

Executive compensation and dividend policy

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Abstract

This study examines the use of dividend provisions in executive compensation contracts to influence dividend policy. A sample is constructed with the largest companies in the oil and gas, defense/aerospace and food processing industries, where dividend-related agency costs are expected to be high. The results indicate that the existence of a dividend incentive in the compensation plan is positively associated with higher dividend payouts and yields, and higher annual changes in dividend levels. Evidence is also provided on firm characteristics associated with the use of a compensation contract with a dividend provision. The results are consistent with the theory that firms link compensation incentives to dividend payments to reduce conflicts between shareholders and management over dividend decisions.

JEL classification: G35; J33

Keywords: Executive compensation; Dividend policy; Compensation contracts; Agency costs

1. Introduction

The payment of cash dividends is an area of potential conflict between shareholders and corporate managers. Managers have incentives to avoid paying dividends primarily because dividends decrease the amount of discretionary funds available inside the firm. This reduction in internal funds may lead managers to issue stock or debt, either to continue paying dividends or to raise new capital for investment programs (Miller and Modigliani, 1961). Managers tend to lose autonomy if they frequently have to raise funds in the capital market and submit

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themselves to increased risk and monitoring (Rozeff, 1982; Easterbrook, 1984). Dividends may also force managers to commit future cash flows to maintain a certain level of dividend payments, if managers expect investors to penalize dividend reductions or omissions (Healy and Palepu, 1988).¹ From the shareholders' viewpoint, the increased risk-taking, monitoring and commitment of future cash flows caused by dividend payments are beneficial, especially when the investment opportunity set facing the firm does not offer the best possible returns (Jensen, 1986; Kallapur, 1994).

This study investigates control mechanisms to reduce the conflict between managers and shareholders over dividend policy. One of these control mechanisms is found in special provisions in executive compensation contracts. These provisions establish that the annual bonus pool is to be calculated as a function of dividends paid. For example, Healy (1985) finds that cash dividends are frequently used as an upper limit for the bonus pool reserve in a given year. In companies that link bonus awards to dividend payments, an incentive is created to help offset managers' tendency to avoid paying dividends. Dividend-based bonus plans also serve shareholders' interest in making compensation payments contingent on measures of performance (e.g., real cash flows) that are not as susceptible to earnings management practices as accounting accruals (Sloan, 1993).²

Separate bodies of literature have examined dividend and compensation policies, yet little is known about the relation between these two corporate policies. This study examines the relation between the existence of an explicit dividend covenant in compensation contracts and dividend policy. To investigate these issues, a sample is constructed with the largest companies in the oil and gas, defense/aerospace and food processing industries, where dividend-related agency costs are high, due to free cash flow problems (Jensen, 1989). The use of a dividend incentive in compensation contracts is found to be positively associated with company size, and negatively associated with the presence of outside directors on the board, ownership of company stock by senior managers and company growth. The empirical results also indicate that dividend provisions in the compensation contract are positively associated with higher dividend payouts and yields, and higher annual changes in dividend levels.

¹ Previous studies have asserted that, if a set of assumptions about capital markets are true, dividend policy should have no effect on firm value (e.g., Miller and Modigliani, 1961; Miller and Scholes, 1982). The empirical evidence, however, indicates that those assumptions about capital markets are violated, supporting the assertion that the market favors consistent dividend growth (see, for example, Asquith and Mullins, 1983; Healy and Palepu, 1988).

² Compensation plans based on stock price performance are also less affected by management manipulation than those based on accounting earnings, but stock price fluctuations are subject to market-wide factors that are beyond management control, and therefore can be judged as not perfect indicators of managerial performance.

The remainder of this paper is organized as follows. In the next section, management incentives with respect to dividend policy are discussed, and hypotheses are developed about how provisions in compensation contracts affect dividend behavior. The sample design and data collection methods are then described, followed by an analysis of the empirical results. The final section contains a summary of the implications of the study and suggestions for further research.

2. Compensation incentives and the dividend decision

Few studies have directly investigated the relation between compensation and dividend policies. Recently, however, there has been growing evidence that these two policies are significantly related. For example, Lewellen et al. (1987) find that higher cash compensation levels are often *implicitly* associated with higher dividend payout ratios. On the other hand, empirical evidence from Lambert et al. (1989) suggests that managers tend to reduce dividend levels in response to the initial adoption of executive stock option plans, because such plans are usually not ‘dividend protected’. They recognize, however, that the cost of reducing dividends varies across firms, and may be affected by bonus plan provisions linking bonus awards to dividends paid. Based on extensive empirical tests at the industry level, Smith and Watts (1992) document that lower dividend yields are associated with higher levels of executive compensation, after controlling for the effects of growth opportunities and firm size. Using different methods, Gaver and Gaver (1993) show that the results from the Smith and Watts study also hold at the firm level. More recently, Golec (1994) provides evidence that in the real estate industry formula-based compensation is associated with higher dividend yields than discretion-based compensation contracts. To date, however, no work has investigated how *explicit* provisions in compensation contracts influence dividend policy.

Explicit dividend provisions were first adopted as part of the introduction of bonus plans in the late 1970s. The most common form of dividend provision is the use of cash dividends as a lower or upper bound limiting the amount of the bonus pool reserve in a given year. For example, the 1980 bonus plan for Gulf Oil Corporation limited the transfer to the bonus reserve to “ten percent of the total amount of the dividends paid on the corporation’s stock” (as documented in Healy, 1985). In other cases, the bonus contract sets a percentage of total dividends to be used as a lower bound for the bonus reserve, or as a prerequisite for any bonuses to be paid in a given year (e.g., dividends per share have to be equal to or greater than a certain amount). United Technologies’ annual executive incentive compensation plan is a good example:

“The Board of Directors ... would determine the amount set aside in the Corporate Fund, as well as the amount of individual incentive compensation payments to be

made to executives from that Fund, subject only to the condition that no amount may be set aside in the Corporate Fund in any fiscal year unless dividends paid on the Common Stock of the Corporation during such fiscal year have aggregated not less than \$1.00 per share. ”

The dividend provision may also serve as a protection against dividend reductions or omissions. For example, the 1980 incentive plan for Atlantic Richfield Co. established that:

“no payment shall be made ... [under the plan] if the Company reduces the aggregate amount of its regular quarterly cash dividends paid on a share of its Common Stock in any year ... below the annual amount of such dividends paid in the year preceding the term of the award.”

In some companies, the plan still allows for incentives to be paid when dividends are reduced, but the bonus pool is reduced by the same percentage as the dividends. Dividend provisions also appear in compensation contracts as a direct incentive in the form of dividend units granted to managers, which allows them to receive in cash the amount of dividends per share declared on common stock, multiplied by the number of dividend units awarded to each manager (as described, for example, in the McDonnell Douglas plan). In a few cases the compensation contract also discloses information on what performance targets have to be achieved for dividend units to be granted, or for bonuses to be paid.

Explicit provisions in compensation plans linking top management compensation to dividend payments reflect a concern, on the part of shareholders, about providing incentives for managers to at least maintain current levels of dividends. This is particularly important for companies that generate large volumes of free cash flows (Jensen, 1986). Given the high tax cost associated with dividends, however, it is in fact surprising that shareholders would prefer receiving excess cash in the form of dividends rather than creating incentives for managers to repurchase some of the company's outstanding shares, for instance.³

Increased leverage would be another effective instrument to control cash over retention, and to discipline management's investment decisions, while taking advantage of tax shields for interest expenses. Heavy debt financing would make

³ Stock repurchases are often used to obtain shares for executive stock options, acquisitions, and to correct for perceived undervaluation of the company shares (Walsh, 1975; Lees, 1983). Stock repurchases can also be used, however, to protect managers from takeover threats, or to consolidate the control exercised by larger shareholders, at the expense of minority shareholders. Even though one would expect, *ex ante*, that stock buybacks should influence dividend policy, there were no specific provisions in the compensation contracts of the sample companies in this study about how stock repurchases might affect dividends or the bonus reserve. One explanation for this may be that shareholders of the sample companies prefer ongoing ordinary dividends, rather than occasional stock repurchases. Tax factors and limited growth opportunities may also explain the absence of stock repurchase provisions in dividend-based compensation contracts.

managers contractually obliged to use up cash flows to pay interest and principal, thereby reducing shareholders' desire to receive the excess cash as dividends. Empirical evidence on the link between leverage and dividend policies, however, demonstrates that growth opportunities are a major factor influencing each of these policies separately (Smith and Watts, 1992; Barclay et al., 1995).

Rather than attempting to explain what the 'optimal' mechanism to influence dividend policy would be, this study is the first to explore explicit provisions found in compensation contracts that directly link managerial incentives to dividend payments. In particular, this study focuses on two research questions to examine the role of such provisions in influencing dividend policy: (1) What factors explain the use of a compensation plan with a dividend provision? (2) Do dividend provisions in compensation contracts have an impact on dividends actually paid?

2.1. Factors in the use of dividend incentives

In addition to macroeconomic factors that affect investors' preference for dividends (such as changes in interest, inflation, and capital gains tax rates), other firm-related factors are expected to explain cross-sectional differences in the use of dividend-based incentives.⁴

Consistent with the argument that a greater demand for monitoring dividend policy leads to the inclusion of dividend provisions in the compensation contract, this study hypothesizes that compensation contracts with a dividend incentive are more likely to be found in larger firms, in those with a lower percentage of outside directors, where managers hold a smaller percentage of the firm's equity and those anticipating less growth. These hypotheses are further discussed below in light of results from previous studies.

2.1.1. Firm size

The use of a dividend incentive in the compensation contract is hypothesized to be positively associated with firm size. Firm size has been shown in the literature to have a significant impact on compensation policy, for various reasons. First,

⁴ Interviews were conducted with the chief financial officers, controllers and outside directors of the sample firms that use dividend provisions in their executive compensation contracts, to find out what factors influenced their firms' choice of such provisions. Their anecdotes confirmed that monitoring by outside directors, incentives created by managerial ownership of company stock, and dividend provisions in compensation contracts were all instruments used to either motivate consistent annual increases in dividends, or to provide a cap to bonus payments when that was not possible. Their anecdotes, however, were based on limited recollections concerning their company's decision to adopt a dividend provision. In most cases, the provisions were already in force prior to their employment with the firms.

executives in larger companies tend to make decisions on a larger volume of resource allocations and face more complex problems, thus adding more value to their firms (Gomez-Mejia et al., 1987). This higher value added is reflected in higher salaries and more sophisticated compensation contracts. Substantial evidence indicates that company size is positively related to compensation levels (e.g., Murphy, 1985; Jensen and Murphy, 1990), and that size affects the choice of compensation contracts. Larger companies are more likely to have bonus and stock option plans (Smith and Watts, 1992) and more complex compensation features such as performance plans and restricted stock plans (Gaver and Gaver, 1993). Second, direct monitoring over dividend policy is expected to be more difficult in larger companies, because of increased information asymmetry between shareholders and managers, higher coordination costs related to ownership dispersion, and the incentive problems associated with lower insider holdings. Therefore, dividend provisions in the compensation contract are hypothesized to occur more frequently among large companies.

2.1.2. Monitoring by outside directors

Several control mechanisms are available to control cash over-retention, including the use of outside directors on the board. Outside directors are in a unique position to monitor major management decisions proposed for approval by the board of directors (Benston, 1985; Vancil, 1987; Weisbach, 1988).⁵ This is particularly relevant in the context of decisions about dividend policy. Dividend levels are decided on the basis of management's recommendation and are subject to a formal vote of approval by the full board of directors before the company can announce the level of dividends to be paid. Lewellen et al. (1987) note that senior managers have incentives to try to persuade the board of directors to retain a large proportion of the firm's earnings in order to increase the firm's future ability to pay out large sums of cash to its managers. While inside directors will likely support management proposals, outside directors have significant personal incentives to provide effective monitoring of management's recommendations on dividend policy, because the market for their services is sensitive to the performance of the firms where they serve as directors. For example, Kaplan and Reishus (1990) find evidence that outside directors serving on boards of dividend-reducing firms are less likely also to serve on boards of non-dividend-reducing firms. In firms where the percentage of outside members on the board of directors is higher, management's recommendation on dividend levels is subject to greater

⁵ Since outside directors often join the board at the invitation of the firm's senior managers, it could be argued that outside directors would likely support most of top management's decisions (even when such decisions do not contribute to shareholders' wealth), to protect their perquisites and compensation associated with board membership. Empirical evidence, however, suggests that outside directors do, in fact, represent the interest of shareholders (e.g., Brickley et al., 1994; Rosenstein and Wyatt, 1990).

monitoring than in firms where the board is dominated by inside members, thus lowering the demand for a dividend provision to be added to the compensation contract.

2.1.3. Inside stock ownership

Information asymmetry between shareholders and managers concerning future cash flows, and the high costs of directly monitoring cash balances and expenditures, impose limits on the monitoring role of the board, making firms dependent on other incentives to control the cash over-retention problem.

Executive ownership of firm equity is hypothesized to be another determining factor in reducing the firm's monitoring costs over the dividend decision. Top managers who are also shareholders are presumably less averse to dividends than managers who do not have direct access to the cash distributed as dividends. Managers who own more shares of their company's stock have a greater incentive to produce real (non-manipulated), permanent cash flows, because they can personally benefit from increased firm value. Even when senior managers do not hold the majority of their firm's stock, stock-related incentives can still represent a large share of the executive's personal wealth (Jensen and Murphy, 1990). Therefore, higher insider holdings are expected to be associated with a lower likelihood of a dividend provision in the compensation contract.⁶

2.1.4. Company growth

It is expected that fast-growing companies will be less likely to offer their executives compensation plans that provide incentives for higher dividend payments. As argued in the recent literature (see, for example, Barclay et al., 1995; Gaver and Gaver, 1993; and Smith and Watts, 1992), growth options have a significant impact in reducing the agency costs of free cash flow because of the greater demand for firm resources placed by investment opportunities promising positive net returns. Therefore the use of dividend-based incentives is hypothesized to be less common among companies expecting fast growth.

2.2. Effects of dividend incentives on dividend policy

Evidence in the dividend literature (in particular, Lintner, 1956; and Fama and Babiak, 1968) is consistent with the theory that most companies establish long-term target dividend payouts and yields, and that annual dividend levels are partially

⁶ Taxes offer an alternative explanation. Due to the higher tax costs of dividends, managers who are also large shareholders arguably prefer capital gains to dividends. Those managers (like the ones in firms with a complete separation between ownership and control) will likely try to avoid having a dividend constraint in their compensation contracts. Therefore, the relation between insider holdings and preference for dividends may follow a non-linear, concave pattern.

adjusted in response to changes in earnings in order to maintain a consistent pattern of dividend growth.⁷

In this study, firms that have compensation contracts linking bonus awards to dividends are hypothesized to offer higher dividend payouts or yields, and to change annual dividends by larger amounts than firms that do not have dividend provisions in the compensation contract. The study controls for other variables shown in previous research to be significant factors in determining dividend policy.⁸

The hypotheses on dividend policy are based on the fact that, while dividend-based incentives do not necessarily *cause* dividend payments to increase, the presence of such incentives is at least associated with a greater demand from shareholders to have the excess cash distributed as dividends.

Based on prior evidence, it is expected that dividend payouts and yields are higher for firms with fewer opportunities for growth and with more dispersion of ownership. Comparing high-growth to low-growth firms, Smith and Watts (1992) find that high-growth firms tend to show lower dividend yields, because more of their cash flows are used to meet their greater investment requirements. Using data from 6,700 industrial corporations, over a 30-year period, Barclay et al. (1995) also conclude that growth opportunities is a major explanatory factor for dividend policy. Ownership dispersion is proposed by Rozeff (1982) as a measure of monitoring demands: when the stock is dispersedly held, shareholders face higher monitoring costs, thereby increasing the demand for management to precommit to higher dividend payouts. This study extends previous research by testing whether dividend incentives explain cross-sectional differences in payouts and yields beyond what is explained by those variables from the dividend policy literature –

⁷ Lintner (1956) develops and tests a model suggesting that managers prefer to smooth dividend growth over long periods of time rather than risking adverse market reactions to dividend reductions or omissions. Fama and Babiak (1968) compare several regression models for dividend policy and confirm the explanatory power of Lintner's model. More recently, Kallapur (1994) argues that Lintner's model continues to adequately describe firms' dividend policies.

⁸ Previous research on dividend policy has investigated the role of other variables that potentially restrict the amount of dividends paid. For example, debt agreements often impose constraints on dividend payments to protect bondholders' interests and prevent managers from underinvesting in the firm's growth. However, empirical evidence (e.g., Kalay, 1982; Long et al., 1994) shows that firms usually pay significantly smaller dividends than what is allowed by the debt agreements, suggesting that managers prefer conservative dividend levels. Dividend provisions in compensation contracts offer an incentive for managers to increase dividend levels up to the limit authorized by the debt agreements. An interesting research question would be to investigate what happens when dividend provisions in the compensation contract and in the debt agreement are both binding. Empirically, though, this is a difficult issue to research, since proxy statements do not disclose enough information to allow identification of when the dividend provision in the compensation contract was actually binding. As described in this paper, such provisions limit the size of the compensation *reserve* in a given year, whereas the proxy statements disclose the amount of compensation *actually paid* that year, possibly including deferred payments from the compensation reserve created in previous years.

that is, this paper tests if, given a certain level of growth and ownership dispersion, firms with dividend provisions offer higher dividend payouts and yields than firms without such provisions.

Using another definition of dividend policy, this study also investigates the effect of dividend provisions on the annual decision to increase, maintain or decrease the levels of dividend payments. Consistent with previous research, the magnitude of annual dividend changes is expected to be positively associated with current earnings levels and earnings changes from the previous year, and negatively associated with previous dividend levels (Lintner, 1956; Fama and Babiak, 1968; Kallapur, 1994). When the current level of earnings increases from the previous year, current dividend levels are also expected to increase (as argued by Barclay et al., 1995, management may choose to increase dividends in response to earnings increases to signal to the market that the firm is 'high quality'); in the following year, higher previous dividends act as a benchmark against which the amount of the current annual dividend change is decided. Therefore, higher levels of previous dividends and previous earnings are expected to have a negative effect on the magnitude of current dividend changes. While controlling for those variables, this study tests the hypothesis that the use of a dividend incentive in the compensation contract leads to dividend changes of a larger amount. As discussed above, even though such test cannot assess if dividend incentives actually *cause* higher annual dividend changes, it is expected that, given a certain level of previous dividends and current earnings, firms that use these incentives will increase dividends by a larger amount than firms that do not use such incentives.

3. Sample design and data collection

3.1. Selection of industries and sample firms

This study focuses on three industries likely to have free cash flows: oil and gas, food processing and defense/aerospace.⁹

Jensen (1986) argues that free cash flow is more likely to be a problem in such industries because of the substantial economic rents or quasi-rents available to

⁹ Compensation surveys such as those conducted by Business Week, the Conference Board and Forbes suggest that industry affiliation has a significant effect on both the level of compensation payments and the choice of features in the compensation contract. Masson (1971), and Antle and Smith (1985), Antle and Smith (1986) provide further evidence of industry effects on compensation practices, and recommend that compensation studies should control for systematic profits and risks associated with industry-wide fluctuations. All three studies use observations from a total sample of 39 firms that represent three different industries. The dividend literature indicates that industry affiliation is also a relevant factor determining dividend payouts and yields (e.g., Michel, 1979). This evidence suggests that empirical studies of compensation and dividend policies would benefit from explicitly controlling for systematic differences due to industry effects (see also Smith and Watts, 1992).

companies in these industries. Large volumes of cash flows, with few growth opportunities, lead to high agency costs of free cash flows.¹⁰

These industries are also heavily represented among the firms that used dividends as an upper limit for the bonus pool in the sample examined by Healy (1985).¹¹

An analysis of the compensation contracts of the 94 companies in Healy's sample revealed that 21 of these firms use cash dividends in the formula for bonus calculation, and that those firms are clustered in the oil and gas, food processing and defense/aerospace industries.

Within each industry selected for this study, firms were chosen that on aggregate accounted for at least 90% of total industry sales, using the Ward's Business Directory of Largest U.S. Companies. The directory ranks firms by industry (defined by the three-digit SIC code) in descending order according to their size, measured by total sales revenues. For each industry, firms were included in the sample in descending order of size until total annual sales of the sample firms comprised at least 90% of total industry sales.¹²

Thus, the number of sample firms from each industry varies depending on different industry concentrations. The final sample includes 62 companies, comprising 27 oil and gas firms, 19 food processing firms and 16 firms from the defense/aerospace industries.

3.2. Data

The compensation data were hand-collected by examining compensation contracts and all of their modifications as described in proxy statements and annual reports of each of the sample firms during the period 1981–1985. Each company was classified according to whether the compensation contract included an explicit dividend provision. Based on this classification criterion, 28 of the sample firms were found to have a dividend provision (13 oil and gas firms, 9 food processing firms and 6 defense/aerospace firms); the remaining 34 firms had no dividend

¹⁰ As Jensen (1986) pointed out about the oil and gas industry, price increases in the early 1980s led to significant free cash flows, which were used in part to fund large exploration and development expenditures, even when such investments offered returns below the cost of capital. Jensen also refers to empirical evidence that shows that increases in E and D expenditures by oil and gas companies were associated with negative stock price reaction.

¹¹ Thanks to Paul Healy for providing access to his list of sample firms. Healy selected his 94 firms from the population of Fortune 250 companies mainly because these were the only firms that disclosed sufficiently detailed information about their bonus plans.

¹² This sampling criterion was based on the purposes of this study. On one hand, it was necessary to obtain as much data as possible on each of the selected industries; but, on the other hand, the limited disclosure on the specific provisions of compensation contracts used by smaller firms precluded their inclusion in the sample. This problem of limited data availability from smaller firms has been well documented in previous compensation research (see, for example, Healy, 1985; Skinner, 1993).

provision. Further attempts were made to better distinguish among the different types of dividend provisions, but the small number of firms disclosing enough detail on their compensation contracts did not allow additional tests of statistical significance.

The test period was set between 1981 and 1985, based on two main criteria: (1) to allow enough observations for each firm so that sufficient time would have lapsed for managers to react to the new dividend provisions adopted in the late 1970s; and (2) to reduce the chances of confounding events such as changes in the senior management team and in major compensation contract provisions.¹³

The compensation classification is stable over the test period, since none of the sample firms adopted or discontinued a dividend provision during those years.¹⁴

Table 1 shows a description of the variables used in this study, along with the data sources used. Table 2 contains descriptive statistics for the sample firms.

4. Factors associated with the choice of dividend incentives

The hypotheses developed in Section 2 suggest that certain firm characteristics may help explain cross-sectional differences in the use of dividend incentives. Specifically, four characteristics are expected to increase the likelihood that the compensation contract will contain provisions related to dividend policy: greater monitoring demands related to larger size, a lower percentage of outside directors on the board, fewer incentives to help align the interests of shareholders and managers, and higher expected growth.

Summary statistics comparing firms with and without dividend provisions appear in Table 3. Even though firms with a dividend-related compensation contract do not differ significantly in terms of profitability from those without dividend provisions, they do differ significantly with respect to the other variables of interest for this study: firms with dividend incentives are much larger, have

¹³ Lewellen et al. (1987) find that the average tenure of senior managers in their sample is 5.7 years and that compensation plans usually undergo major changes in every five years. In this study, there were no reported changes in the senior management team of the sample firms and no changes in the compensation contract that affected the dividend provisions during the test period.

¹⁴ Ideally, tests on how dividend incentives affect dividend policy should be conducted on a time-series basis (before and after adoption of a dividend incentive). However, an examination of proxy statements from the time of initial adoption of dividend incentives showed that several other significant changes occurred when the dividend incentive was introduced in the compensation contract. The adoption of a dividend provision often coincides with new bonus plan introduction, or with changes in the performance measures used in the bonus formulas. The confounding effects of such simultaneous changes in the compensation contract make a cross-sectional approach more appropriate for the purposes of this study. Also, as argued by Barclay et al. (1995), the cross-sectional approach helps correct for the 'stickiness' of dividend policy changes from year to year. They caution, though, that cross-sectional tests likely report conservative *t*-statistics.

Table 1
Description of variables: Definitions and sources used

BOARD	Percentage of outside directors (those not personally nor professionally related to the company) in relation to total number of directors on the board; source: proxy statements
COMP	One if the firm has a dividend provision in the compensation contract; zero otherwise; source: proxy statements and annual reports
DIVCH	Annual dividend changes deflated by stock price at the beginning of the year; source: annual reports
DEF	One if the firm is in the defense/aerospace industry; zero otherwise; source: <i>Ward's Business Directory of Largest U.S. Companies</i>
DISPERSION	Natural logarithm of the number of common shareholders; source: <i>Value Line Investment Survey</i>
EARNINGS	Earnings per share deflated by stock price at the beginning of the year; source: annual reports
EARCH	Earnings changes deflated by stock price at the beginning of the year; source: annual reports
ECHCOM	EARCH multiplied by COMP; sources as described above
FOOD	One if the firm is in the food processing industry; zero otherwise; source: <i>Ward's Business Directory of Largest U.S. Companies</i>
GROWTH	Predicted growth in sales revenues over the test period; source: <i>Value Line</i>
OWNERSHIP	Percentage of total outstanding shares owned by the most senior officers in the company; source: proxy statements
PAYOUT	Sum of dividends paid over the test period, divided by the sum of earnings over the same period; source: annual reports
PREDIV	Dividends per share paid in the previous year, deflated by stock price at the beginning of the year; source: annual reports
SIZE	Sales revenues in US\$ billions; source: annual reports
TOP5	Percentage of common shares controlled by top five shareholders; source: proxy statements and Disclosure Information Service
YIELD	Dividends per share divided by price, averaged over test period; source: annual reports

lower percentages of outside directors and of managerial ownership, and are expected to grow less than firms without such provisions.

To further test those relations, a logistic regression model is estimated, with the dichotomous choice about the compensation contract as the dependent variable. Firms with a dividend provision are compared to those without such provisions, and the data on size, board composition, managerial ownership and growth are averaged across the test period, providing one observation per company:

$$COMP = a_0 + a_1 SIZE + a_2 BOARD + a_3 OWNERSHIP + a_4 GROWTH + e, \quad (1)$$

where all variables are defined as in Table 1.

Table 4 reports that company size, the presence of outside directors, insider ownership and company growth all have a significant impact on the likelihood of a dividend provision in the compensation contract. The results are consistent with

Table 2
Summary statistics for the 62 sample firms averaged over the period 1981–1985

Variable	Mean	Standard deviation	Median	Minimum	Maximum
BOARD	63.72	13.58	62.50	30.77	90.00
DIVCH	0.004	0.003	0.003	–0.002	0.015
DISPERSION	10.25	1.26	10.36	7.19	13.56
EARNINGS	0.13	0.10	0.10	–0.36	0.48
Oil and gas sample (Oil and gas industry average = 0.14)	0.20	0.10	0.18	0.05	0.48
Food processing sample (Food proc. industry average = 0.06)	0.07	0.10	0.09	–0.36	0.15
Defense/aerosp. sample (Defense/aerosp. industry average = 0.10)	0.10	0.01	0.10	0.07	0.12
GROWTH	11.77	7.75	10.50	0.50	48.00
OWNERSHIP	12.58	17.33	3.15	0.03	62.00
PAYOUT	31.28	15.57	32.88	0	64.84
SIZE	8.72	14.93	4.40	0.002	79.10
TOP5	18.79	22.04	7.80	0.02	99.60
YIELD	3.42	2.26	3.10	0	10.00

Table 3
Comparison of firm characteristics associated with the choice of dividend incentives

Firm characteristic	Firms with no dividend provision in the compensation contract, $n = 34$	Firms with a dividend provision in the compensation contract, $n = 28$
A. EARNINGS		
Mean	0.13	0.14
Standard deviation	(0.01)	(0.01)
B. SIZE		
Mean	3.02 *	15.63 *
Standard deviation	(0.53)	(3.90)
C. BOARD		
Mean	69.43% *	56.77% *
Standard deviation	(2.16)	(2.31)
D. OWNERSHIP		
Mean	18.86% *	4.96% *
Standard deviation	(3.28)	(2.30)
E. GROWTH		
Mean	14.86% *	6.4% *
Standard deviation	(5.48)	(3.55)

* Means of each group significantly different at the 0.95 level.

Table 4

Estimates from a logistic regression model of the use of dividend provisions in the compensation contract. The sample is composed of 62 observations (one per firm). The dependent variable is COMP (= 1 if the firm has a dividend provision, = 0 otherwise). The independent variables are averaged over the period 1981–1985. All variables measured as in Table 1^a

	Constant	SIZE	BOARD	OWNERSHIP	GROWTH
Coefficient	11.48 *	0.35 *	−0.19 *	−0.10 *	...
t-statistic	(3.06)	(2.19)	(−3.17)	(−2.50)	
−2 Log likelihood = 36.78					
Coefficient	15.04 *	0.56 *	−0.17 *	−0.10 *	−0.57 *
t-statistic	(2.79)	(1.99)	(−2.34)	(−1.97)	(−2.32)
−2 Log likelihood = 21.13					

^a OLS estimation produced similar results.

* All coefficient estimates significant at the 0.95 level.

the interpretation that in larger firms the lower percentages of outside directors and of insider holdings increase the agency costs of free cash flow, especially for those firms with little expected growth, thus making the demand for special dividend-related provisions in the compensation contract more compelling.¹⁵

Conversely, the results lend support to the hypotheses that the monitoring provided by outside directors and the incentives created by management ownership of company shares reduce the chances that compensation provisions will be used to influence dividend policy.¹⁶

5. Effects of compensation provisions on dividend policy

5.1. Dividend payouts and yields: Models and test results

Tables 5 and 6 show the models estimated to test the hypothesis that dividend-related compensation incentives influence dividend payouts and yields. Given that the objective of these models is to investigate if dividend incentives affect the firm's long-term dividend policy, the data from each firm are averaged across the study period and the model is estimated using one observation per company:

$$PAYOUT/YIELD = b_0 + b_1COMP + b_2GROWTH + b_3DISPERSION + e, \quad (2)$$

where all variables are defined as in Table 1.

¹⁵ Size and insider holdings are often strongly correlated, but not in this particular sample, which includes only the largest firms in the three industries selected for this study.

¹⁶ These results have to be interpreted taking into consideration the cross-sectional nature of the empirical tests, and the particular industries selected for this study. It is possible that another sample, composed from a variety of industries, with a different set of investment opportunities, would produce different results.

Table 5

Estimated coefficients and *t*-statistics of dividend payout models for the 62 sample firms during the period 1981–1985. All variables measured as in Table 1

Dependent variable = PAYOUT					
Constant	– 5.68 (– 0.41)	36.78 * (6.67)	26.61 (8.74)	39.63 * (5.59)	22.29 (1.79)
COMP	9.04 * (2.14)	9.23 * (2.22)	14.98 * (4.58)	13.76 * (4.16)	10.25 * (2.13)
GROWTH	– 0.43 (– 1.70)	– 0.56 (– 1.72)	...	...	– 0.66 * (– 2.02)
DISPERSION	3.59 * (2.63)	...	...	...	...
TOP5	...	– 0.20 * (– 2.88)	– 0.19 * (– 2.59)	– 0.20 * (– 2.81)	– 0.08 (– 0.83)
EARNINGS	...	...	4.00 (0.25)	...	...
BETA	...	...	...	– 11.30 (– 1.52)	...
BOARD	...	...	...	...	0.22 (1.46)
OWNERSHIP	...	...	...	...	– 0.12 (– 0.89)
Adjusted R^2	0.38	0.38	0.37	0.39	0.40

* Coefficient estimates significant at the 0.95 level.

As discussed in Section 2, the models include, besides the compensation variable, two other factors suggested in the literature as determinants of dividend policy: growth and ownership dispersion (as in Rozeff, 1982). It is expected that firms with a dividend provision in the compensation contract, fewer opportunities for growth, and more ownership dispersion will have higher long-term payouts and yields. Some alternative measures for growth and ownership dispersion are compared in Tables 5 and 6 and discussed below.

Growth is measured by the *Value Line*'s forecast of average growth rate of sales revenues (following Rozeff, 1982). This measure is consistent with the analysis of different proxies for the investment opportunity set presented by Gaver and Gaver, 1993 (pp. 130–136). Gaver and Gaver suggest the use of growth estimates from investment analysts as a richer source of information about investment opportunities than measures that use stock prices, especially for larger firms (which is the case in this study, given that the sample selection criteria favors large firms). They also raise the issue of the inadequacy of measures that

Table 6

Estimated coefficients and *t*-statistics of dividend yield models for the 62 sample firms during the period 1981–1985. All variables measured as in Table 1

Dependent Variable = YIELD					
Constant	3.86 *	4.22 *	1.45	2.70 *	4.59
	(2.32)	(5.39)	(4.23)	(2.76)	(2.53)
COMP	1.79 *	1.91 *	3.14 *	3.23 *	1.77 *
	(3.54)	(3.22)	(7.43)	(6.64)	(2.53)
GROWTH	−0.07 *	−0.10 *	...	...	−0.10 *
	(−2.52)	(−2.08)			(−2.00)
DISPERSION	0.73 *	...	...	...	...
	(4.45)				
TOP5	...	−0.03 *	−0.01	−0.01	−0.02
		(−2.76)	(−1.56)	(−1.37)	(−1.69)
EARNINGS	...	...	7.25 *	...	...
			(3.58)		
BETA	...	...	...	−0.36	...
				(−0.33)	
BOARD	...	...	...	...	−0.005
					(−0.20)
OWNERSHIP	...	...	...	...	−0.01
					(−0.54)
Adjusted R^2	0.63	0.50	0.56	0.47	0.49

* Coefficient estimates significant at the 0.95 level.

include book value of assets, since they introduce significant measurement error due to high accumulated depreciation reported by firms with long-lived assets (such as those in the current sample). Nevertheless, all of those growth measures exhibit statistically significant correlations with each other. In this study, growth opportunities were also measured as the earnings/price ratio (to reflect the percentage of earnings received from assets in place, as opposed to all future expected cash flows) and the company beta (to capture the variability in the firm's rate of return), as suggested by Gaver and Gaver, 1993. The results for those alternative measures (see Tables 5 and 6) are not as strong as when the *Value Line* forecasts are used, with the exception of the earnings/price ratio in the yield model. But, as Gaver and Gaver (1993) point out, such result has to be interpreted with caution, since both EARNINGS and YIELD are measured using stock prices, thus creating the opportunity for spurious correlations.

The results in Table 5 are consistent with the previously discussed hypotheses: holding growth and ownership dispersion constant, firms using dividend incentives in the compensation plan pay, on average, 9% more of their earnings as dividends

than firms not using such incentives (result significant at the 0.04 level). Similarly, Table 6 reports that dividend yields are 1.8% higher on average for companies with a dividend provision (result significant at the 0.001 level). Non-significant results are obtained for industry dummy variables when they are included in the dividend ratio models. Based on Chow tests, no significant difference is observed when the equations are estimated within-industry.

The other variables (ownership dispersion and expected growth) show results consistent with the existing theory. Companies with a larger number of shareholders tend to maintain higher dividend payouts and yields. Higher growth is associated with lower dividend ratios, especially in the yield model. Again, as suggested by Gaver and Gaver (1993), this association may be due to spurious correlation, since high-growth firms tend to have higher stock prices, and dividend yields decrease with stock prices. The effect of growth seems to be less pronounced in the payout model (significance at the 0.09 level). Dividend yields are more influenced than payouts by variations in compensation provisions, growth or ownership dispersion: together these three variables explain 63% of the total cross-sectional differences in yields, but only 38% of the variation in payouts. One interpretation of this result is that long-term dividend policy (measured by target dividend ratios) is more related to market performance than to accounting earnings, which are more volatile than stock prices, at least for the firms in these three industries.

Alternative measures for ownership dispersion were also tested. The percentage of common shares controlled by the top 5 shareholders (instead of the number of shareholders as measured by DISPERION) has a statistically negative and significant effect in most of the payout and yield models (see Tables 5 and 6: higher concentration is associated with lower payouts and yields). Qualitatively similar results were obtained when the percentage of common stock owned by the top 20 shareholders was used; when the percentage of shares controlled by institutional investors (with different preferences for dividends from those held by individual shareholders) was included in the model, it produced insignificant coefficients.

Further tests of the payout and yield models investigated whether BOARD and OWNERSHIP have a direct impact on dividend policy. If the monitoring role of outside directors and the incentives of managerial ownership have an influence on dividends paid, then those variables should have a significant relation to payouts and yields, like the one reported for COMP. However, the results on both Tables 5 and 6 reveal that no such direct relation exists (at the 0.95 level). It seems that BOARD and OWNERSHIP affect dividend policy only indirectly, through their association with the choice of dividend provisions in the compensation contract.

5.2. Annual dividend change models and results

In order to test whether dividend-based compensation contracts influence annual decisions about dividend levels, a model is estimated using the magnitude

Table 7

Estimated coefficients and *t*-statistics of annual dividend change models. All variables measured as in Table 1

Dependent Variable = DIVCH				
Panel A: Five annual dividend changes for 62 firms, resulting in 310 observations.				
PREDIV	–0.14 *		–0.12 *	
	(–5.13)		(–4.57)	
EARNINGS	0.04 *		0.04 *	
	(4.24)		(4.06)	
EARCH	0.01		0.003	
	(1.20)		(0.03)	
COMP **	0.3 *		0.3 *	
	(2.72)		(2.58)	
ECHCOM	...		0.06 *	
			(3.63)	
Adjusted <i>R</i> ²	0.15		0.19	
Panel B: One observation per company (N = 62), data averaged over the test period.				
PREDIV	0.03	0.03	0.02	0.02
	(1.64)	(1.66)	(1.00)	(1.04)
EARNINGS	0.01 *	0.01 *	0.01 *	0.01 *
	(2.81)	(2.68)	(2.18)	(2.07)
EARCH	0.007	0.007	0.009	0.009
	(1.22)	(1.21)	(1.49)	(1.47)
COMP **	0.20 *	0.20 *	0.20 *	0.19 *
	(2.68)	(2.62)	(2.57)	(2.53)
ECHCOM	...	0.02	...	0.02
		(0.59)		(0.53)
BOARD ***	...	...	12	11
			(1.01)	(0.96)
OWNERSHIP ***	...	...	–5.4	–3.3
			(–0.25)	(–0.15)
Adjusted <i>R</i> ²	0.41	0.42	0.43	0.43

* Coefficient estimates significant at the 0.95 level.

** All coefficient estimates on COMP should be multiplied by 10^{-2} .

*** All coefficient estimates on BOARD and OWNERSHIP should be multiplied by 10^{-6} .

of dividend changes from one year to the next as the dependent variable, as shown in Table 7 (following the model of Lintner (1956), which continues to be used in current dividend policy research, as discussed in Kallapur, 1994). The sample in

Panel A is formed by computing first differences for dividends per share paid each year over the test period, generating a series of five annual dividend changes for each of the 62 sample companies, resulting in a panel of 310 observations (1980 data were also collected so that 1981 changes could be computed). The use of multiple observations per firm has the potential of introducing problems of serial dependence; but as evidenced in Lewellen et al. (1987), non-trivial differences in dividend levels from year to year suggest that multiple observations of annual changes for each firm actually introduce a bias against finding a significant relation between dividends and other corporate policies.

$$DIVIDEND\ CHANGES = c_0 + c_1 D_{t-1} + c_2 E_t + c_3 \Delta E_t + c_4 COMP + u_t, \quad (3)$$

where all variables are defined as in Table 1.

Based on previous research on dividend policy, annual dividend changes are regressed on previous year dividends, current earnings, and earnings changes from the previous year; the compensation variable is added to the model to test if it increases the model's explanatory power. Annual dividend changes are expected to be positively associated with current earnings, current earnings changes and with dividend-based compensation contracts; and negatively associated with previous dividend levels. The model is estimated using the financial variables deflated by stock prices at the beginning of the year, to facilitate cross-sectional comparisons (as in Landsman and Magliolo, 1988).

The results reported in Table 7 support most of the above predictions. The evidence in Panel A indicates that, holding other factors constant, a dividend provision has a positive and significant impact on the magnitude of annual dividend changes.¹⁷

The results also demonstrate that firms tend to increase dividends in response to current earnings and when dividends paid in the previous year are lower. The change in earnings from the previous year, though, seems to have no direct influence on dividend changes. This result is partially consistent with previous research. For example, lagged earnings led to a slight improvement in the dividend policy model tested by Fama and Babiak (1968). Similarly, Barclay et al. (1995) found that abnormal earnings (or earnings increases) showed only a marginal impact on dividend policy.¹⁸

¹⁷ Industry effects on annual dividend changes were analyzed using industry dummy variables, resulting in insignificant industry coefficient estimates. This finding demonstrates that annual dividend changes in the food and defense industries are not significantly different in magnitude from annual dividend changes by oil and gas firms (the base case).

¹⁸ Also, it should be noted that in this model earnings changes are deflated by price, introducing a constant term E_{t-1}/P_{t-1} : $\Delta E_t/P_{t-1} = E_t/P_{t-1} - E_{t-1}/P_{t-1}$. If the second term behaves as a constant, it leads to an insignificant coefficient on earnings changes.

The effect of earnings changes on dividend changes is further tested to examine whether it is significant if the firm has a dividend provision. In that case, it is expected that the compensation incentive would help offset management's reluctance to increase dividends in response to increased earnings. In other words, the total effect of the compensation incentive on dividend changes would increase with the magnitude of the earnings change. To test for this interaction effect, another variable (ECHCOM) is computed by multiplying the earnings per share change and the compensation variables. The results in Panel A of Table 7 show that, while the earnings change variable in isolation continued to be insignificant, the interaction term is significant. This evidence indicates that the effect of earnings changes on annual changes in dividend levels depends on whether the firm has a dividend incentive in the compensation contract.¹⁹

Other tests with alternative specifications of the earnings variables led to insignificant results. The lack of interaction found between current earnings and compensation suggests that the effect of current earnings on annual dividend changes is independent of whether or not the company has a dividend provision. In order to assess the potential effect of earnings expectations on dividend policy, additional tests included actual earnings of the following year in the dividend change model. The results indicated no significant relation between future earnings and dividend changes, even when future earnings changes (future earnings less current earnings) are used.

The results reported in Panel B of Table 7 confirm most of the findings discussed above. The sample in Panel B contains one observation per company, with the data averaged over the test period, to ensure that the results would not be biased by outlier observations. The goodness of fit of the regressions in Panel B is much higher, reflecting the smaller variance in the averaged data to be explained by the models. The results are qualitatively similar to those in Panel A, except for the coefficients on PREDIV and ECHCOM, which are not statistically significant. This finding is not surprising, since Lintner's model (on which the models in this section are based) was developed for panel data, pooling multiple annual observations per company. It is likely that variables using previous year's observations (such as PREDIV, EARCH and ECHCOM) would lose some significance when the data are averaged over the test period.

Similarly to what happened with the payout and yield models, the inclusion of BOARD and OWNERSHIP in the annual dividend change model produced coefficients that were not statistically significant. These results suggest that board composition and managerial ownership have no direct influence on the magnitude of dividend changes from year to year.

¹⁹ As previously discussed, a more powerful test of the effect of a dividend incentive would require the identification of when the dividend constraint in the compensation contract was actually binding, which is not observable from publicly available data.

The evidence presented in this section is consistent with the hypothesis that compensation incentives help offset managers' reluctance to commit themselves to higher levels of dividend payments. It does *not* suggest, however, that firms without a dividend provision are necessarily suffering from cash over-retention. As discussed in Section 2, those firms may either not face free cash flow problems (e.g., because they can reinvest excess cash to explore profitable growth opportunities), or they may have already adopted other control mechanisms to monitor dividend policy (e.g., outside directors, or managerial ownership of company stock, as argued in Section 4).

6. Conclusions

This study is the first to investigate the use of explicit dividend provisions in compensation contracts. Such provisions address the potential conflict between managers and shareholders over the dividend decision. Managers are motivated to avoid paying dividends to increase the amount of discretionary funds inside the firm, while shareholders may be interested in receiving the free cash flows as dividends.

Two main types of empirical tests are reported, at the firm level. The first examines characteristics of firms that use dividend incentives. The second focuses on the impact of dividend-related compensation provisions on dividend policy, operationalized as long-term payouts and yields, and as annual decisions about dividend levels. The findings in this study are consistent with the theory that dividend provisions in compensation contracts provide an incentive for managers to reduce the monitoring costs associated with cash over-retention. Larger firms, especially those with slower expected growth (presumably facing more costly monitoring on the dividend decision), are more likely to link managerial rewards to dividends paid. The monitoring role provided by outside directors on the board is found to be negatively correlated with the existence of a dividend provision. Furthermore, firms with a higher proportion of their equity held by managers are found to be less likely to use a dividend incentive in the compensation plan than firms where the proportion of insider ownership is lower. This evidence suggests that board monitoring, the incentives from insider ownership, and compensation contracts with a dividend provision supply various control mechanisms to reduce the agency costs associated with cash over-retention. Moreover, companies with dividend covenants in the compensation contract are found to offer higher dividend payouts and yields, and to increase annual dividends by larger amounts than companies without such covenants.

While this is the first time that explicit dividend provisions in compensation contracts have been studied, the evidence provided here raises several other relevant research issues for future studies, from both an empirical and a theoretical perspective. First, access to more detailed compensation data (possibly including

confidential information obtained from the sample firms) would allow more powerful tests on how different types of dividend provisions relate to dividend behavior. Access to data from smaller firms, and samples constructed from different industries, should offer some interesting opportunities for replication studies. On the other hand, further theoretical work is needed to more effectively distinguish exogenous from endogenous factors in the choice of compensation contracts with a dividend provision. In this study, some of these factors were treated as exogenous (e.g., insider ownership and board composition), while in fact they may be partially endogenous.²⁰

Also, a model of ‘optimal’ dividend policy would help assess which of the control mechanisms discussed above is most effective in influencing dividend behavior. Finally, more theoretical development on what factors explain the choice of specific provisions in compensation contracts is needed to improve our understanding of the effects of such provisions on managerial decision making.²¹

This study contributes to the existing literature by demonstrating the interdependency between compensation and dividend policies in influencing decisions on how firms distribute cash flows. This is particularly relevant since dividend policy still seems to ‘puzzle’ academicians and practitioners alike.²²

The empirical results in this study also provide additional evidence to an emerging literature about which factors determine the choice of provisions found in compensation contracts.

Acknowledgements

I thank Paul Healy, Bob Kaplan and Krishna Palepu for their support and suggestions on this project. The reviews from Ken Lehn (editor) and two anonymous referees are also appreciated. This paper further benefited from comments by Beth Cooperman, Leo White, and from seminar participants at

²⁰ This is a common problem in studies of interaction among corporate policies. See, for example, the discussion in Smith and Watts (1992, p. 281).

²¹ Compensation studies typically select one specific feature in the compensation contract, treat it as an independent variable, and test whether it affects the behaviors that it was presumably designed to induce (e.g., Larcker, 1983). Few studies, however, have examined how and why certain features are included in the design of compensation contracts (e.g., Smith and Watts, 1992; Gaver and Gaver, 1993). See Merchant (1989) for an extensive field research study on factors likely to affect the design of managerial compensation contracts.

²² For example, Marsh and Merton (1987, p. 3), after reviewing the various normative theories on dividends, argue that “there do not appear to be any significant legal, accounting-convention, or corporate-tax factors to exert pressures on managers... to follow any particular dividend policy”. More recently, Smith and Watts (1992) argue that incentive contracting theories explain dividend policy better than tax-based or signaling theories. Yet, in his keynote address to the Financial Management Association, Roll acknowledges that “we are still studying dividend policy” (Roll, 1994, p. 75).

Harvard University, the University of Southern California and San Diego State University, as well as remarks by participants in the annual meeting of the American Accounting Association. Financial support from the University of Baltimore is gratefully acknowledged.

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