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Managerial compensation and the threat of takeover

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Abstract

A greater threat of takeover has two opposing effects on managerial compensation. The *competition effect* in the market for managers reduces compensation. The *risk effect* increases compensation by making managers' implicitly deferred compensation and firm-specific human capital less secure. Using a sample of about 450 large firms, we find that an increase in the threat of takeover from the first to the third quartile reduces a typical CEO's salary and bonus by \$22,800–211,600 due to the competition effect, but raises salary and bonus by \$41,500–255,300 due to the risk effect. The net effect is an increase of \$18,700–43,700. © 1998 Elsevier Science S.A. All rights reserved.

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1. Introduction

Will a manager be paid more when the threat of takeover facing his firm is great or when it is small? The answer is unclear because the threat of takeover has two distinct, but opposing, effects on the level of compensation negotiated by a manager. First, the threat of takeover restrains a manager's ability to extract higher wages. Viewing the market for corporate control as an arena for competition in the managerial labor market (Manne, 1965; Jensen and Ruback, 1983), a greater threat of takeover means a more competitive market for managers and thus lower managerial rents. This *competition effect* implies that managers will receive lower pay when the threat of takeover is greater. Brickley

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and James (1987) find evidence of this effect in banks. Second, the threat of takeover imposes risk on managers who invest in firm-specific human capital (Shleifer and Summers, 1988) or agree to contracts under which some compensation is implicitly deferred (Knoeber, 1986). Anticipating that a takeover will likely result in the loss of firm-specific human capital or implicitly deferred compensation, managers will demand higher pay to accept the risk.¹ This *risk effect* implies that managers will receive higher pay when the threat of takeover is greater. Because the competition effect and the risk effect oppose one another, the net effect is unclear.

In this paper, we attempt to assess the size of the net effect of the threat of takeover on managerial compensation and to separate this into the underlying competition and risk effects. To do this, we estimate cross-sectional compensation regressions using data for the Chief Executive Officers (CEOs) of about 450 firms, and include in these regressions a measure of the threat of takeover. By dividing CEOs into a set that faces only the competition effect and another set that faces both the competition and risk effects, we can assess the size of the two individual effects as well as their combination, the net effect. Our empirical results support the existence of each effect. Moreover, we find the risk effect to be somewhat larger than the competition effect.

The remainder of the paper is organized as follows. Section 2 describes our empirical approach, how we measure the threat of takeover, and how we sort managers into those that face only the competition effect and those that face both the competition and risk effects of the threat of takeover. Section 3 details the sample selection procedure and describes the data. Section 4 presents and interprets our empirical results. Section 5 summarizes and concludes the paper.

2. Empirical approach

To assess the competition and risk effects of the threat of takeover on managerial compensation, we estimate cross-sectional compensation regressions that include the threat of takeover as one determinant of managerial compensation. We employ two alternative measures of the threat of takeover. The primary one is industrywide and measures the incidence of takeovers in a firm's industry during the preceding three years. This measure accords with the evidence that takeover activity has an important industry component (Palepu, 1986; Mitchell and Mulherin, 1996). The secondary measure is firm-specific and forward looking. It is a binary variable that records actual takeovers for our

¹ The findings of Martin and McConnell (1991) and Agrawal and Walkling (1994) suggest that a large part of a typical CEO's human capital is firm-specific and that CEOs have reason to fear losing this human capital in the event of a takeover bid.

sample firms in the succeeding seven years. The estimated coefficient on the takeover threat variable in the compensation regression measures the net effect of this threat on managerial compensation. If the coefficient is negative, the competition effect dominates; if it is positive, the risk effect dominates. However, this coefficient alone provides no information on the size of the separate competition and risk effects.

To assess the size of these two separate effects, we divide our sample firms into a set in which managers face both the competition and risk effects and another set in which managers face only the competition effect. We do this by identifying contractual provisions that can assure managers that a takeover will not lead to an uncompensated loss of firm-specific human capital or the loss of implicitly deferred compensation. Managers protected by these contractual provisions do not face the risk effect of the threat of takeover, just the competition effect. Managers not protected by these provisions face both the competition and risk effects. These contractual provisions are explicit employment contracts that permit court enforcement, and golden parachutes. Since these provisions guarantee that (perhaps implicitly) promised payments will be made even if a takeover occurs, an increase in the threat of takeover will impose no risk on the manager, i.e., there is no risk effect.² Since these provisions do not guarantee future rents to managers, however, an increase in the threat of takeover will reduce these rents, i.e., there is a competition effect.

Dividing firms into those whose managers are protected by contract from the risk effect of the threat of takeover and those whose managers are not, and then reestimating the compensation regression letting the threat of takeover affect compensation differently for these two groups, yields a more precise assessment of the net effect of the threat of takeover and permits estimates of the separate competition and risk effects. We do this by adding a variable that equals the threat of takeover for firms in which the CEO has no contractual provision to assure compensation and zero for other firms. Now, the coefficient on the original takeover threat variable measures only the competition effect which is felt by all managers. The coefficient on the new variable that interacts the threat of takeover with the absence of compensation assurance measures the risk effect which is felt only by those managers without compensation assurance. The sum of these two coefficients provides a more precise measure of the net effect of the threat of takeover on managerial compensation.

² To reassure managers and so eliminate the risk effect, the size of a golden parachute should be just sufficient to compensate a manager for the loss of firm-specific human capital and the present value of any implicitly deferred compensation following a takeover (see also Jensen, 1988, p. 40). For our empirical analysis, we assume this to be the case.

3. Sample and data

Our sample consists of the set of “Forbes 800” firms. These are firms that appear in any of the four lists, made by *Forbes* magazine, of the 500 largest U.S. firms as measured by sales, total assets, market value of equity, or profits. Together, the four lists include about 800 firms. From these lists, we first delete all public utilities (SIC codes 48 and 49). Our rationale is that the level and structure of compensation is fundamentally different for utility firms (see, e.g., Agrawal et al., 1991) and during our sample period, regulation largely insulated utilities from the threat of takeover. For each remaining firm, we obtain the following data from *Forbes* magazine’s annual survey of top executive compensation for 1987: the CEO’s salary and bonus, the number of years the CEO has been employed by the firm, the number of years in the CEO position, the CEO’s age at the time of appointment as CEO, the percentage of outstanding shares owned by the CEO, and two binary dummy variables: whether the CEO founded the company and whether the CEO was appointed from outside the company. Following Rose and Shepard (1994), we define a CEO as being appointed from outside if he or she was not the company’s founder and had been with the company less than four years at the time of appointment as CEO.

The following data are obtained from COMPUSTAT annual files (Industrial, Industrial Research, OTC, and OTC Research): total assets, net sales, a measure of firm growth opportunities (GROWTH), and cash flow return. GROWTH is defined as the inverse of the A/V measure in Smith and Watts (1992). That is, GROWTH equals firm value divided by the book value of total assets, where firm value is the sum of the market value of equity and the book values of long-term debt, preferred stock, convertible securities, and short-term debt. Following Healy et al. (1992), cash flow return is defined as operating income before depreciation divided by firm value, where the numerator equals sales less cost of goods sold less selling and administrative expenses plus depreciation. Healy, Palepu, and Ruback argue that cash flow return is superior to traditional measures of accounting performance because it is based on cash flows rather than accounting profits and because it uses an estimate of the market value (rather than the book value) of assets.

We measure the takeover threat for a firm in two different ways. The first, TTHREAT, is the relative frequency of takeovers of NYSE firms in a firm’s two-digit SIC industry over the three-year period preceding December 31, 1987. This procedure is based on Palepu’s (1986) evidence that the industry of a firm is an important determinant of its probability of acquisition. The exact procedure we use is as follows. We obtain a list of all firms that were listed on NYSE as of December 31, 1984 from the Center for Research in Security Prices files. From these firms, we next identify all firms that were delisted over the next three years due to a merger or acquisition. We then compute an industry-specific

probability of takeover over this period using the two-digit SIC code.³ The second takeover threat measure is an acquired firm dummy variable that equals one if a sample firm is acquired in the seven-year period following December 31, 1987; and zero otherwise. We use a seven-year period to ensure that a significant number of firms are actually acquired.

We define a regulated firm variable to equal one if its primary SIC code indicates that it is a railroad, banking, finance, or insurance firm (two-digit SICs 40, 60, 61, or 63); and zero otherwise. Recall that we have already excluded all public utilities.

We obtain data on CEO employment contracts from the 1989 Directory of Corporate Takeover Defenses published by the Investor Responsibility Research Center (IRRC). As classified by IRRC, a golden parachute is a severance agreement granting cash and other benefits if certain events follow a change in control. Among these are the firing, demotion, or resignation of the CEO within a specified time following the change in control. For example, Abbott Laboratories' golden parachute provides for a lump sum payment of three times the CEO's total annual compensation, a three-year continuation of employee benefits, and an additional payment equal to three years of pension accruals if the CEO is terminated or elects to leave within five years following a change in control. Based upon IRRC's classification, we define a golden parachute dummy variable to equal one for CEOs with golden parachutes at the end of 1987; and zero otherwise. IRRC classifies CEOs with written assurance of job security and/or income protection for a specified number of years as having employment contracts. These employment contracts do not incorporate any change in control provision. Again using IRRC's classification, we define an employment contract dummy variable that equals one for CEOs with explicit employment contracts; and zero otherwise. Most CEOs who have golden parachutes do not also have an explicit employment contract, and most CEOs with an explicit employment contract do not also have a golden parachute. A few CEOs have both.

Finally, we define a measure of firm diversification as the number of different lines of business (at the three-digit industry level) in which the firm operates. This variable is obtained from the Standard and Poor's Register of Corporations, Directors, and Executives.

We are able to obtain these data for 446 firms. Table 1 presents summary statistics for each variable. Table 2 presents correlations among the variables.

³ We do not use three- or four-digit SIC industry codes to avoid forcing the probability of takeover to equal zero due to the small number of firms in some industries using these narrower industry definitions. We choose the NYSE firms for this purpose because they are large firms, similar to the Forbes 800 population.

Table 1

Descriptive statistics (mean, median, standard deviation, first and third quartiles) of CEO compensation and characteristics of CEOs and firms for the sample of 446 of the Forbes 800 firms for 1987

Variable ¹	Mean	Median	Standard deviation	First quartile	Third quartile	Sample size
Salary and bonus (\$'000)	875	760	886	511	1000	446
Sales (\$ millions)	4714	2278	9026	1231	4515	446
Assets (\$ millions)	5330	2104	10075	1038	4987	446
GROWTH	1.22	1.00	0.91	0.72	1.49	446
Cash flow return	0.16	0.15	0.11	0.11	0.18	446
Regulated firm	0.09	0	0.29	0	0	446
TTHREAT	0.16	0.17	0.08	0.13	0.20	445
Acquired firm	0.11	0	0.31	0	0	410
Golden parachute	0.51	1	0.50	0	1	428
Employment contract	0.12	0	0.33	0	0	425
Diversification	5.0	3	4.6	2	7	444
Tenure as CEO	9.1	6	8.9	3	13	446
Age at appointment as CEO	47.6	48	8.8	42	54	444
Outside CEO	0.17	0	0.37	0	0	446
Founder CEO	0.10	0	0.30	0	0	446
Years with the company	24.5	26	11.8	15	33	446
CEO ownership (%)	2.30	0.18	6.23	0.05	1.09	446

¹The variables are defined as follows:

Salary and bonus = CEO's salary and bonus, fees and commissions.

Assets = Total assets at book value.

GROWTH = Firm value/assets.

Firm value = Market value of equity plus book value of long-term debt, preferred stock, convertible securities, and short-term debt.

Cash flow return = Operating income before depreciation/firm value.

Regulated firm = One for a banking, finance, insurance, or railroad firm; zero otherwise.

TTHREAT = The relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.

Acquired firm = One if the firm was acquired over the seven years following December 31, 1987; zero otherwise.

Golden parachute = One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.

Employment contract = One if the CEO has an explicit employment contract; zero otherwise.

Diversification = Degree of diversification, measured as the number of different lines of business the firm operates at the three-digit SIC level.

Tenure as CEO = The number of years the individual has held the CEO position in the company.

Age at appointment as CEO = The CEO's age at appointment to the CEO position.

Outside CEO = One if the individual had been with the company less than four years before being appointed to the CEO position, unless he or she was the company's founder; zero otherwise.

Founder CEO = One if the current CEO founded the company; zero otherwise.

Years with the company = Number of years the CEO has been with the company.

CEO ownership = Percentage of the outstanding equity owned by the CEO.

Table 2
Correlations among CEO compensation and measures of firm growth, size, performance, regulation, takeover threat, and the incidence of golden parachutes and explicit employment contracts for the CEO for the sample of 446 Forbes 800 firms for 1987.

Variable ¹	GROWTH	Ln Sales	Cash flow return	Regulated firm	Takeover threat	Acquired firm	Golden parachute	Employment contract
Ln salary and bonus	-0.03	0.41 ^a	0.24 ^a	-0.05	-0.01	0.00	0.08	0.10 ^b
GROWTH		-0.35 ^a	-0.33 ^a	-0.28 ^a	0.05	-0.06	-0.09	-0.05
Ln Sales			0.26 ^a	-0.16 ^a	-0.06	-0.08	-0.08	0.00
Cash flow return				0.00	0.00	0.12 ^b	0.03	0.04
Regulated firm					0.00	-0.04	0.12 ^b	0.06
TTHREAT						-0.01	0.09	-0.01
Acquired firm							0.16 ^a	0.00
Golden Parachute								-0.24 ^a

^{a,b}Statistically significant at the 1% or 5% levels, respectively, in 2-tailed tests.

¹The variables are defined as follows:

Salary and bonus = CEO's salary and bonus, fees and commissions.

GROWTH = Firms value/assets

Firm value = Market value of equity plus book value of long-term debt, preferred stock, convertible securities, and short-term debt.

Assets = Total assets at book value.

Cash flow return = Operating income before depreciation/firm value.

Regulated firm = One for a banking, finance, insurance, or railroad firm; zero otherwise.

TTHREAT = The relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.

Acquired firm = One if the firm was acquired over the seven years following December 31, 1987; zero otherwise.

Golden parachute = One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.

Employment contract = One if the CEO has an explicit employment contract; zero otherwise.

The average salary and bonus of the CEOs in our sample is \$875,000 (median = \$760,000). About 51% of the CEOs had golden parachutes, and 12% had explicit employment contracts. The average CEO was appointed at age 48, had been with the company for 24.5 years, and had held the CEO position for 9.1 years. About 17% of the CEOs had been appointed from outside the firm, and about 10% were founders. The median CEO held 0.18% of the outstanding shares in the firm. The average firm in our sample had a growth opportunities measure of 1.22 (median = 1.00). The median firm had sales of about \$2.3 billion, total assets of \$2.1 billion, cash flow return of 15%, and operated in three lines of business. About 9% of the sample firms were regulated. For the three years preceding 1987, the probability of takeover in the industry of the median firm was 16% or about 5.6% per year. Forty-four of the sample firms (about 11%) were taken over in the seven years following 1987.

4. Empirical results

4.1. *Net effect of the threat of takeover: first estimates*

To examine the effect of the threat of takeover on managerial compensation, we estimate a cross-sectional regression with the log of CEO salary and bonus as the dependent variable and the threat of takeover as an independent variable. We control for other determinants of managerial compensation by adapting the empirical model in Smith and Watts (1992). Using industry-level data, Smith and Watts find that CEO compensation is positively related to measures of growth opportunities, firm size, and accounting performance. They also find that managerial compensation is smaller in regulated industries (insurance, banks, and utilities) but this finding is likely driven by their inclusion of public utilities. Gaver and Gaver (1993, 1995) replicate the findings of Smith and Watts using firm-level data. We use our firm-level counterparts to each of the Smith and Watts variables to control for determinants of managerial compensation other than the threat of takeover.

More specifically, we use ordinary least squares to estimate

$$\text{In salary and bonus} = f(\text{GROWTH, ln sales, cash flow return, regulated firm, TTHREAT}), \quad (1)$$

We also estimate Eq. (1) replacing TTHREAT with our other measure of the threat of takeover, the acquired firm dummy. Following Smith and Watts (1992), we expect positive regression coefficients for GROWTH, log of sales, and cash flow return. Since, unlike Smith and Watts, we have excluded public utilities from our sample, we cannot predict the sign of the coefficient for the regulated firm dummy. The coefficient on TTHREAT identifies the net effect (competition effect and risk effect combined) of the threat of takeover on

Table 3

Coefficient estimates from cross-sectional ordinary least squares regressions of CEO compensation on measures of firm size, firm performance, regulation, and the industrywide threat of takeover for the sample of 446 Forbes 800 firms for 1987.

Independent variable ¹	(1)	(2)
CONSTANT	4.49 ^a (21.04)	4.61 ^a (21.91)
GROWTH	0.13 ^a (4.41)	0.14 ^a (4.37)
Ln sales	0.23 ^a (9.44)	0.22 ^a (8.96)
Cash flow return	1.01 ^a (4.39)	0.94 ^a (4.13)
Regulated firm	0.16 ^b (1.81)	0.13 (1.50)
TTHREAT	0.04 (0.15)	
Acquired firm		0.05 (0.61)
Adjusted R^2	0.213	0.211
Sample size	445	410
p -value of F -test	< 0.001	< 0.001

^{a,b}Statistically significant at the 1% or 10% levels, respectively, in two-tailed tests.

¹The variables are defined as follows:

GROWTH = Firm value/assets.

Firm value = Market value of equity plus book value of long-term debt, preferred stock, convertible securities, and short-term debt.

Assets = Total assets at book value.

Cash flow return = Operating income before depreciation/firm value.

Regulated firm = One for a banking, finance, insurance, or railroad firm; zero otherwise.

TTHREAT = The relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.

Acquired firm = One if the firm was acquired over the seven years following December 31, 1987; zero otherwise.

managerial compensation. A negative coefficient indicates that the competition effect dominates; a positive coefficient indicates that the risk effect dominates. Results are displayed in Column 1 of Table 3. Results for the estimation using the acquired firm dummy are displayed in Column 2. Each of the control variables performs as in Smith and Watts (1992) except for the regulated firm dummy, which has a positive coefficient. Coefficients on each of the takeover threat variables are slightly positive but insignificantly different from zero. As a consequence, our first estimate of the net effect of the threat of takeover on managerial compensation is zero. Because some of the CEOs in our sample face

only the competition effect but are treated as facing both effects by the regressions reported in Table 3, however, this first estimate is likely too small.

The results in Table 3 suggest that the competition and risk effects of the threat of takeover are approximately equal, but they provide no indication of the size of the individual effects. Both may be small or both may be large. The statistical insignificance of the coefficient on the takeover threat variable may result from the competition and risk effects each being insignificant or from both being of the same magnitude. To estimate the separate competition and risk effects, we sort firms into those facing both effects and those facing only the competition effect. We use the presence of contractual provisions that assure that compensation will be paid despite a takeover as a way to sort firms.

4.2. *Compensation assurance provisions*

Two contractual devices that can assure managers that their compensation is not at risk from a takeover are explicit employment contracts and golden parachutes. Explicit employment contracts equip managers to use the courts to enforce promises to pay compensation even when a firm is taken over. But not all promises can be made explicit. When payment depends upon measures that are difficult to specify *ex ante* or are unobservable to the courts, promises must be implicit. Because of this, explicit employment contracts are not always feasible. An alternative is to provide managers with golden parachutes. These are severance payments tied to takeovers. As long as a golden parachute payment is equal to the expected payment that has been implicitly promised to a manager, the threat of takeover imposes no risk on the manager.

Of our sample firms, 12% provide CEOs with explicit employment contracts and 51% provide golden parachutes. The negative correlation between the dummy variables for employment contracts and golden parachutes described in Table 2 suggests that these two contractual provisions are substitutes. Still, a few firms (about 2% of our sample) provide their CEOs with both explicit employment contracts and golden parachutes.

Table 4 explores the incidence of explicit employment contracts and golden parachutes. Panel A presents the fraction of firms with golden parachutes and the fraction with explicit employment contracts for firms partitioned in several ways. The first two columns look at those firms for which the threat of takeover, TTHREAT, is below the median for all firms and those firms for which the threat of takeover is at or above the median. Golden parachutes are significantly more prevalent in firms facing a high threat of takeover. Explicit employment contracts, however, appear equally likely for firms with high and low threats of takeover. The third and fourth columns of Panel A look at those firms that were acquired in the seven years following 1987 and those that were not. CEOs of firms subsequently acquired are significantly more likely to have golden parachutes, but once again they are not more likely to have explicit employment

Table 4

Incidence of golden parachutes and explicit employment contracts for the CEO for the sample of 446 Forbes 800 firms for 1987.

Panel A shows the proportion of firms employing each provision for subgroups with below-median and above-median takeover threat, and for subgroups that were taken over and those that were not during the seven year period following the end of 1987. Panel B shows the coefficient estimates from probit regressions of the incidence of each provision as a function of CEO ownership, firm size, years with the company, and measures of takeover threat.¹

Panel A: Proportion of firms

	TTHREAT		Acquired	
	Low (n = 222)	High (n = 223)	Yes (n = 44)	No (n = 366)
Golden parachute	0.46	0.55 ^b	0.79	0.51 ^a
Employment contract	0.11	0.13	0.12	0.13

Panel B: Probit estimates

Independent variable	Dependent variable			
	Golden parachute		Employment contact	
CONSTANT	1.29 ^d (2.50)	2.04 ^c (3.91)	-1.36 ^d (-2.08)	-1.07 ^c (-1.67)
CEO ownership	-0.05 ^e (-4.09)	-0.05 ^e (-4.11)	0.02 (1.42)	0.02 (1.36)
Ln sales	-0.13 ^d (-2.04)	-0.19 ^c (-2.84)	0.07 (0.83)	0.04 (0.47)
Years with the company	-0.02 ^c (-2.90)	-0.02 ^c (-3.02)	-0.02 ^d (-2.49)	-0.02 ^d (-2.56)
TTHREAT	1.39 ^e (1.67)		0.20 (0.19)	
Acquired firm		0.70 ^c (2.70)		0.01 (0.02)
X ²	35.19	46.24	7.80	8.27
p-value of X ²	< 0.001	< 0.001	0.099	0.082

^{a,b}Difference significant at the 1% or 10% levels, respectively, in two-tailed tests.

^{c-e}Statistically significant at the 1%, 5%, or 10% levels, respectively, in two-tailed tests.

¹The variables are defined as follows:

- TTHREAT = Takeover threat, measured as the relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.
- Acquired firm = One if the firm was acquired over the seven years following December 31, 1987; zero otherwise.
- Golden parachute = One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.
- Employment contract = One if the CEO has an explicit employment contract; zero otherwise.
- CEO ownership = Percentage of the outstanding equity owned by the CEO.

contracts. Firms facing a higher threat of takeover appear more likely to protect their CEOs from the compensation risk that takeovers create by providing a golden parachute.

To explore more fully the incidence of golden parachutes and explicit employment contracts, we estimate probit regressions with each as the dependent variable. As independent variables we include a number of possible determinants of compensation assurance provisions. As suggested by the Panel A results, the greater the threat of takeover, the more valuable is the protection of CEO compensation from takeover risk and so the more likely are golden parachutes (and, perhaps, explicit employment contracts). We include, alternatively, TTHREAT and the acquired firm dummy as independent variables and expect their estimated coefficients to be positive. Because larger firms are less likely to be taken over, we also include firm size as measured by the log of sales. To the extent that our measures of the threat of takeover are imperfect, we expect the estimated coefficient on the log of sales to be negative. For larger firms the threat of takeover is smaller and so compensation assurance provisions are less valuable and ultimately less likely. The rationale for including the log of sales along with our measure of the threat of takeover is strongest for the measure TTHREAT. This is an industrywide measure and likely understates the threat of takeover for large firms within the industry. The acquired firm dummy is a firm-specific measure, but takes only the values of zero and one, so it too is an imperfect measure of the threat of takeover. Once again, firm size may provide additional information about the threat of takeover faced by the firm.

Two characteristics of CEOs that can affect the likelihood of the use of compensation assurance provisions are the percent of the firm's shares owned by the CEO and the number of years that the CEO has been employed (in total, not just as CEO) by the company. Managers who hold shares in their companies are partially protected from takeover risk. The loss of expected compensation is partly offset by an appreciation in stock price resulting from a takeover. The greater the manager's stake in the firm, the greater is the protection from takeover risk. As a consequence, when CEO ownership is larger, the value to a manager of compensation assurance provisions is smaller and so these provisions are less likely. We expect the estimated coefficient on CEO ownership to be negative. Similarly, managers who have been with their companies longer are less likely to have compensation assurance provisions for two reasons. First, newly hired managers will face more uncertainty about their environment and so will value compensation assurances more. Golden parachutes and explicit employment contracts are more likely for CEOs newly hired from outside the firm. Second, managers who have been employed by a company for a very long time will have received most of the return on their investments in firm-specific human capital. They will have little at risk to a takeover. As a consequence, very long-serving managers will place little value on compensation assurance and so are unlikely to have golden parachutes or explicit employment contracts. For

both reasons, we expect the estimated coefficient on years with the company to be negative.

The results in Panel B of Table 4 describing the incidence of golden parachutes are consistent with our expectations. As described in the first two columns, golden parachutes are more likely when the threat of takeover is greater, when the firm is smaller, when the CEO owns a smaller fraction of the firm, and when the CEO has been employed for a shorter time by the firm.

Results for explicit employment contracts are substantially weaker. The third and fourth columns present these results. Explicit employment contracts are more likely when CEOs have been employed by their firm for a shorter time. However, the threat of takeover as measured by either TTHREAT or the acquired firm dummy has no effect on the incidence of explicit employment contracts. Neither does firm size. Our probit estimates are more successful at explaining the incidence of golden parachutes than they are at explaining the incidence of explicit employment contracts.

4.3. The Competition, risk, and net effects of the threat of takeover: Second estimates

To estimate the separate competition and risk effects of the threat of takeover on managerial compensation and to more precisely estimate their combined net effect, we reestimate Eq. (1) allowing the effect of the threat of takeover, TTHREAT, to differ for firms whose CEOs have a compensation assurance provision. As an example, for the case of golden parachutes we add a variable that equals TTHREAT for firms without golden parachutes and zero for other firms. Assuming that CEOs with a golden parachute are fully protected from the risk effect and that CEOs without a golden parachute are unprotected, the coefficient on TTHREAT now measures the competition effect alone. The coefficient on TTHREAT for CEOs without golden parachutes measures the (additional) risk effect. The sum of these two coefficients measures the combined or net effect. We expect the coefficient on TTHREAT to be negative and the coefficient on TTHREAT for CEOs without golden parachutes to be positive. We also allow the intercept to differ for firms with and without a compensation assurance provision. We do this by including a dummy variable indicating the existence of the provision as one of the independent variables.

Table 5 presents the basis for four different estimates of the competition and risk effects of the threat of takeover on managerial compensation. The regression in Column 1 estimates the effect of TTHREAT separately for CEOs with and without golden parachutes. These results, along with the assumption that only golden parachutes protect managers from the risk effect and that they do so completely, provide one estimate of the separate competition and risk effects. The regression in Column 2 estimates the effect of TTHREAT separately for

Table 5

The effect of compensation assurance provisions on managerial compensation

Coefficient estimates from cross-sectional ordinary least squares regressions of CEO compensation on measures of firm growth, size, performance, regulation, takeover threat, incidence of golden parachutes and explicit employment contracts for the CEO, and interaction variables. The sample consists of 446 Forbes 800 firms for 1987.

Independent variable ¹	(1)	(2)	(3)	(4)
CONSTANT	4.41 ^a (19.95)	4.47 ^a (20.58)	4.28 ^a (20.18)	4.31 ^a (19.38)
GROWTH	0.13 ^a (4.33)	0.13 ^a (4.34)	0.13 ^a (4.45)	0.13 ^a (4.25)
Ln Sales	0.22 ^a (8.88)	0.21 ^a (8.73)	0.23 ^a (9.76)	0.22 ^a (8.95)
Cash flow return	1.20 ^a (3.91)	1.23 ^a (4.06)	1.00 ^a (4.46)	1.15 ^a (3.83)
Regulated firm	0.12 (1.34)	0.14 (1.56)	0.10 (1.19)	0.09 (1.01)
TTHREAT	-0.47 (-0.93)	-2.60 ^a (-2.75)	-0.92 ^b (-2.09)	-8.19 (-1.42)
TTHREAT for CEOs without golden parachute	0.80 (1.24)			
TTHREAT for CEOs without employment contract		3.07 ^a (3.07)		
TTHREAT for CEOs with neither golden parachute nor employment contract			1.51 ^b (2.56)	8.96 (1.55)
TTHREAT for CEOs with only golden parachute or only employment contract				7.37 (1.27)
CEOs with golden parachute	0.25 ^b (2.24)			0.42 ^a (3.86)
CEOs with employment contract		0.66 ^a (3.82)		0.51 ^a (4.11)
CEOs with golden parachute or employment contract			0.44 ^a (4.25)	
CEOs with both golden parachute and employment contract				0.76 (0.80)
Adjusted R ²	0.214	0.225	0.253	0.238
Sample size	427	424	445	423
p-value of F-test	< 0.001	< 0.001	< 0.001	< 0.001

^{a,b}Statistically significant at the 1% or 5% levels, respectively, in two-tailed tests.

¹The variables are defined as follows:

- GROWTH = Firm value/assets.
 Firm value = Market value of equity plus book value of long-term debt, preferred stock, convertible securities, and short-term debt.
 Cash flow return = Operating income before depreciation/firm value.

CEOs with and without explicit employment contracts. These results, along with the assumption that only explicit employment contracts protect managers from the risk effect and that they do so completely, provide a second estimate of the separate competition and risk effects. The regression in Column 3 estimates the effect of TTHREAT separately for those CEOs with either a golden parachute or an explicit employment contract and for those CEOs with neither provision. These results, along with the assumption that golden parachutes and explicit employment contracts each completely protect managers from the risk effect, provide a third estimate of the separate competition and risk effects. Finally, the regression in Column 4 estimates the effect of TTHREAT separately for CEOs with only a golden parachute or only an explicit employment contract, CEOs with both a golden parachute and an explicit employment contract, and CEOs with neither a golden parachute nor an explicit employment contract. These results, along with the assumption that only the combination of a golden parachute and an explicit employment contract fully protects a manager from the risk effect, but that either a golden parachute or an explicit employment contract alone provides partial protection, provides the final estimate of the separate competition and risk effects of the threat of takeover on managerial compensation.

Table 5 provides evidence for the existence of both the competition and risk effects. The coefficient on TTHREAT is always negative as predicted by the competition effect. In two of the models, it is also statistically different from zero. Similarly, the coefficient on TTHREAT for firms without compensation assurance provisions (golden parachutes in Model 1, explicit employment contracts in Model 2, either golden parachutes or explicit employment contracts in Model 3, and both golden parachutes and explicit employment contracts in Model 4) is always positive as predicted by the risk effect. Once again, in two models, this coefficient is also statistically different from zero.

Employing the results in Table 5, four estimates of the effect on CEO salary and bonus of an increase in the threat of takeover from the first quartile to the

Table 5 footnote continued

Regulated firm	= One for a banking, finance, insurance, or railroad firm; zero otherwise.
TTHREAT	= The relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.
Golden parachute	= One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.
Employment contract	= One if the CEO has an explicit employment contract; zero otherwise.

Table 6

Estimates of the competition and risk effects of an increase in the threat of takeover from quartile 1 to quartile 3 on CEO salary and bonus (in \$'000), for alternative assumptions about whether a golden parachute and/or an explicit employment contract eliminates the risk effect.¹ The sample consists of 446 Forbes 800 firms for 1987.

Contractual provision assumed to eliminate the risk effect	Competition effect	Risk effect	Net effect
Golden parachute	– 22.8	41.5	18.7
Employment contract	– 157.8	186.3	28.5
Either golden parachute or employment contract	– 43.1	80.8	37.7
Both golden parachute and employment contract	– 211.6	255.3	43.7

¹The variables are defined as follows:

- Golden parachute = One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.
- Employment contract = One if the CEO has an explicit employment contract; zero otherwise.

third quartile are calculated. These estimates provide an indication of the dollar value of the separate competition and risk effects as well as a more precise measure of their net effect (from Table 3, this net effect was estimated to be zero). These calculations, based on mean CEO salary and bonus, are presented in Table 6. The net effect varies between \$18,700 and \$43,700 (as expected, this is larger than the zero net effect from Table 3), with the competition effect alone estimated to be between \$22,800 and \$211,600 and the risk effect alone estimated to be between \$41,500 and \$255,300. Our estimates of the risk effect may be too small. The Table 5 regressions treat the incidence of compensation assurance provisions as random (exogenous), but Table 4 suggests that this is not true, at least for golden parachutes. If those firms for which the risk effect is largest (firms that have the most to gain from employing a compensation assurance provision) are more likely to have compensation assurance provisions, then our measure of the risk effect, which is based on only those firms that do not have such provisions, is likely too small.

We find evidence that the threat of takeover has both competition and risk effects on managerial compensation. The competition effect is negative; the threat of takeover reduces managerial compensation. The risk effect is positive; the threat of takeover increases managerial compensation. The risk effect is somewhat larger than the competition effect, but each of the individual effects seems to be larger than the difference between them.

4.4. Robustness checks

We explore the robustness of the Table 5 results (which provide the basis for our estimates of the size of the competition and risk effects of the threat of takeover on managerial compensation) in two ways. First, we reestimate the models in Table 5 replacing our backward-looking, industrywide measure of the threat of takeover, TTHREAT, with the forward-looking, firm-specific acquired firm dummy. Second, we expand the models in Table 5 to include firm diversification and a number of CEO characteristic variables that Rose and Shepard (1994) find to be related to managerial compensation.

Replacing the continuous TTHREAT variable with the binary acquired firm variable has the following consequences. First, because no sample firms provided both a golden parachute and an explicit employment contract to their CEO and also were taken over in the seven years following 1987, we cannot reestimate the model in Column 4 of Table 5. Second, for the remaining models, replacing TTHREAT with the acquired firm dummy has very little effect on either the size or the statistical significance of the coefficients estimated for the other (control) variables. Third, the pattern of results for the threat of takeover variable is quite similar for the model that includes golden parachutes (Column 1 of Table 5). Column 1 of Table 7 presents these results. The most noteworthy difference is that the coefficient on the acquired firm dummy for CEOs without golden parachutes is more statistically significant than its counterpart, based on TTHREAT, in Table 5. For the model that includes explicit employment contracts (Column 2 of Table 5), however, replacing TTHREAT with the acquired firm dummy matters. Measured by the latter, the threat of takeover has essentially no effect on managerial compensation for firms whether or not explicit employment contracts are used. For the model that includes either golden parachutes or explicit employment contracts (Column 3 of Table 5), the story is similar.

Rose and Shepard (1994) find that larger firms, better-performing firms, and more diversified firms all pay CEOs more. In addition, they find that CEOs appointed from outside the firm are paid more, as are older and longer-serving CEOs. Finally, they find weak evidence that founders are paid less. We add our measures of each of these additional variables (diversification, outside CEO dummy, age at appointment as CEO, tenure as CEO, and the founder CEO dummy) to the models in Table 5 and then reestimate these models. Results for the added variables mimic those in Rose and Shepard. For each model, the coefficients on diversification and the outside CEO dummy are significantly positive, the coefficient on tenure as CEO is positive but generally insignificant, and the coefficients on age at appointment as CEO and founder CEO dummy are negative but statistically insignificant. More important, results for our original variables are unchanged. Column 2 of Table 7 presents representative results for the model that includes golden parachutes (Column 1 in Table 5).

Table 7

The effect of compensation assurance provisions on managerial compensation: Additional evidence

Coefficient estimates from cross-sectional ordinary least squares regressions of CEO compensation on measures of firm growth, size, performance, regulation, incidence of golden parachutes, takeover threat for firms with and without golden parachutes, diversification, dummy variables for outside and founder CEO, CEO tenure, and CEO age at appointment as CEO. The sample consists of 446 Forbes 800 firms for 1987.

Independent variables ¹	(1)	(2)
CONSTANT	4.44 ^a (20.16)	4.52 ^a (15.24)
GROWTH	0.15 ^a (4.72)	0.14 ^a (4.65)
Ln sales	0.22 ^a (8.97)	0.23 ^a (8.81)
Cash flow return	1.22 ^a (3.99)	1.25 ^a (4.14)
Regulated firm	0.13 (1.51)	0.11 (1.21)
Acquired firms	– 0.02 (– 0.21)	
Acquired firms without golden parachute	0.48 ^b (2.36)	
TTHREAT		– 0.59 (– 1.17)
TTHREAT for CEOs without golden parachute		0.76 (1.20)
Golden parachute	0.11 ^b (2.17)	0.25 ^b (2.23)
Diversification		0.01 ^b (2.38)
Outside CEO		0.17 ^b (2.51)
Tenure as CEO		0.003 (0.95)
Founder CEO		– 0.05 (– 0.53)
Age at appointment as CEO		– 0.01 (– 1.48)
Adjusted R^2	0.218	0.240
Sample size	397	423
p -value of F -test	< 0.001	< 0.001

^{a,b}Statistically significant at the 1% or 5% levels, respectively, in two-tailed tests.

¹The variables are defined as follows:

GROWTH = Firm value/assets.

Firm value = Market value of equity plus book value of long-term debt, preferred stock, convertible securities, and short-term debt.

Cash flow return = Operating income before depreciation/firm value.

5. Conclusions

Because a greater threat of takeover implies more competition in the managerial labor market, it should lead to lower managerial compensation. This is the competition effect. Because a greater threat of takeover makes managerial investments in firm-specific human capital or implicit agreements to defer compensation less secure, it should lead to higher managerial compensation. This is the risk effect. We examine empirically these two opposing effects of the threat of takeover on managerial compensation for a sample of about 450 large U.S. firms.

To do this we divide firms into a group whose CEOs face only the competition effect and another group whose CEOs face both effects. The basis for this division is the provision of a golden parachute or an explicit employment contract to the CEO. Treating CEOs with such contractual compensation assurance as insulated from the risk effect of the threat of takeover and other CEOs as exposed to this risk, we estimate compensation regressions that include the threat of takeover as one determinant. But we allow the effect of this takeover threat to differ for the two types of managers. This allows us to estimate the competition and risk effects separately.

Table 7 footnote continued

Regulated firm	= One for a banking, finance, insurance, or railroad firm; zero otherwise.
TTHREAT	= The relative frequency of acquisitions in the two-digit SIC industry of a firm among firms listed on NYSE as of December 31, 1984 over the next three years.
Acquired firm	= One if the firm was acquired over the seven years following December 31, 1987; zero otherwise.
Golden parachute	= One if the CEO has a golden parachute (that provides certain cash and other benefits if the executive is fired, demoted, or resigns within a certain time period following a change in control); zero otherwise.
Employment contract	= One if the CEO has an explicit employment contract; zero otherwise.
Diversification	= Degree of diversification, measured as the number of different lines of business the firm operates at the three-digit SIC level.
Tenure as CEO	= The number of years the individual has held the CEO position in the company.
Age at appointment as CEO	= The CEO's age at appointment to the CEO position.
Outside CEO	= One if the individual had been with the company less than four years before being appointed to the CEO position, unless he or she was the company's founder; zero otherwise.
Founder CEO	= One if the current CEO founded the company; zero otherwise.
Years with the company	= Number of years the CEO has been with the company.

Our results provide evidence that the competition effect is, indeed, negative and that the risk effect is positive. Moreover, while the risk effect dominates, each individual effect seems to be larger than the difference between them. For an increase in the threat of takeover from the first to the third quartile, salary plus bonus for a typical CEO falls by between \$22,800 and \$211,600 due to the competition effect alone, depending upon the model estimated. Salary plus bonus rises by between \$41,500 and \$255,300 due to the risk effect alone. The net effect is an increase of between \$18,700 and \$43,700. These effects are both statistically and economically significant. Overall, our results provide evidence on an important way in which the market for corporate control affects internal contracting. They also add to the growing literature on the determinants of the level of executive compensation.

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