives. Journal of Political Economy 98, 225-264.

Jensen, M.C., 1986. Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, American Economic Review 76, 323-329.

Lambert, R.A., and D.F. Larcker, 1985. Golden Parachutes, Executive Decision-Making, and Shareholder Wealth. Journal of Accounting and Economics 7,179-203.

Murphy, K.J., 1998. Executive Compensation, in: O. Ashenfelter and D. Card, eds., Handbook of Labor Economics, Vol. 3, North Holland.

Murphy, K.J., 1985. Corporate Performance and Managerial Remuneration: An Empirical Analysis. Journal of Accounting and Economics 7, 11-42.

Smith Jr., C.W., and J.B. Warner, 1979. On Financial Contracting: An Analysis of Bond Covenants. Journal of Financial Economics 7, 117-161.

U.S. Department of Energy, 1989. Financial Aspects of the Consolidation of the U.S. Oil and Gas Industry in the 1980's. Energy Information Administration: Washington, DC.

U.S. Department of Energy, 1996. Monthly Energy Review. Energy Information Administration, Washington, DC.

Winter, R.H., R.D. Rosenbaum, M.H. Stumpf, M.H., L.S. Parker, 1989. State Takeover Statutes and Poison Pills. Vol. 1-4, Prentice Hall Law & Business, Englewood Cliffs, NJ.