Which companies deliver on the dividend promise? New evidence on dividend smoothing and dynamic dividend behavior*

Anzhela Knyazeva†

University of Rochester

Abstract

This paper uses differences in corporate governance and ownership structure to explain the time series properties of dividends (in particular, dividend smoothing). I show that the implicit dividend promise is sustainable in the presence of weak monitoring. The reason is that weakly governed managers face increased pressure from shareholders and the market to comply with the observable dividend policy. I find that weakly governed managers make fewer dividend cuts, engage in more dividend smoothing, and adopt small regular dividend increases. The effect of governance on dividend changes is concentrated in firms with significant cash flow increases. The paper's empirical strategy accounts for potential endogeneity of corporate governance and financial decisions. The dividend findings are robust to the use of overall payout. Persistent dividends exhibit a partial substitution with debt.

JEL classification: G30, G34, G35

Keywords: dividend smoothing, dynamic dividend behavior, corporate governance, ownership, endogeneity.

* I am thankful to Kose John, Joseph Stiglitz, Daniel Wolfenzon, David Yermack, and Bernard Yeung for valuable discussions and to William Greene, Michael Lemmon, Roni Michaely, Eli Ofek, Anthony Saunders, Raghu Sundaram, Jeffrey Wurgler and participants at the 2006 Financial Management Association meeting and workshops at New York University, University of Rochester, University of Michigan, Ohio State University, University of Maryland, University of North Carolina – Chapel Hill, Emory University, University of Wisconsin, Arizona State University, University of Georgia, Baruch College, Georgia State University, and Georgia Tech for helpful comments. I am grateful to Paul Gompers, Joy Ishii, and Andrew Metrick for providing the data on dual classes of shares and to Institutional Shareholder Services for providing the Corporate Governance Quotient data. I thank Stern School of Business and William E. Simon Graduate School of Business Administration for financial support. All remaining errors and omissions are mine.

† William E. Simon Graduate School of Business Administration, University of Rochester, Carol Simon Hall, Rochester, NY 14627. E-mail: anzhela.knyazeva@simon.rochester.edu.

Intertemporal patterns in dividends have remained an unresolved issue in the finance literature for half a century. Since Lintner (1956) and Fama and Babiak (1968) documented the propensity of firms to smooth dividends and avoid cuts, there has been a need for a better understanding of dynamic dividend behavior. The answer to this question can offer valuable insights into the dividend puzzle. This paper approaches dynamic dividend behavior from a corporate governance perspective. In the presence of agency costs, dividends can constrain inefficient managerial behavior, however, their effectiveness is limited if the manager discontinues payments. Are weakly governed managers more likely to cut or suspend dividends at their discretion? Will they engage in more or less dividend smoothing? What effect does corporate governance have on dividend increases? Answers to these questions lead to a better understanding of the prevalence of times series properties of dividends in the sample of dividend paying firms.

This paper contributes to the existing literature in several ways. The analysis focuses on several understudied aspects of dynamic patterns in dividends from the perspective of monitoring and ownership structure: variation in dividend smoothing, incremental dividend decisions, and the role of dividend changes for overall payout policy adjustment. I find that weak corporate governance increases dividend smoothing, lowers the likelihood of cuts, and expands the use of dividend increases in response to increases in the cash flow. Firms in the bottom governance quartile are twice less likely to cut dividends and one and a half times more likely to raise dividends than firms in the top governance quartile. Weakly governed managers keep the implicit promise of continued dividends. Since weakly governed firms are prevalent among dividend payers (John and Knyazeva, 2007), the finding helps explain the preference towards greater dividend smoothing in the dividend paying sample. Other results involve total payout and the substitution between debt and persistent dividends.

Further, the empirical approach in the paper differs from related work in addressing the potential endogeneity of dividend decisions and governance. If the choice of governance depends on the cost and effectiveness of dividends, hypothesis tests are biased. To deal with the causality issue, I focus on two sets of results: instrumental variables and a natural experiment (adoption of legal changes to the corporate governance environment with the passage of state antitakeover laws and the Sarbanes-Oxley Act). In addition, I use firm effects to capture unobserved firm level heterogeneity and perform Granger causality tests. The results also account for the possible selection bias in the dividend payer sample and use a new aggregate measure of governance and alignment.

The main hypothesis focuses on the decision of a self-interested manager to continue or change the dividend policy. Weakly governed managers can invest suboptimally in the absence of additional constraints. To show that they are not destroying shareholder value, such managers can uphold the promise of continued dividends. Dividends are effective because dividend changes are observable and trigger a response by value-maximizing shareholders. Expecting less efficient investment by misaligned managers in the absence of dividends, shareholders react more adversely to deviations, thus putting pressure on the manager to sustain dividends.

The manager's dividend decision arises from a dynamic tradeoff conditional on) governance quality: flexibility gain (loss) from a forgone (paid) dividend versus the expected loss (gain) from shareholder reaction to the dividend. Shareholders affected adversely by the observable dividend change can respond through the equity market by selling shares or providing capital at a higher cost in the future (Myers, 2000). A steep stock price drop also facilitates intervention through a potential takeover (in the spirit of Zwiebel, 1996; Fluck, 1998, 1999). The expected shareholder reaction to deviations prompts weakly governed

managers to keep the dividend promise. If firm cash flows increase significantly, shareholders reward weakly governed managers more for raising the dividend. However, weakly governed managers are cautious about the magnitude of the increase since they have to sustain higher dividends in the future. Conversely, better governed managers of dividend paying firms benefit from a more flexible dividend policy. If the observable governance quality is better, shareholders react less adversely to deviations because they expect more efficient investment after a dividend cut.

The main findings are as follows. Weakly governed managers exhibit more dividend smoothing. They are less likely to cut or omit dividend payments. Weakly governed managers make more dividend increases, however, such increases are smaller in magnitude, conditional on the occurrence of an increase. Changes in the dividend level following large cash flow increases are decreasing in governance quality. The observed time series properties of dividends extend to overall payout. Weakly governed managers prefer a repurchase cut to a dividend cut and use dividend increases for additional cash distributions. Finally, persistent dividends partially substitute for debt payments.

The rest of the paper is organized as follows. The second section develops the main hypothesis. The third section discusses data and methodology. The fourth section presents the empirical findings. The fifth section concludes.

I. Hypotheses

According to one view, dividends are an implicit contract between the manager and the shareholders to mitigate the free cash flow problem. Dividends decrease the free cash flow and expose the manager to additional monitoring from the external financing market (Easterbrook, 1984). Therefore, firms with low insider ownership and weak governance precommit to dividends to address the free cash flow problem (Rozeff, 1982; John and

Knyazeva; 2007). On the other hand, La Porta et al. (2000) argue that insiders entrenched due to weak investor protections pay low dividends. Existing work does not help explain the time series properties of dividends.

Managers of firms that have adopted dividends can either keep them or deviate by cutting dividends. A dividend cut can improve the manager's current utility by offering more flexibility to invest. However, unlike investment decisions, dividend changes are observable and verifiable. The shareholder reaction to the dividend change affects the manager's expected utility from investment in future periods. When a weakly governed manager cuts the dividend, other things given, shareholders rationally expect less efficient investment and potentially respond more adversely. The manager's dividend continuation decision solves the dynamic tradeoff presented by these two effects.

Shareholders can sell shares in response to a decrease in the expected firm value. The resulting higher cost of capital and reluctance to provide new capital (Myers, 2000) reduces the ability to expand investment and undertake some privately beneficial investment projects in the future. If the manager's dividend deviation is large enough to cause a steep stock price drop, the CEO can also face an increased threat of intervention through a takeover (see Zwiebel (1996) and Fluck (1998, 1999) for models of the dynamic tradeoff between current managerial gains and control challenge threat in the context of debt choice). Controlling for other factors such as cash flow changes and risk, weakly governed managers can expect a more adverse shareholder reaction to deviations since their investment is less efficient in the absence of dividends. Therefore, they are more likely to keep the implicit dividend promise.

Better governed managers can deviate from the implicit dividend promise at a lower cost to accommodate changes in investment opportunities. Existing empirical evidence does not necessarily support the additional signaling power of dividends about unexpected

changes in future earnings (Benartzi, Michaely, and Thaler, 1997; Benartzi, Grullon, Michaely, and Thaler, 2005). Therefore, better aligned managers can allocate internal cash flow more efficiently through a more flexible dividend policy.

The conclusion is that the implicit dividend promise can be credibly sustained over time in the presence of weak corporate governance, which yields several new testable predictions regarding the time series properties of dividends. Managers seeking a more credible dividend policy will make regular persistent dividend payments to shareholders.

H1. Weakly governed managers engage in more dividend smoothing.

In examining dividend smoothing, this paper relates to the well known findings of high dividend persistence in the full sample of firms (Lintner, 1956; Fama and Babiak, 1968; Brav, Graham, Harvey, and Michaely, 2005). The present analysis attempts to explain considerable variation in the extent of dividend smoothing across firms, focusing on corporate governance. Dewenter and Warther (1998) perform international comparisons and find that Japanese firms smooth dividends less than US firms. Gugler (2003) uses Austrian data and concludes that state-controlled firms are more reluctant than family-controlled firms to cut dividends when cuts are expected. Michaely and Roberts (2006) find that private firms engage in less dividend smoothing than public firms. Earlier work offers several theoretical explanations of dividend smoothing based on adverse selection and signaling. Kumar (1988) derives dividend smoothing in a model of coarse dividend signaling of firm productivity type. Warther (1994) shows the optimality of dividend smoothing in an asymmetric information game between shareholders and the manager, in which the manager pays dividends to demonstrate adequate profitability. Fudenberg and Tirole (1995) provide a theory of dividend and earnings smoothing based on managerial job security. This paper proposes and empirically tests a corporate governance view of dynamic dividend behavior.

The prediction in H1 suggests that a misaligned manager makes more persistent dividend payments. It is important to know which dividend decisions (decreases or increases) account for the dividend smoothing. The implication of the main hypothesis is that weakly governed managers avoid downward deviations from the dividend commitment.

H2. Weakly governed managers are less likely to make dividend cuts.

Weakly governed managers choose a persistent non-decreasing dividend path.

The next issue is the link between governance quality and dividend increases. Applying the earlier argument, well governed managers bear the costs but realize lower benefits of dividend increases. Shareholders care less about dividend increases because dividends cannot significantly improve investment efficiency and firm value. In the weak governance case, if the free cash flow does not change, the manager remains constrained as long as cuts are avoided. If internally generated cash flow decreases, the manager faces additional monitoring from the external financing market (Easterbrook, 1984). If the free cash flow increases, shareholders expect weakly governed managers to raise dividends to offset lower investment efficiency. Weakly governed managers should therefore make as many or more dividend increases than better governed managers, controlling for other factors.

Further, shareholder reaction is greatest if the cash flow increase is significant. From a misaligned manager's perspective, a small cash flow increase or a cash flow increase that is reversed next period does not warrant a dividend increase. Weakly governed managers raise dividends to meet shareholder expectations in response to large cash flow increases. They avoid substantial one-time dividend increases since the higher dividend has to be sustained in the future. Weakly governed managers are expected to exercise caution with respect to the magnitude of individual dividend increases. If the cash flow continues to rise in the future, dividends will be raised further in small or medium-sized increments.

H3. Weakly governed managers are more likely to raise dividends, but they avoid substantial increases and postpone increases in the case of small or temporary cash flow changes. Changes in the dividend level are decreasing in governance quality.

Better aligned managers enjoy more flexibility with respect to downward deviations and face less pressure to raise dividends. Managerial behavior described in the predictions H1-H3 is consistent with individually optimal decisions of a rational manager that faces an implicit promise to shareholders. The previously announced level of dividends forms an implicit dividend promise to shareholders. Whether managers continue to 'deliver on the dividend promise' depends on the expected shareholder reaction, which is a function of managerial alignment and governance quality.

The described dynamic dividend behavior patterns have implications for overall payout decisions of weakly governed managers. First, all cash distributions are expected to be more persistent and payout changes are expected to be higher when governance is weak. Second, weakly governed managers choose payout policy adjustments that minimize costly deviations from the implicit dividend promise, leading to the preference towards cuts in repurchases rather than dividend cuts when payout decreases are necessary. Similarly, shareholders expect misaligned managers to distribute extra cash in the form of higher dividends, which sustains the constraint on managerial investment behavior. Temporary cash distributions in the form of higher share repurchases have a weak commitment effect since the timeline and amounts of payouts are less clear compared to regular quarterly cash dividends.

H4. Governance quality has a negative effect on total payout smoothing (changes). Weakly governed managers are more likely to reduce payout through a repurchase cut and to distribute additional cash through higher dividends.

An alternative mechanism of constraining a misaligned manager is debt (Jensen, 1986; John and Knyazeva, 2007). A debt contract requires the manager to make regular interest payments and imposes the threat of bankruptcy in case of deviations. The roles of debt and

dividends in mitigating the free cash flow problem are related. Both constraints on managerial behavior involve distribution of a pre-specified amount from the firm's free cash flow to external claimholders. The manager can expect a negative reaction to deviations from either type of commitment. With both forms of commitment, the firm bears a cost (cost of external financing when internal cash flow is insufficient; tax disadvantage of dividends, bankruptcy and agency costs of debt). Since debt and dividends are costly and fulfill a similar agency role, they are expected to act as partial substitutes in the dynamic context.

> H5. Governance quality has a negative effect on changes in total payments committed to external claimholders. Debt and dividends are partial substitutes.

II. Data and methodology

This paper uses the sample of U.S. firms from Compustat Industrial Annual for 1993-2004, excluding financial firms (SIC codes 6000-6999) and regulated utilities (SIC codes 4900-4949), observations with book value of total assets (item #6) below 20 mln, firms incorporated abroad (incorporation code 99), and LBOs (stock code 4). CRSP monthly file is used to obtain dividend data for ordinary common shares (certificates, ADRs, shares of beneficial interest, units, Americus trust components, closed-end funds, and REITs are excluded). Dividend is defined as the annual sum of ordinary quarterly cash dividends (CRSP distribution code 1232), adjusted for splits and stock dividends, unless other measures are specified. Dividend behavior regressions use the sample of dividend paying firms unless specified otherwise. Selection model regressions use the full sample that includes dividend paying and zero dividend firms.

Governance quality measures

Existing research shows that firm performance and firm behavior depend on the governance structure in place, including charter and bylaw provisions that increase the

manager's exposure to the corporate control market (see, e.g., Gompers, Ishii, Metrick, 2003; Bebchuk and Cohen, 2004), monitoring by a large blockholder (see, e.g., Cremers and Nair, 2005), board independence (see, e.g., Agrawal and Knoeber, 1996), and board size (see, e.g., Yermack, 1996).

This paper uses five governance and alignment measures to capture board monitoring quality (Board Monitoring), institutional blockholder monitoring (Blockholders), external governance quality (External Governance), lower separation of ownership and control in single class firms (Single Class of Shares), and CEO-level alignment characteristics (CEO Characteristics) as well as the aggregate Alignment and Governance Index (AGI). The board, blockholder, and CEO characteristics measures are constructed using annual firm rankings based on continuous characteristics believed to capture good governance and dummy variables that contain firm level information about individual governance features.

Blockholder monitoring is expected to be more intense in the presence of institutional blockholders with large holdings in the firm[3], public pension funds, which are believed to be more active monitors (see, e.g., Cremers and Nair, 2005), and low investor coordination costs (concentrated institutional ownership and a limited number of institutional blockholders).

Board monitoring quality is expected to increase with the independence of directors and decrease with the presence of employee directors, decrease with board size (Yermack, 1996) and the presence of the CEO on the key committees (see, e.g., Shivdasani and Yermack, 1999), and increase with the frequency of board meetings.

Certain CEO characteristics can affect the degree of alignment of the manager and shareholder interests. Longer CEO tenure in the firm increases the level of managerial

[3] Amihud and Li (2002) argue that a lower degree of information asymmetry between management and institutional owners is the underlying reason for the negative relation between institutional ownership and dividend payout.

influence over the board. CEO age could be associated with a shorter horizon of the manager in the firm and potential misalignment with the shareholder interests.

External Governance is based on the Gompers, Ishii, and Metrick (2003) and Investor Responsibility Research Center (IRRC) G index data. Managers in firms with fewer takeover defenses are more exposed to the corporate control market. Takeover defense provisions reflect the distribution of bargaining power between shareholders and the management as well as the difficulty of independent oversight of the CEO's decisions. Firm rankings based on the G index are rescaled such that higher values correspond to better governance.

Finally, the presence of dual class shares exacerbates the separation of control and cash flow rights of the manager. The dual class data is based on Gompers, Ishii, and Metrick (2005) for 1994-2002 and IRRC for the remaining years. The variable takes on 1 if the firm has a single class of shares. The Appendix provides a more detailed description of the governance variables.

The Alignment and Governance Index combines the five described variables into an aggregate measure of managerial alignment and monitoring quality. The alternative definition of the AGI that uses rescaled values of the continuous variables rather than annual firm rankings does not change the main results. As a further robustness check, governance factors constructed based on the factor analysis of the underlying firm characteristics replace the equally-weighted AGI measure. Factors based on the Institutional Shareholder Services (ISS) Corporate Governance Quotient provisions supplement the analysis. Alternative approaches to the construction of governance measures produce consistent results. Firm characteristics that continue to be significant determinants of dividend behavior are qualitatively similar to the five variables above.

Differences in dividend behavior between firms in the top quartile and firms in the bottom quartile of AGI are illustrated in Fig. 1-2.

[Fig. 1-2]

Control variables

Besides corporate governance, an important determinant of dividends is the strength of ownership incentives. Fenn and Liang (2001) find that managerial ownership is positively associated with payout in firms with high agency costs whereas stock option compensation is negatively associated with dividends. Execucomp contains data on CEO ownership stakes and CEO stock option holdings. Dividend choice is also conditional on the availability of cash flow and investment opportunities, which reflects the extent of the free cash flow problem. Firm size is expected to have a positive effect on dividends (Fama and French, 2001). Higher risk (cash flow volatility) is expected to decrease dividends (Hoberg and Prabhala, 2005; Jagannathan, Stephens, and Weisbach, 2000). Other controls include information asymmetry (log of the number of one-year-ahead analyst earnings forecasts), firm liquidity (bid-ask spread), and industry conditions (change in median industry dividend).

Table 1 reports descriptive statistics and correlations for the main variables.

[Table 1]

Endogeneity of governance quality

Differently from prior work on dividends, this paper recognizes and attempts to address the potential endogeneity of governance quality and dividend decisions. Dividends and governance constitute alternative ways of preventing inefficient investment. The optimal mix of dividends and governance could depend on the relative costs of setting up incentive and monitoring mechanisms versus having persistent dividend payments. Related work examines the causal link between managerial ownership, governance, and performance (see,

e.g., Himmelberg, Hubbard, and Palia, 1999; Palia, 2001; Brick, Palia, and Wang, 2005; Chidambaran, Palia, and Zheng, 2006; Core, Guay, and Rusticus, 2006). Hermalin and Weisbach (1998) provide an analytical argument regarding the endogeneity of boards.

Instrumental variables

The simultaneous determination of dividends and governance results in inconsistent Ordinary Least Squares (OLS) estimates. Main analyses use instrumental variables (IV) to address this issue[4]. First stage equations regress governance and CEO ownership on instruments and controls. The second stage equation predicts dividend behavior with controls and instrumented variables. A good instrument predicts corporate governance but does not directly affect dividend changes. Firm governance mechanisms are expected to arise under the influence of industry governance practices, legal environment, initial conditions at the time of entry, market wide and investor level demand for governance quality, and the nature of the industry in which the firm operates.

Governance practices in the industry influence the manager's ability to resist monitoring. Industry level governance characteristics are unlikely to be directly related to incremental dividend decisions of individual firms. However, industry practices offer a certain standard of governance quality and monitoring, to which shareholders can benchmark firm level governance.

State antitakeover laws are another exogenous determinant of governance quality. State laws, like industry governance practices, influence firm level governance. I use data on six types of laws during the sample period (business combination, control share acquisition,

[4] As an aside, If instruments satisfy excludability and relevance conditions, IV estimates are consistent but inefficient. OLS estimates are more efficient and are preferred if governance is exogenous. The auxiliary regression version of the Durbin-Wu-Hausman test (see Davidson and MacKinnon, 1993; Hausman, 1978) and the difference of Hansen-Sargan statistics (C statistic; Baum, Schaffer, Stillman, 2003) test the exogeneity of governance. Probit model tests follow Rivers and Vuong (1988). Also note that Grinstein and Michaely (2005) employ VAR methodology to analyze institutional ownership and payout policy, but the scope of the present paper extends to governance and managerial alignment more generally.

fair price, cash out, director's duties, antigreenmail - recapture of profits). The presence of antitakeover laws makes it costlier for shareholders to set up and maintain strong external governance at the firm level. At the same time, shareholders could find it optimal to implement stronger internal governance mechanisms when the corporate control market is relatively less effective.

Initial conditions in the year of the firm's entry impact initial governance quality. Governance mechanisms evolve slowly over time, making entry-year determinants of governance reasonably good predictors of today's governance. One such determinant is the extent of takeover market activity measured as the fraction of firms delisted due to M&As in the first year that the firm appeared in the CRSP database. Unlike the year of entry (firm age), the variable is unlikely to affect contemporaneous dividend changes but is likely to influence initial firm charter provisions and the level of monitoring.

Shareholder demand for governance quality is another potential predictor of the intensity of monitoring but not dividend changes. The governance premium is the industry level asset-weighted market-to-book premium for the strong governance subsample relative to the weak governance subsample (AGI below the sample median). The governance premium can be interpreted similarly to the Baker and Wurgler (2004) dividend premium. Since shareholder demand for good corporate governance is measured at the industry level, it is likely to affect governance without directly influencing firm level dividend changes.

Further, from the perspective of an institutional investor, pre-existing portfolio structure (i.e. the structure of portfolio holdings excluding holdings in the sample firm) could affect the amount of monitoring and attention the investor wants to commit to an individual firm. Investors with more concentrated portfolio holdings could demand and enforce better governance whereas distracted investors with dispersed ownership could sell shares in

response to suboptimal managerial behavior. Prior concentration of portfolio holdings is averaged across investors with stakes in a given firm to compute this variable.

The optimal level of monitoring also depends on the importance of managerial discretion conditional on the nature of the industry. Limited observability of value-enhancing managerial effort in the technology sector decreases the efficiency of disciplining through the relatively less informed corporate control market and increases the importance of oversight by the more informed internal monitors (board of directors). Further, the importance of firm-specific managerial human capital can be sufficient to align the manager in the absence of additional incentives. The dummy for the technological nature of the industry equals 1 if the 2-digit SIC industry code is 28, 35, 36, or 36 (Griliches and Mairesse, 1984).

A natural experiment

The use of exogenous shocks to governance quality can help address causality concerns. The adoption of second-generation antitakeover laws and the Sarbanes-Oxley Act of 2002 are natural experiments that can identify the effect of governance quality on dividend behavior. A number of states adopted business combination, control share acquisition, and fair price laws in the 1980s and early 1990s (Bertrand and Mullainathan, 2003). In a relatively more hostile takeover market, the passage of antitakeover laws is equivalent to a decrease in governance. The event represents an exogenous shock to the governance of firms incorporated in that state. The addition of antitakeover laws should lead to dividend increases. The passage of the Sarbanes-Oxley Act of 2002 and stock exchange governance rules can be viewed as another exogenous shock to governance quality (see, e.g., Grinstein and Chhaochharia, 2005). Differently from antitakeover laws, these changes could have a positive effect on governance and lead to lower dividends and more significant dividend cuts.

Additional causality checks

Additional tests of the hypotheses include firm effects on the right hand side to control for endogeneity related to unobservable firm level heterogeneity. Another test implemented to check the direction of causality in the relation of dividend behavior and governance substitutes lagged governance quality and changes in governance quality for the level of governance. Further, a simultaneous equations model estimates the effect of governance on dividend changes as well as the effect of dividend changes on governance and alignment.

Selection bias

Dividend continuation decisions are examined in the sample of past dividend payers. Such non-random assignment of firms to the sample introduces a potential selection bias. Determinants of being a past dividend payer can be correlated with higher dividend changes. I use a selection model to account for this bias. The selection equation includes controls from the main equation (with log of lagged net sales as a proxy for size), growth in net sales, industry share of firms with a positive lagged dividend, industry median lagged dividend, the dummy for having a positive dividend in the first year in the sample since 1980, industry dividend premium (based on Baker and Wurgler, 2004), technology industry dummy, and the index of state antitakeover laws (IRRC).

III. Results

The first set of results uses the Lintner (1956), Fama and Babiak (1968), and Brav, Graham, Harvey, and Michaely (2005) partial adjustment framework to examine differences in dividend smoothing. The dependent variable, dividend minus lagged dividend, is regressed on lagged dividend and controls. Higher coefficients on lagged dividend reflect a higher level of dividend smoothing. The interaction term of past dividend and governance quality captures the effect of corporate governance on dividend smoothing and enters with a

significant negative coefficient. Numerically, past dividends on average have a 0.97 effect on contemporaneous dividends, holding other factors constant. The degree of persistence approaches 0.90 for firms with the best governance quality. An increase in AGI by 0.10 (one standard deviation) decreases the degree of dividend persistence by approximately 0.02.

[Table 2]

Firms with better governance exhibit less dividend smoothing. Managers in firms with strong board and blockholder monitoring have the lowest propensity to uphold the implicit dividend commitment. (Note that statistics in Columns I and II do not reject the null hypothesis of exogeneity of suspected variables - AGI, CEO ownership, interaction terms.) Columns III and IV report selection model results that account for the self-selection of dividend payers. The selection bias is significant, suggesting that past dividend payers possess characteristics associated with higher dividends. The interaction terms of interest continue to enter with negative signs. The findings in Table 2 support the prediction that weakly governed managers have more persistent dividends.

The dividend change regressions evaluate the effect of governance quality on the magnitude and direction of dividend adjustments. Corporate governance has a negative effect on changes in the dividend level, which is consistent with larger cuts and/or lower increases by better governed managers. Qualitatively, managers in better governed firms tend to reduce the extent of their dividend commitment. The most significant effects are associated with board structure, blockholder monitoring, CEO alignment characteristics, and the presence of a single class of shares. The corporate control market has become less hostile over time. In addition, it is a potentially noisier monitoring mechanism focused on firm level and not necessarily managerial underperformance.

[Table 3]

Columns III and IV report selection model estimates. Similarly to the dividend smoothing results, there is evidence of a significant selection bias, however, the main governance coefficients continue to be negative and significant. Since the tests of suspected variables strongly reject exogeneity (reported in Columns I and II), Columns V and VI also present instrumental variables estimates[5], producing a -0.69 effect of AGI on dividend changes. An increase in governance quality by one standard deviation (0.10) lowers the dividend change by approximately 7%. Overall, weak governance quality has the hypothesized effect of increasing the extent of commitment in dividend behavior.

The analysis of changes in the dividend level in Table 3 does not distinguish between the effects of dividend cuts and dividend increases. In the full sample, dividend increases tend to be more frequent but have a smaller magnitude than dividend cuts, so it is not clear which of the two effects drives the result. Panel A of Table 4 reports the effect of governance on the direction of dividend changes.

[Table 4, Panel A]

Better governed managers are more likely to announce dividend cuts and omissions (Columns I and II). The result is concentrated in firms with strong boards, concentrated blockholders, and aligned CEOs. In addition, better governed managers are significantly less likely to raise dividends (Columns III and IV). These results provide a more accurate picture of the time series properties of dividends conditional on governance quality. Observable governance weaknesses prompt managers to follow an upward-sloping smooth dividend path while strong governance and managerial alignment allow for more dividend variability, primarily due to more frequent downward adjustments.

[5] The instrument set satisfies validity conditions. The Hansen-Sargan statistic does not reject instrument excludability. First stage statistics (the Anderson canonical correlation likelihood ratio test and the Cragg-Donald test) support the relevance of instruments. Tests of overidentifying restrictions involving individual instruments do not reject exogeneity (not reported due to space constraints).

The effect of governance quality on dividend changes depending on the type of the shock to cash flow or investment opportunities is examined in Panel B of Table 4.

[Table 4, Panel B]

The percentage change in ROA and market-to-book ratio are observable proxies for the changing extent of the free cash flow problem. The governance effect is concentrated in the subsamples with large increases in cash flow (Columns I-II), cash flow increases that are not reversed next period (Columns III-IV), and large decreases in market-to-book (Columns V-VI). Weakly governed managers increase dividends only when shareholder pressure is unavoidable. They primarily respond to large cash flow increases more likely to draw shareholder attention and ignore small or temporary positive cash flow shocks.

Since weakly governed managers also face more shareholder pressure to uphold the higher dividend, they adjust the dividend to a level that can be sustained in the future without costly cuts and tend to be more conservative with respect to the magnitude of increases. Incremental adjustments make the new dividend level easier to sustain and limit expected future penalties for dividend cuts. Multinomial logit is used to estimate the likelihood of different types of dividend changes (no increase, moderate increase, substantial increase). While weakly governed managers are more likely to raise dividends, they avoid substantial increases and prefer small or moderate dividend increases (Columns VII-VIII).

The analysis has so far focused on dynamic dividend behavior. Recent evidence (e.g., Grullon and Michaely, 2002) suggests that share repurchases may act as substitutes for disappearing dividends. One of the implications is the negative effect of governance quality on total payout persistence and changes.

[Table 5]

Governance quality has a negative effect on the persistence of overall cash distributions and on changes in total payout (Columns I and II). I next ask whether repurchase changes are treated the same way as dividend changes when managers implement payout adjustments. If changes in dividends and repurchases are perfect substitutes, governance quality should not have a systematic effect on the choice of dividends over repurchases when payout is changed in a given direction. The results are inconsistent with perfect substitutability. Weakly governed managers cut corporate payout through repurchases but use dividend increases for additional payouts (Columns III-IV).

Debt can serve as an alternative method of constraining misaligned managers.

[Table 6]

Columns I through V report instrumental variables estimates of the effects of debt and governance on dividend changes. Debt and interest payments have a negative effect on dividend changes. Debt and dividends serve as partial substitutes. Column VI examines changes in the total payments committed to external claimholders - dividends paid to shareholders plus interest paid to debtholders. Strong corporate governance has a negative effect on changes in total commitment, suggesting that the effect of governance on dynamic features of dividends partly extends to overall managerial commitment.

A natural experiment: exogenous shocks to governance quality

Tests of the effect of governance on dynamic dividend behavior relied on instrumental variables methodology. An alternative approach to dealing with endogeneity is a natural experiment that uses an exogenous shock to identify the governance effect. A relevant natural experiment in this context is the passage of state antitakeover laws. During the 1980s period of relatively more hostile M&A activity, a number of states passed antitakeover statutes to impede unfriendly takeovers, which weakened monitoring of the manager. The

years of passage of the business combination, control share acquisition, and fair price laws by state are found in Bertrand and Mullainathan (2003). The advantage of using state antitakeover laws is that some but not all states passed these laws (over a span of several years), which generates the samples of firms affected and unaffected by these laws. The state antitakeover statutes materially affect monitoring of the CEO. The threat of a control challenge following poor performance can effectively deter managers from engaging in empire-building projects. Following the passage of antitakeover statutes, the level of corporate control market activity, in particular, the incidence of hostile takeover attempts, has decreased significantly. Finally, the advantage of the data on state laws is comparability of provisions across states and comparability with provisions in the external governance measure used previously (business combination, fair price, control share acquisition).

The prediction that dividend changes are negatively related to governance quality is confirmed in Columns I-III. The passage of antitakeover laws has a significant and positive effect on dividend changes. The passage of an antitakeover statute has the effect of a 12% dividend increase over a [-1,+1] window. Firms in states affected by an antitakeover statutes have made 5% higher dividend changes over the 1983-1991 period.

[Table 7]

The second exogenous shock involves changes in governance around the adoption of the Sarbanes-Oxley Act of 2002 and stock exchange governance rules, which focused, in particular, on independent director majority and independence of key committees on the board. The exogenous component of changes in governance around the passage of Sarbanes-Oxley can be used to identify firm level governance effects (Chhaochharia and Grinstein, 2006). In Columns IV and V, dividend levels and dividend changes are decreasing in changes in firm level governance around the shock. Dividends have decreased more after the reform

for firms that previously did not have an independent director majority on the board and for firms that did not have an independent director majority earlier but have acquired it since (see Columns VI and VII).

Additional causality checks

The main tests used instrumental variables to account for the potential endogeneity of corporate governance. The next test includes firm effects to mitigate endogeneity concerns by controlling for unobserved firm level heterogeneity.

[Table 8]

Fixed effects regressions of dividend changes corroborate the results obtained earlier (Column I). Instrumental variables regressions adjust for the potential feedback effect of dividends and produce consistent estimates of the effect of governance on dividend behavior. Two stage least squares (2SLS) regressions examine the effect of dividends on governance as well as the effect of governance on dividends. Governance has a negative effect on dividend changes, but there is no evidence that dividend changes significantly affect governance after the two effects are properly identified (Column III). Additional causality checks predict dividend changes using lags of governance and changes in governance instead of levels of governance. Past governance quality and changes in governance have a negative effect on dividend changes even after controlling for lagged dividend changes (Columns IV and V).

Corporate governance and dividend behavior: interaction effects

The next table explores the sensitivity of the effect of corporate governance on dividend changes to various firm and industry characteristics.

[Table 9]

The effect of cash flow changes on dividend changes is strongest in cases of poor corporate governance (Column I). Corporate governance is most important for the dividend

behavior of firms with substantial free cash flow (Column II). Weakly governed managers face more pressure to continue dividends after periods of poor performance (Column IV-V) and in industries with a high dividend premium (Column VI). Further, the corporate governance effect is strongest in equity-dependent industries (Column III), which supports the equity market rationale for the dividend behavior of weakly governed managers. Managers more likely to have to raise equity in the future face a greater need to mitigate corporate governance failures with a dividend policy.

Robustness: alternative governance measures, controls, and sample selection criteria

The link between governance and dividend changes is potentially nonlinear. We compare the effects of AGI above and below the median and find that both coefficients are negative, significant, and similar in magnitude, which fails to provide evidence of nonlinearity (Column I of Table 10, Panel A). Optimal governance standards are likely to vary across industries due to differences in investment opportunities and cost of disciplining. Industry-adjusted AGI captures deviations from the governance quality of same-industry counterparts. The effect remains negative and significant (Column II). The AGI measure relies on firm rankings based on different governance characteristics. An alternative version of the index (Absolute AGI) that uses rescaled values of continuous governance variables instead of rankings yields very similar results: a one standard deviation increase in governance (0.07) lowers dividend changes by 9%, ceteris paribus (Column III).

[Table 10, Panel A]

The governance measures assign equal weights to component characteristics. I use factor analysis of the governance characteristics to check the reliability of the equally-weighted measure. The underlying governance are highly correlated with Cronbach's alpha of 0.74, so factor analysis can be useful. Seven factors with eigenvalues in excess of one

cumulatively explain 86.6% of the variation in the underlying characteristics. Governance factors that enter significantly in the dividend regression are qualitatively similar to the governance indexes in the main analyses. Based on the factor loadings, these factors proxy for the presence of concentrated blockholders, coordination costs of blockholders and board members, separation of ownership and control in dual class firms, board independence, and CEO alignment (Column IV). We also construct factors from the provisions of the Institutional Shareholder Services (ISS) Corporate Governance Quotient dataset (Column V). The results are consistent with earlier findings.

Several other factors affect the costs and benefits of dividends.

[Table 10, Panel B]

Following DeAngelo, DeAngelo, and Stulz (2006), I control for the share of retained earnings in assets to capture the effect of life cycle on dividend behavior. I also include of dummies for the year of entry, the share of tangible assets, stock performance, and bond rating. The governance result continues to hold (Column I). The main analyses have measured dividends as the annual sum of ordinary quarterly regular cash dividends. Alternative dependent variable definitions (change in cash dividends scaled by lagged market value of the firm; change in dividends per share scaled by lagged price) do not affect the result (Columns II-IV). The result continues to hold when firms with zero lagged dividend are included in addition to dividend paying firms (Columns IV-VI).

Stock market reaction to dividend changes

An event study of dividend changes confirms the differences in shareholder reaction to dividend decisions of weakly governed and strongly governed managers. Consistent with the preceding analysis and evidence in Officer (2007), the market responds more strongly to dividend changes by weakly governed managers. Since the dividend constraint is more

important for preventing suboptimal managerial behavior when governance is weak, dividend decisions have a larger effect on shareholder wealth. The event study results have implications for poorly governed managers' dividend choices. Changes in the stock price influence the value of incentive compensation while a significant drop in the stock price can also make the firm more vulnerable to a takeover.

[Table 11]

IV. Conclusion

On average dividends tend to be sticky and change little over time, but systematic evidence on the underlying causes of such dividend behavior is limited and considerable firm differences in dynamic patterns in dividends remain. This paper has proposed a corporate governance view of time series properties of dividends and provided new evidence of firm differences in dividend smoothing and incremental dividend and payout decisions.

Weakly governed managers face a tradeoff between flexibility gains and expected shareholder reaction to the dividend decisions. Shareholders rationally expect inefficient investment by weakly governed managers in the absence of additional constraints such as dividends and can respond more adversely to observable managerial deviations from the dividend policy (e.g., by selling shares and providing less equity financing or attempting to impose additional scrutiny if the deviation is substantial). Consequently, weakly governed managers are overall more likely to honor the implicit dividend commitment. Besides maintaining a persistent non-decreasing dividend path, they are expected to increase dividends more in response to positive cash flow changes.

I find that weakly governed managers engage in more dividend smoothing, have lower dividend variability, and fewer dividend cuts. Governance quality has a negative effect on changes in the level of dividends. Besides making fewer cuts, weakly governed managers

undertake more dividend increases. When deciding on the magnitude of a dividend increase, such managers balance the need to meet shareholder expectations and set a sustainable dividend level. They focus on large cash flow shocks and avoid substantial one-time dividend increases. The pressure to sustain the dividend commitment affects overall payout adjustments made by weakly governed managers.

Differently from related work on dividends and incentives, the empirical analyses have corrected for potential endogeneity and selection issues. The main conclusions rely on instrumental variables and a natural experiment resulting from the adoption of legal changes in the governance environment of the firm. Notably, the decrease in monitoring owing to the passage of a second-generation state antitakeover statute has the effect of a positive 12% dividend change.

Weak governance also has a positive effect on changes in total payout (dividends and repurchases) and on total payout smoothing. However, dividend and repurchase changes are not perfect substitutes. Weakly governed managers cut payouts through decreases in repurchases and distribute additional cash through higher dividends. Changes in total payments committed to shareholders and debtholders are decreasing in governance. Dividends and debt act as partial substitutes in the dynamic context. In other findings, the strongest effects are due to board and blockholder monitoring, CEO alignment characteristics, and the separation of ownership and control in dual class firms. Weakly governed managers pass through a higher fraction of cash flow changes to dividend changes. The effect of corporate governance on dividends is strongest for high free cash flow, poorly performing, and equity dependent firms.

Several issues are open for future research. One issue is the effect of dividend smoothing on the signaling power of dividends. The other issue is joint determination of

dividend and earnings smoothing. Leuz, Nanda, and Wysocki (2003) find more earnings management in weak legal environments. Fudenberg and Tirole (1995) theoretically link dividend and earnings smoothing decisions. The third issue is the effect of cross-country differences on dynamic dividend behavior. This paper has focused on US firms. It is possible that in countries with poor investor protections (as in La Porta et al., 2000) insiders discount adverse shareholder reaction more. Further, the change in the cost of capital would be less consequential in countries with less developed stock markets, in which firms rely on delegated bank monitoring, trade credit, or internal funds to finance investments.

Appendix. Construction of governance variables and instruments

Alignment and governance variables

Board Monitoring index assigns equal weights to the annual firm rankings based on board independence (high fraction of independent directors and low fraction of employee directors on the board; source: IRRC Directors[a]), annual firm ranking based on board size (low board size; source: IRRC Directors[a]), key committees (dummies for the absence of the CEO from the nominating, compensation, governance, and audit committees; source: IRRC Directors[a]), annual firm ranking based on the frequency of board meetings (source: Execucomp).

Blockholders index assigns equal weights to the presence of a blockholder (dummies for the presence of a 5% public pension fund blockholder and a 5% institutional blockholder), annual firm rankings based on the largest institutional investor stake (largest institutional owner stake, largest 'other (type 5) institutional investor' stake, largest public pension fund stake), annual firm rankings based on the concentration of holdings (concentration of 5% institutional blockholdings and concentration of all institutional holdings), annual firm rankings based on the number of institutional owners (low number of public pension fund owners, low number of institutional owners). Source: Thomson Financial 13f filings. Public pension funds are identified using the list in Cremers and Nair (2005) (also, Missouri State Employees Retirement System, Pennsylvania Public School Employees' Retirement System).

CEO Characteristics index assigns equal weights to annual firm rankings based on the following variables: CEO age (source: IRRC Directors[a]) and CEO tenure in the firm (source: Execucomp). Rankings are rescaled to [0,1] such that higher values reflect shorter CEO age and tenure.

External Governance is the annual firm ranking based on the Gompers, Ishii, and Metrick (2003) G index, rescaled to [0,1] such that higher values reflect the presence of fewer antitakeover provisions. Source: IRRC Governance[b].

Single Class of Shares is the dummy variable equal to 1 if the firm has one class of shares; 0 if the firm has dual classes of shares. Source: 1994-2002 - Gompers, Ishii, and Metrick (2005); 1993, 2003, 2004 - IRRC Governance[b].

Alignment and Governance Index (AGI) assigns equal weights to Board Monitoring, Blockholders, CEO Characteristics, External Governance, Single Class of Shares.

The statistics below are based on the sample of dividend and zero dividend firms (9854 obs.). All correlations are significant at the 5% level.

	Underlying governance characteristics	Corr. w/AGI	Mean	Median	SD
Board Monitoring		0.402	0.590	0.592	0.121
a. Independence	Fraction of independent directors on the board	0.053	0.633	0.667	0.178
	Fraction of employee directors on the board	-0.037	0.215	0.182	0.115
b. Size	Board size (log)	-0.438	2.206	2.197	0.278
c. Committees	CEO not on nominating committee	0.058	0.925	1.000	0.264
	CEO not on compensation committee	0.026	0.983	1.000	0.129
	CEO not on governance committee	0.060	0.977	1.000	0.151
	CEO not on audit committee	0.027	0.991	1.000	0.094
d. Meetings	Number of board meetings (log)	0.149	1.895	1.946	0.354
Blockholders		0.427	0.477	0.499	0.188
a. Presence	Public pension fund blockholder (at 5% or higher)	0.301	0.047	0.048	0.027
	Institutional blockholder (at 5% or higher)	0.280	0.824	1.000	0.337
b. Largest stake	Largest institutional owner stake	0.259	8.975	8.488	4.079
	Largest 'other (type 5) institutional investor' stake	0.144	5.678	4.794	4.649
	Largest public pension fund stake	0.151	1.206	0.783	1.388
c. Concentration	Concentration of all institutional holdings	0.311	0.057	0.049	0.035
	Concentration of 5% institutional blockholdings	0.336	0.051	0.046	0.038
d. Number	The number of public pension fund owners (log)	-0.292	1.993	2.169	0.553
	The number of institutional owners (log)	-0.354	5.000	4.956	0.723
CEO Characteristics		0.514	0.525	0.539	0.232
a. Age	CEO age (log)	-0.447	3.998	4.007	0.131
b. Tenure	CEO tenure (log)	-0.364	1.527	1.609	1.007
External Governance		0.508	0.450	0.439	0.290
	Gompers, Ishii, and Metrick (2003) G Index	-0.497	9.328	9.000	2.710
Single Class of Shares		0.449	0.932	1.000	0.252

[a] – IRRC Directors incorrectly assigns the CEO title for some directors (e.g. non-CEO directors with a CEO position in another firm). Where the name of a director's primary employer was available, the accuracy of the matching of the CEO flag to director id was checked manually. Data is available for 1996-2004; data for 1993-1995 was filled in using 1996 data.

[b] – Data is available for 1993, 1995, 1998, 2000, 20002, 2004; data for gap years was filled in using (average) data from adjacent years.

Instruments

1. Instruments for Alignment and Governance Index (AGI) and CEO Ownership:

State Laws – the index that assigns 1 for the presence of each of the following state antitakeover laws: business combination law; control share acquisition law; cash out law; fair price law; director's duties law; antigreenmail (recapture of profits) law; firms are ranked based on the index in a given year; the variable is rescaled to [0,1] such that higher values reflect the presence of fewer antitakeover laws.

Industry Governance Practices – industry state median of the internal governance index that assigns equal weights to Board Monitoring, Blockholders, and CEO Characteristics.

Year of Entry Takeover Market Activity – proportion of CRSP firms delisted due to mergers and acquisitions in the year that the firm first appeared in the CRSP database.

Technology Industry Dummy – dummy equal to 1 if the firm belongs to the two-digit SIC codes 28, 35, 36, 38 (following Griliches and Mairesse [1984]); 0 otherwise.

Blockholder Portfolio Structure – concentration of portfolio holdings (excluding holdings of the sample firm) of an average institutional blockholder with a stake in the firm; concentration of holdings is measured using the Herfindahl index; equally weighted average over blockholders with a stake in the firm is used; a blockholder is an institutional investor with a 5% or higher stake in the firm.

Governance Premium – market premium for governance quality defined as the difference of the log of asset-weighted average market-to-book ratio of firms with AGI above and below the sample median (computed at the three-digit SIC level; two-digit SIC level if not available; one-digit SIC industry level if not available). The variable is related to the dividend premium used in Baker and Wurgler (2004).

2. Instruments for the full set of alignment and governance variables (Board Monitoring, Blockholders, CEO Characteristics, External Governance, Single Class of Shares) and CEO Ownership

See pt1. *Industry Governance Practices* are captured by median Board Monitoring, Blockholders, and CEO Characteristics, and proportion of single-class firms in the sample, defined at the industry state level.

3. Instruments for the interaction terms of governance and lagged dividend

Industry Median Lagged Dividend, Dividend Premium (following Baker and Wurgler, 2004), Governance Premium, Year of Entry Takeover Market Activity, Technology Industry Dummy, Industry Governance Practices, State Laws

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Fig. 1. Direction of dividend changes and governance quality

Percentage of observations that experienced a dividend increase, no change in dividend level, and a dividend decrease. "Worst Governance" subsample includes observations in the bottom quartile of the Alignment and Governance Index (AGI) - AGI below 0.51 (1,392 obs.). "Best Governance" subsample includes observations in the top quartile of the AGI - AGI above 0.63 (1,391 obs.). Dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. The AGI is defined in the Appendix.

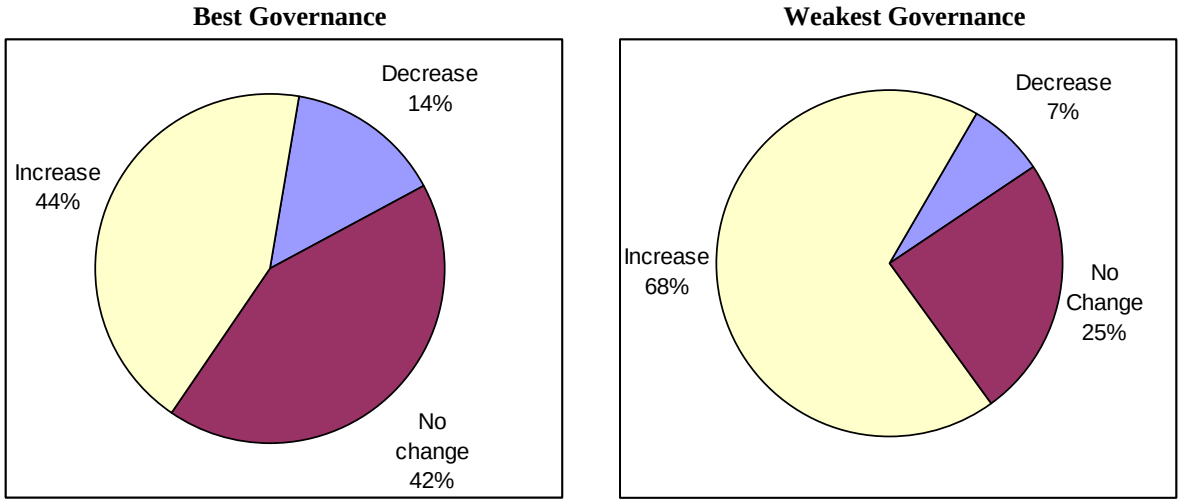

Fig. 2. Governance quality and change in dividend level over time

Average dividend level (of firms with past positive dividend) in subsamples of firms with different governance quality. "Worst Governance" subsample includes observations in the bottom quartile of the Alignment and Governance Index (AGI) - AGI below 0.51 (1,392 obs.). "Best Governance" subsample includes observations in the top quartile of the AGI - AGI above 0.63 (1,391 obs.). Dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. The AGI is defined in the Appendix.

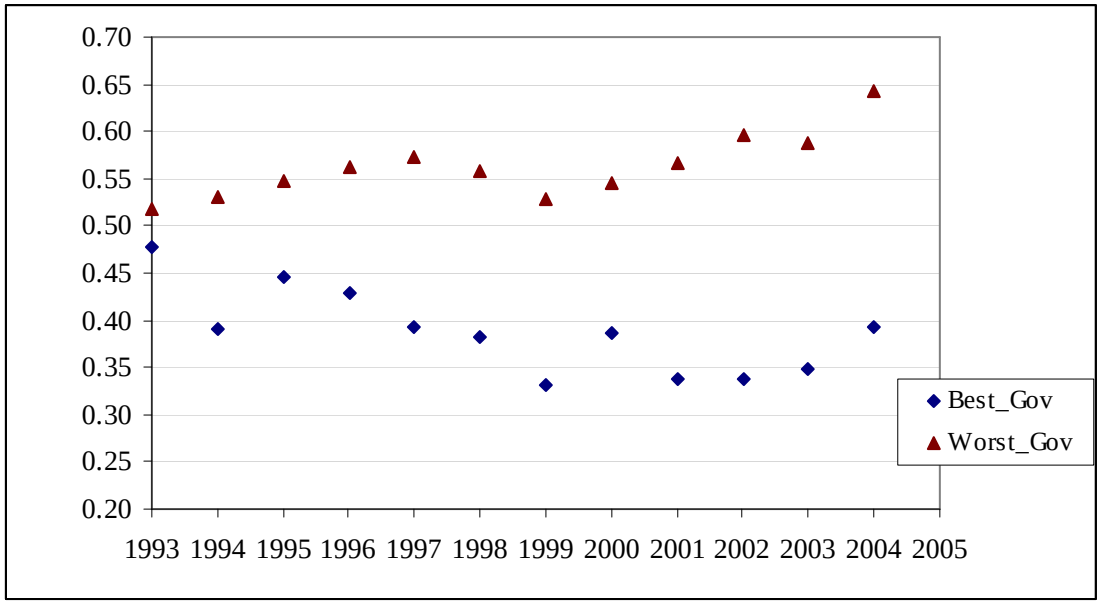

Table 1. Descriptive statistics and correlations

Panel A. Descriptive statistics

Descriptive statistics of the main variables. The following main dependent variables are used: Div. Difference (current dividend minus lagged dividend), Div Change (current dividend minus lagged dividend, scaled by lagged dividend), D_Increase (dummy equal to 1 if Div Change is positive; 0 otherwise), D_Decrease (dummy equal to 1 if Div Change is negative; 0 otherwise), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables - Alignment and Governance Index (AGI), Board Monitoring; Blockholders, CEO Characteristics, External Governance, Single Class of Shares - are defined in the Appendix. The following controls are used: CEO Ownership (ratio of shares owned by the CEO to common shares outstanding; Execucomp), Cash Flow (ratio of EBITDA to lagged total assets), Asset Size (log of lagged total assets), Market-to-Book (ratio of firm market value - market value of common equity minus book value of common equity plus book value of total assets - to book value of total assets), Cash Flow Volatility (log of the standard deviation of income before extraordinary items based on up to twelve quarters of data), Analyst Following (log of the number of one-year-ahead analyst earnings forecasts; I/B/E/S), CEO Stock Options (percentage of stock option holdings of the CEO to common shares outstanding; Execucomp), Firm Taxes (ratio of income taxes to pretax income), Liquidity (log of the annual average bid-ask spread; CRSP). The sample is based on Compustat Industrial Annual (1993-2004), excluding firms with total assets less than 20 mln., financials (SIC codes 6000-6999) and regulated utilities (SIC codes 4949-4999), resulting in 5564 obs.

	Mean	Median	Std. Dev.
Div. Difference	0.013	0.010	0.090
Div Change	0.050	0.030	0.310
D_Increase	0.559	1.000	0.497
D_Decrease	0.094	0.000	0.292
AGI	0.563	0.566	0.096
Board Monitoring	0.578	0.582	0.117
Blockholders	0.440	0.461	0.194
CEO Characteristics	0.511	0.523	0.230
External Governance	0.370	0.315	0.280
Single Class of Shares	0.916	1.000	0.276
CEO Ownership	0.018	0.002	0.048
Cash Flow	0.177	0.167	0.092
Asset Size	7.695	7.536	1.469
Market-to-Book	1.885	1.567	1.092
Cash Flow Volatility	-1.577	-1.676	1.535
Analyst Following	2.219	2.359	0.839
CEO Stock Options	0.918	0.609	1.028
Firm Taxes	0.360	0.362	1.682
Liquidity	-1.827	-1.917	0.591

Panel B. Correlations

Pairwise correlations of the main variables. The following main dependent variables are used: Div. Difference (current dividend minus lagged dividend), Div Change (current dividend minus lagged dividend, scaled by lagged dividend), D_Increase (dummy equal to 1 if Div Change is positive; 0 otherwise), D_Decrease (dummy equal to 1 if Div Change is negative; 0 otherwise), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables - Alignment and Governance Index (AGI), Board Monitoring; Blockholders, CEO Characteristics, External Governance, Single Class of Shares - are defined in the Appendix. The following controls are used: CEO Ownership (ratio of shares owned by the CEO to common shares outstanding; Execucomp), Cash Flow (ratio of EBITDA to lagged total assets), Asset Size (log of lagged total assets), Market-to-Book (ratio of firm market value - market value of common equity minus book value of common equity plus book value of total assets - to book value of total assets), Cash Flow Volatility (log of the standard deviation of income before extraordinary items based on up to twelve quarters of data), Analyst Following (log of the number of one-year-ahead analyst earnings forecasts; I/B/E/S), CEO Stock Options (percentage of stock option holdings of the CEO to common shares outstanding; Execucomp), Firm Taxes (ratio of income taxes to pretax income), Liquidity (log of the annual average bid-ask spread; CRSP). The sample is based on Compustat Industrial Annual (1993-2004), excluding firms with total assets less than 20 mln., financials (SIC codes 6000-6999) and regulated utilities (SIC codes 4949-4999), resulting in 5564 obs. Correlations significant at 5% are underlined.

	Div. Difference	Div Change	D (Increase)	D (Decrease)	AGI	Board Monitoring	Blockholders	CEO Characteristics	External Governance	Single Class of Shares	CEO Ownership	Cash Flow	Asset Size	Market-to-Book	Cash Flow Volatility	Analyst Following	CEO Stock Options	Firm Taxes
Div Change	0.70																	
D_Increase	0.49	0.45																
D_Decrease	-0.67	-0.58	-0.36															
AGI	-0.10	-0.10	-0.19	0.10														
Board Monitoring	-0.07	-0.08	-0.15	0.08	0.38													
Blockholders	-0.17	-0.13	-0.28	0.12	0.38	0.05												
CEO Characteristics	-0.04	-0.07	-0.06	0.04	0.51	0.14	0.00											
External Governance	0.02	0.04	0.01	0.02	0.42	-0.10	0.05	-0.06										
Single Class of Shares	-0.01	-0.03	-0.04	0.01	0.47	0.18	-0.11	0.05	-0.23									
CEO Ownership	0.01	0.05	0.01	-0.02	-0.07	-0.18	0.15	-0.24	0.18	-0.13								
Cash Flow	0.22	0.22	0.29	-0.17	-0.06	-0.06	-0.23	0.02	0.05	0.02	0.04							
Asset Size	0.10	0.03	0.10	-0.05	-0.23	0.05	-0.62	0.02	-0.07	0.08	-0.24	-0.12						
Market-to-Book	0.14	0.14	0.25	-0.07	-0.08	-0.03	-0.31	0.03	0.07	0.00	0.02	0.64	0.03					
Cash Flow Volatility	0.05	-0.01	0.06	0.00	-0.17	0.11	-0.56	0.03	-0.05	0.07	-0.19	-0.02	0.85	0.14				
Analyst Following	0.15	0.11	0.17	-0.10	-0.20	0.04	-0.61	0.02	-0.06	0.11	-0.21	0.17	0.68	0.26	0.66			
CEO Stock Options	-0.10	-0.06	-0.18	0.07	0.08	0.06	0.30	-0.09	-0.03	0.00	0.03	-0.11	-0.34	-0.14	-0.30	-0.35		
Firm Taxes	-0.01	0.00	0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	0.00	0.00	-0.01	0.02	-0.01	0.01	0.02	0.00	
Liquidity	-0.09	0.00	0.02	0.08	0.04	0.00	-0.04	-0.03	0.05	0.06	0.04	0.11	-0.03	0.14	0.07	0.10	0.04	0.00

Table 2. Dividend smoothing

OLS (Columns I-II) and full maximum likelihood selection (Columns III-IV) regressions of Div. Difference (current dividend minus lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables and instruments for governance, CEO Ownership, and interaction terms are described in the Appendix. Div_Lag is dividend level lagged one year. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. The selection equation uses controls from the main equation, log of lagged net sales (instead of Asset Size), growth in net sales, industry proportion of observations with a positive lagged dividend and industry median lagged dividend (instead of Industry Trend), dummy for having a positive dividend in the first year the firm was present in the sample (going back to 1980), industry dividend premium (following Baker and Wurgler, 2004), technology industry dummy (2-digit SIC codes 28, 35, 36, 38), index of state antitakeover laws (IRRC). Lambda is Inverse Mills Ratio from the selection model. Davidson-MacKinnon and difference-in-Sargan (C) statistics test the exogeneity of AGI, CEO Ownership, and the interaction terms. Robust t-(z-) statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	OLS				Selection Model			
	I		II		III		IV	
Div_Lag	0.067	**	0.082	**	0.066	**	0.082	**
	2.11		*2.03*		*2.12*		*2.06*	
Div_Lag*AGI	-0.165	***			-0.163	***		
	-2.97				*-2.96*			
Div_Lag*Board Monitoring			-0.064	**			-0.065	**
			-2.27				*-2.34*	
Div_Lag*Blockholders			-0.079	***			-0.077	***
			-3.81				*-3.76*	
Div_Lag*CEO Characteristics			-0.018				-0.017	
			-1.22				*-1.16*	
Div_Lag*External Governance			-0.007				-0.008	
			-0.50				*-0.55*	
Div_Lag*Single Class of Shares			-0.027				-0.026	
			-1.10				*-1.09*	
AGI	0.026		0.011		0.022		0.008	
	1.14		*0.45*		*0.98*		*0.33*	
CEO Ownership	0.064	*	0.055	*	0.060		0.052	*
	1.71		*1.75*		*1.63*		*1.68*	
Cash Flow	0.223	***	0.210	***	0.226	***	0.213	***
	8.70		*8.34*		*9.00*		*8.65*	
Asset Size	0.015	***	0.012	***	0.017	***	0.014	***
	6.14		*4.81*		*6.69*		*5.32*	
Market-to-Book	-0.002		-0.003	*	-0.002		-0.003	*
	-1.35		*-1.76*		*-1.46*		*-1.85*	
Cash Flow Volatility	-0.009	***	-0.009	***	-0.010	***	-0.009	***
	-4.77		*-4.59*		*-5.04*		*-4.85*	
Analyst Following	0.008	**	0.008	**	0.007	**	0.007	**
	2.55		*2.51*		*2.29*		*2.28*	
CEO Stock Options	-0.002		-0.001		-0.002		-0.002	
	-1.24		*-1.03*		*-1.64*		*-1.41*	
Firm Taxes	-0.001		-0.001		-0.001		-0.001	
	-0.58		*-0.59*		*-0.55*		*-0.56*	
Liquidity	-0.020	***	-0.020	***	-0.021	***	-0.021	***
	-6.66		*-6.64*		*-6.91*		*-6.89*	
Industry Trend	0.195	***	0.195	***	0.197	***	0.196	***
	6.40		*6.37*		*6.51*		*6.49*	
Lambda					0.011	***	0.010	***
Lambda (s.e.)					0.003		0.003	
Number of obs.	5564		5564		9851		9851	
R^2	0.16		0.17					
Adj. R^2	0.15		0.16					
Davidson-MacKinnon test	1.18		1.20					
C statistic	5.31		5.26					

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 3. Dividend changes

OLS (Columns I-II), full maximum likelihood selection (Columns III-IV), and instrumental variables (Columns V-VI) regressions of Div Change (current dividend minus lagged dividend, scaled by lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables and instruments for governance and CEO Ownership are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. The selection equation uses controls from the main equation, log of lagged net sales (instead of Asset Size), growth in net sales, industry proportion of observations with a positive lagged dividend and industry median lagged dividend (instead of Industry Trend), dummy for having a positive dividend in the first year the firm was present in the sample (going back to 1980), industry dividend premium (following Baker and Wurgler, 2004), technology industry dummy (2-digit SIC codes 28, 35, 36, 38), index of state antitakeover laws (IRRC). Lambda is Inverse Mills Ratio from the selection model. Davidson-MacKinnon and difference-in-Sargan (C) statistics test the exogeneity of governance and CEO Ownership. Hansen-Sargan statistic tests the exogeneity of instruments. Anderson-Rubin and Cragg-Donald statistics tests the irrelevance of instruments. Robust t-(z-) statistics (with clustering by firm) are in the parentheses.
The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

Div Change	OLS		OLS		Selection		Selection		Instrumental Variables			
	I		II		III		IV		V		VI	
AGI	-0.238	***			-0.249	***			-0.688	***		
	-4.64				*-4.99*				*-4.31*			
Board Monitoring			-0.077	**			-0.081	**			-0.182	**
			-1.97				*-2.11*				*-2.03*	
Blockholders			-0.142	***			-0.146	***			-0.109	**
			-4.28				*-4.44*				*-1.98*	
CEO Characteristics			-0.077	***			-0.075	***			-0.191	**
			-4.20				*-4.18*				*-2.37*	
External Governance			0.018				0.012				-0.104	
			1.04				*0.70*				*-1.10*	
Single Class of Shares			-0.043	**			-0.044	**			-0.102	***
			-2.40				*-2.54*				*-2.98*	
CEO Ownership	0.263	***	0.164	*	0.248	***	0.159	*	-1.222		-2.000	
	2.72		*1.75*		*2.58*		*1.70*		*-1.64*		*-1.23*	
Cash Flow	0.690	***	0.650	***	0.707	***	0.665	***	0.657	***	0.657	***
	7.97		*7.54*		*8.32*		*7.88*		*7.13*		*6.58*	
Asset Size	0.025	***	0.017	**	0.032	***	0.023	***	0.008		0.005	
	3.85		*2.40*		*4.93*		*3.37*		*0.83*		*0.40*	
Market-to-Book	-0.003		-0.005		-0.003		-0.006		0.001		0.004	
	-0.42		*-0.87*		*-0.51*		*-0.95*		*0.17*		*0.45*	
Cash Flow Volatility	-0.034	***	-0.032	***	-0.036	***	-0.034	***	-0.030	***	-0.028	***
	-5.80		*-5.57*		*-6.20*		*-5.95*		*-4.46*		*-3.75*	
Analyst Following	0.033	***	0.030	***	0.029	***	0.027	***	0.013		0.007	
	3.27		*3.05*		*2.88*		*2.66*		*0.90*		*0.33*	
CEO Stock Options	-0.006		-0.006		-0.009		-0.008		-0.011		-0.014	
	-1.15		*-1.07*		*-1.60*		*-1.49*		*-1.54*		*-1.56*	
Firm Taxes	0.001		0.001		0.001		0.001		0.001		0.001	
	0.92		*0.88*		*1.05*		*1.01*		*0.72*		*0.71*	
Liquidity	0.008		0.007		0.003		0.002		0.013		0.013	
	1.06		*0.88*		*0.44*		*0.31*		*1.37*		*1.26*	
Industry Trend	0.993	***	0.993	***	0.987	***	0.988	***	1.007	***	1.013	***
	6.79		*6.80*		*6.80*		*6.81*		*6.89*		*6.84*	
Lambda					0.046	***	0.044	***				
Lambda (s.e.)					0.01		0.01					
Number of obs.	5564		5564		9851		9851		5564		5564	
R^2	0.20		0.21						0.15		0.10	
Adj. R^2	0.19		0.20						0.14		0.09	
Davidson-MacKinnon test	6.18	***	2.42	**								
C statistic	12.29	***	17.17	***								
Hansen-Sargan test									4.86		3.88	
Cragg-Donald statistic									112.05	***	30.58	***
Anderson-Rubin statistic									110.94	***	30.49	***

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 4. Incremental dividend decisions

Panel A. Dividend cuts and increases

Newey's two-step efficient estimation of the dividend decrease and dividend increase decision with correction for endogeneity. Dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables and instruments for governance and CEO Ownership are described in the Appendix (variables scaled by one hundred). CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. The Rivers and Vuong (1988) statistic tests the exogeneity of governance and CEO Ownership. The estimate of correlation of the selection equation and main equation residuals from the selection model (rho) is not significantly different from zero. z-statistics are in the parentheses.

The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Probit with correction for endogeneity			
	Decreases	Decreases	Increases	Increases
	I	II	III	IV
AGI	0.032 ***		-0.082 ***	
	3.93		*-10.40*	
Board Monitoring		0.013 ***		-0.028 ***
		2.87		*-6.29*
Blockholders		0.008 ***		-0.018 ***
		2.63		*-6.81*
CEO Characteristics		0.010 **		-0.019 ***
		2.32		*-4.30*
External Governance		0.001		-0.011 **
		0.25		*-2.22*
Single Class of Shares		0.316 *		-0.950 ***
		1.90		*-6.02*
CEO Ownership	0.061	0.135	-0.215 ***	-0.291 ***
	1.61	*1.60*	*-5.94*	*-3.53*
Cash Flow	-0.042 ***	-0.040 ***	0.035 ***	0.032 ***
	-9.81	*-8.82*	*9.30*	*7.64*
Asset Size	-0.087	-0.030	-2.E-04	-0.068
	-1.58	*-0.41*	*0.00*	*-0.94*
Market-to-Book	0.069 *	0.060	0.152 ***	0.159 ***
	1.85	*1.45*	*4.38*	*3.92*
Cash Flow Volatility	0.158 ***	0.140 ***	-0.119 ***	-0.096 **
	4.36	*3.48*	*-3.61*	*-2.46*
Analyst Following	-0.048	0.022	-0.290 ***	-0.371 ***
	-0.68	*0.24*	*-4.42*	*-4.01*
CEO Stock Options	0.054 *	0.075 *	-0.202 ***	-0.217 ***
	1.85	*1.94*	*-7.14*	*-5.58*
Firm Taxes	-0.008	-0.010	0.010	0.011
	-0.52	*-0.63*	*0.64*	*0.65*
Liquidity	0.253 ***	0.252 ***	0.149 ***	0.148 ***
	5.02	*4.78*	*3.17*	*2.85*
Number of obs.	5564	5564	5564	5564
Rivers-Vuong test	6.05 **	6.18	118.24 ***	85.29 ***
Rho (selection bias)	-0.010	-0.011	-0.060	0.057
Rho (s.e.)	0.075	0.077	0.082)	0.082

*** significance at 1%; ** significance at 5%; * significance at 10%

Panel B. Reaction to shocks and the magnitude of dividend increases

Instrumental variables regressions of Div Change (current dividend minus lagged dividend, scaled by lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits, in subsamples with a large (small) increase in cash flow - above (below) 10.8%, the median increase (Columns I-II), an increase in cash flow that persists (does not persist) next year – increases or decreases by less than (decreases by more than) one percent, the tenth percentile of decrease magnitude (Columns III-IV), a large (small) decrease in the market-to-book ratio – above (below) 11.8%, median decrease magnitude (Columns V-VI). Regressions with correction for endogeneity use instruments for governance variables and CEO Ownership (described in the Appendix). Multinomial logit regressions of the dividend change decision (Columns VII-VIII), using the variable that takes on 1 for decreases; 2 for no changes; 3 for small or moderate increases (below 14%, the third tercile); 4 for substantial increases (above 14%, top tercile). The portion of the results for the likelihood of a small or moderate increase versus no change and the likelihood of a substantial increase versus a small or moderate increase. Governance variables are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. Robust t-(z-) statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Chg Div (Instrumental variables)		Chg Div (Instrumental variables)		Chg Div (Instrumental variables)		Magnitude of increase (Multinomial logit)	
	Cash Flow Increase		Cash Flow Increase		Market-to-Book Decrease		Moderate increase	Moderate vs.
	Large	Small	Persists next year	Does not persist	Large	Small	vs. no change	substantial increase
	I	II	III	IV	V	VI	VII	VIII
AGI	-0.620 **	-0.305	-0.634 ***	-0.376	-0.775 ***	-0.511	-0.726 ***	-0.072 **
	-2.50	*-1.41*	*-2.76*	*-1.60*	*-2.80*	*-1.45*	*-5.34*	*2.12*
CEO Ownership	-0.283	-0.082	-1.031	-0.482	-1.985	-1.171	-0.635	0.512 ***
	-0.26	*-0.09*	*-0.98*	*-0.52*	*-1.64*	*-0.66*	*-1.57*	*3.99*
Cash Flow	1.017 ***	0.456 **	0.670 ***	0.575 ***	0.335 **	0.397 **	0.842 ***	0.721 **
	6.81	*2.53*	*3.83*	*4.11*	*2.42*	*2.08*	*4.74*	*2.25*
Asset Size	0.025 *	0.022	0.046 ***	0.023	-0.001	0.002	0.063 ***	0.033
	1.64	*1.60*	*2.95*	*1.49*	*-0.03*	*0.10*	*3.88*	*0.25*
Market-to-Book	-0.011	0.012	0.005	0.001	0.019	0.024	0.030 **	0.038 *
	-1.04	*1.05*	*0.46*	*0.08*	*1.14*	*1.02*	*2.07*	*1.94*
Cash Flow Volatility	-0.042 ***	-0.025 ***	-0.063 ***	-0.023 **	-0.034 **	-0.018	-0.020 ***	-0.043 **
	-3.77	*-2.63*	*-5.61*	*-2.49*	*-2.52*	*-1.58*	*-2.62*	*-2.21*
Analyst Following	0.031	0.001	0.011	-0.023	0.008	0.032	-0.068 **	0.041 ***
	1.39	*0.05*	*0.47*	*-1.09*	*0.26*	*1.00*	*-2.05*	*3.06*
CEO Stock Options	-0.010	-0.006	-0.013	-0.025 **	-0.028 *	0.002	-0.061 ***	0.006 **
	-0.98	*-0.60*	*-1.11*	*-2.09*	*-1.77*	*0.15*	*-3.64*	*2.09*
Firm Taxes	0.001	-0.018 **	-0.002	0.000	-0.001	-0.007	0.007 *	-0.002
	0.80	*-2.45*	*-1.43*	*0.07*	*-0.61*	*-1.01*	*1.77*	*-1.45*
Liquidity	0.016	0.022	0.031 **	0.022	0.003	0.007	-0.053	0.097 ***
	1.20	*1.61*	*2.14*	*1.47*	*0.14*	*0.37*	*-0.30*	*6.00*
Industry trend	0.980 ***	1.290 ***	1.120 ***	0.665 ***	1.015 ***	0.848 *		
	11.06	*3.79*	*5.74*	*5.34*	*2.82*	*1.76*		
Number of obs.	1390	1385	1260	1162	1181	1183	5564	5564
R^2	0.24	0.27	0.15	0.18	0.16	0.18		
Adj. R^2	0.20	0.24	0.11	0.13	0.12	0.13		
Pseudo R^2							0.15	0.15

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 5. Dynamic dividend behavior and total payout adjustments

OLS regressions of first differences in total payout to lagged market value of the firm (Column I) and changes in total payout scaled by lagged market value of the firm (Column II), where the level of total payout is the sum of cash dividends and share repurchases (replaced by zero if missing, following Frank and Goyal, 2002) and the market value of the firm is the market value of common equity minus book value of common equity plus book value of total assets from Compustat Industrial Annual. Tests do not reject exogeneity of the interaction of governance measures and lagged payout, governance and CEO Ownership, so OLS is used. Multinomial logit regression of the form of payout decreases (Column III) using the categorical variable that takes on 1 in case of no decrease in payout; 2 decrease in repurchases only; 3 decrease in dividends. Multinomial logit regression of the form of payout increases (Column IV) using the categorical variable that takes on 1 in case of no increase in payout; 2 increase in repurchases only; 3 increase in dividends. The portion of the results for the likelihood of a dividend decrease (increase) versus a decrease (increase) in repurchases only is reported. Dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Share repurchases are based on Compustat Industrial Annual data (replaced by zero if missing, following Frank and Goyal, 2002). Governance variables and instruments for governance and CEO Ownership are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. Robust t-(z-) statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Payout smoothing		Payout changes		Form of payout decreases: dividends vs. repurchases only		Form of payout increase: dividends vs. repurchases only	
	I		II		III		IV	
Lag Payout	-0.480	***						
	-8.95							
Payout_Lag*AGI	-0.185	**						
	-2.39							
AGI	0.006		-0.969	**	0.074	***	-0.807	***
	1.64		*-2.16*		*4.16*		*-4.88*	
CEO Ownership	-4.5E-04		0.330		-0.045		-0.008	
	-0.07		*0.61*		*-0.90*		*-0.85*	
Cash Flow	0.018	***	0.969	**	-0.255	***	1.611	***
	5.89		*2.34*		*-6.51*		*4.02*	
Asset Size	0.001	***	0.229	***	-0.008	**	0.092	**
	3.00		*4.54*		*-2.47*		*2.21*	
Market-to-Book	-0.001	***	0.156	***	0.005	**	0.057	
	-2.67		*4.49*		*2.11*		*1.25*	
Cash Flow Volatility	-0.001	***	-0.142	***	0.009	***	-0.063	**
	-2.84		*-3.42*		*3.08*		*-2.27*	
Analyst Following	2.5E-04		-0.045		-0.008	*	-0.018	
	0.49		*-0.64*		*-1.68*		*-0.16*	
CEO Stock Options	0.001	***	0.045		0.002		-0.048	***
	2.83		*1.31*		*0.76*		*-4.13*	
Firm Taxes	7.4E-05		-0.025		-0.001		0.006	
	0.70		*-1.38*		*-0.31*		*0.41*	
Liquidity	-0.003	***	0.101		0.016	***	0.026	
	-5.00		*1.57*		*5.51*		*1.00*	
Industry trend	0.008	***	0.420		-0.188	***	1.269	***
	2.98		*1.11*		*-4.93*		*3.27*	
Number of obs.	7704		7704		5564		5564	
R^2	0.32		0.03					
Adj. R^2	0.31		0.02					
Pseudo R^2					0.09		0.14	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 6. Dynamic dividend behavior and the role of debt

Instrumental variables regressions of Div Change (current dividend minus lagged dividend, scaled by lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits (Columns I-V). OLS estimation of Commitment Changes (changes in the level of commitment multiplied by hundred and scaled by lagged firm market value - market value of common equity minus book value of common equity plus book value of total assets), where the level of commitment defined as the sum of cash dividends and interest payments based on Compustat Industrial Annual (Column VI). Tests do not reject the exogeneity of governance and CEO Ownership, so OLS is used. Governance variables and instruments for governance and CEO Ownership are described in the Appendix. Presence of Debt is the dummy equal to 1 if the company has positive long-term debt; 0 otherwise. Leverage is the ratio of long-term debt to the book value of total assets. Leverage Change is leverage ratio minus lagged leverage ratio. Interest is annual interest payments scaled by lagged firm market value, multiplied by one thousand. Interest Change is the change in interest payments scaled by lagged firm market value, multiplied by one thousand. The added instruments include median ratio of tangible assets to total assets and mean fraction of firms with bond ratings and with positive leverage (Column I), median leverage ratio (Columns II-IV), median change in interest payments (Column V) computed at the industry state level. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend (dividend plus interest). Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. Robust t-statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Dividend changes												(Div+Int) changes	
	I		II		III		IV		V		VI	
AGI	-0.731	***	-0.482	***	-0.703	***	-0.298	**	-0.694	***	-0.124	**
	-4.42		*-3.63*		*-4.20*		*-2.35*		*-4.37*		*-1.96*	
Presence of Debt	-0.293	***										
	-2.70											
Leverage			-0.311	***								
			-6.52									
Leverage Change					-1.698	***						
					-5.73							
Interest							-0.006	***				
							-5.99					
Interest Change									-2.748	**		
									-2.34			
CEO Ownership	-1.592	**	-0.490		-1.519	*	0.144		-1.238	*	0.293	**
	-2.00		*-0.78*		*-1.88*		*0.25*		*-1.67*		*2.51*	
Cash Flow	0.713	***	0.660	***	0.654	***	0.567	***	0.647	***	0.568	***
	7.56		*7.80*		*5.69*		*6.86*		*7.01*		*7.50*	
Firm size	0.024	**	0.020	**	-0.009		0.030	***	0.006		-0.062	***
	2.18		*2.26*		*-0.75*		*3.57*		*0.62*		*-6.80*	
Market-to-Book	-0.014	*	-0.011	*	-0.003		-0.020	***	0.000		-0.054	***
	-1.65		*-1.70*		*-0.38*		*-2.88*		*0.04*		*-9.27*	
Firm risk	-0.032	***	-0.031	***	-0.018	**	-0.030	***	-0.028	***	0.045	***
	-4.54		*-5.00*		*-2.32*		*-5.06*		*-4.28*		*5.59*	
Analyst following	0.010		0.023	*	0.019		0.019		0.014		0.055	***
	0.68		*1.83*		*1.25*		*1.50*		*0.97*		*4.85*	
CEO stock options	-0.010		-0.004		-0.013	*	0.001		-0.011		0.001	
	-1.23		*-0.63*		*-1.65*		*0.13*		*-1.54*		*0.09*	
Firm taxes	0.001		0.001		0.001		0.001		0.001		0.003	
	0.63		*0.83*		*0.35*		*0.86*		*0.69*		*1.33*	
Liquidity	0.010		0.009		0.006		0.011		0.012		0.005	
	1.02		*1.14*		*0.57*		*1.37*		*1.35*		*0.42*	
Industry Trend - Div	1.016	***	0.991	***	1.044	***	0.980	***	1.008	***		
	6.94		*6.78*		*6.98*		*6.69*		*6.90*			
Industry Trend – (Div+Int)											0.186	***
											4.29	
Number of obs.	5564		5564		5564		5564		5564		9253	
R^2	0.12		0.21		-0.01		0.23		0.15		0.089	
Adj. R^2	0.11		0.20		-0.02		0.22		0.14		0.083	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 7. A natural experiment: exogenous governance shocks

OLS regression of Div Change (current dividend minus lagged dividend, scaled by lagged dividend) for the years [-1, +1] around the adoption of a state antitakeover law (Column I). OLS regressions of Div Change for years 1983-1991 (Columns II-III). A/takeover Law Adopted is the dummy equal to 1 in the year of the passage and the year following the passage of a state antitakeover law. A/takeover Laws Index assigns 1 for the presence of each of the three antitakeover laws listed above (following Bertrand and Mullainathan, 2003). D (A/takeover Law) is the dummy equal to 1 if Antitakeover Laws Index is positive; 0 otherwise.

OLS regressions of Div. Difference (current dividend minus lagged dividend, Column IV) and first differences in Div Change (Column V) on first differences in Absolute AGI around the adoption of the Sarbanes-Oxley Act of 2002, for years 2001-2003. Change in Abs. AGI is the first difference in the Alignment and Governance Index constructed using actual values of continuous and discrete governance characteristics. Governance variables are described in the Appendix. OLS regressions of dividend level on Post-2002 * Indep Minor 2000 (the effect of 2002 governance rules for firms with a minority of independent directors in 2000, Column VI) and on Post-2002 * Indep Minor 2000 * Indep Maj Post-2002 (the effect of 2002 governance rules for firms with a minority of independent directors in 2000 changed to a majority of independent directors after 2002, Column VII), for years 2000-2004.

Dividend is the annual dividend per share from Compustat Industrial Annual in Columns I-III and the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits in Columns IV-VII. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). CEO Ownership and CEO Stock Options data is available starting in 1992, so regressions in Columns IV-VI omit these variables. Cash Flow is the ratio of EBITDA to lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Fama and French (1997) industry dummies, year dummies (Columns IV-VII) and year trend (Column III), and the intercept are included but not reported. Robust t-statistics (with clustering by firm) are in the parentheses.

The sample is based on Compustat Industrial Annual firms (sample periods were described above), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Div Change A/T [-1,+1]		Div Change A/T '83-'91		Div Change A/T '83-'91		Diff Div SO [-1, +1]		Diff Div Chg SO [-1, +1]		Div SO '00-'04		Div SO '00-'04	
	I		II		III		IV		V		VI		VII	
Takeov Law Passed	0.122	***												
	2.61													
Takeov Law Index			0.039	***										
			3.71											
D (Takeov Law)					0.049	**								
					1.97									
Change in Abs. AGI							-0.193	**	-0.561	**				
							-2.36		*-2.21*					
Post-2002 *											-0.114	**		
Indep Minor 2000											*-2.32*			
Post-2002 *														**
Indep Minor 2000 *													-0.137	
Indep Maj Post-2002													*-2.57*	
CEO Ownership							0.118	*	0.077		1.487		1.451	
							1.75		*0.44*		*1.11*		*1.09*	
Cash Flow	0.689	**	1.063	***	1.088	***	0.263	***	0.608	***	0.397	**	0.399	**
	1.99		*5.31*		*5.40*		*3.90*		*5.07*		*1.99*		*2.00*	
Firm size	-0.020		-0.013		-0.013		0.008		0.015		0.145	***	0.146	***
	-0.62		*-0.80*		*-0.83*		*1.38*		*1.33*		*5.75*		*5.81*	
Market-to-Book	-0.077	**	-0.066	***	-0.071	***	-0.001		-0.022	**	-0.011		-0.011	
	-2.01		*-2.73*		*-2.94*		*-0.38*		*-2.00*		*-0.74*		*-0.72*	
Firm risk	-0.022		0.004		0.004		-0.009	*	-0.023	**	0.011		0.011	
	-0.73		*0.25*		*0.25*		*-1.81*		*-2.29*		*0.53*		*0.52*	
Analyst following	0.010		0.001		-0.002		0.012	*	0.012		-0.105	***	-0.104	***
	0.47		*0.04*		*-0.15*		*1.68*		*0.87*		*-4.37*		*-4.36*	
CEO stock options							0.000		0.000		-0.014		-0.013	
							-0.01		*-0.01*		*-0.92*		*-0.84*	
Firm taxes	0.031		0.011		0.011		-0.002		0.014	**	-0.010	***	-0.010	***
	0.31		*0.17*		*0.17*		*-0.51*		*2.07*		*-3.10*		*-3.09*	
Liquidity	0.018		-0.007		-0.007		-0.025	***	-0.044	*	-0.323	***	-0.328	***
	0.64		*-0.51*		*-0.51*		*-2.72*		*-1.95*		*-9.81*		*-9.71*	
Number of obs.	1136		3773		3773		1259		1249		1894		1894	
R^2	0.04		0.03		0.03		0.15		0.13		0.40		0.40	
Adj. R^2	0.00		0.01		0.01		0.12		0.09		0.39		0.38	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 8. Additional causality checks

Fixed (firm) effects regression of Div Change (current dividend minus lagged dividend, scaled by lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits (Column I).
Two stage least squares (2SLS) estimation of Div Change (Column II). Equations for AGI and CEO Ownership include Div Change (reported), control variables from the main equation besides the Industry Trend, and the set of instruments.
OLS estimation of dividend changes using one-year lags of AGI and CEO Ownership (Column III) and one-year changes in AGI and CEO Ownership (Column IV).
Governance variables and instruments for governance and CEO Ownership are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. t-statistics (with clustering by firm) are in the parentheses.
The sample is based on Compustat Industrial Annual (1993-2004), excluding firms with total assets less than 20 mln., financials (SIC codes 6000-6999) and regulated utilities (SIC codes 4949-4999).

	Fixed effects		2SLS		OLS		OLS	
	I		II		III		IV	
AGI	-0.361	***	-0.688	***				
	-4.83		*-5.36*					
Lag AGI					-0.209	***		
					-4.81			
AGI Change							-0.210	**
							-2.37	
CEO Ownership	-0.136		-1.222	**				
	-0.71		*-2.05*					
Lag CEO Ownership					0.259	***		
					3.10			
CEO Ownership Change							-1.071	***
							-3.58	
Cash Flow	0.890	***	0.657	***	0.610	***	0.602	***
	12.36		*10.85*		*7.60*		*7.42*	
Firm size	0.048	***	0.008		0.037	***	0.040	***
	3.04		*1.01*		*5.96*		*6.52*	
Market-to-Book	0.013	**	0.001		-0.003		-0.001	
	1.97		*0.20*		*-0.49*		*-0.27*	
Firm risk	-0.015	**	-0.030	***	-0.033	***	-0.034	***
	-2.32		*-5.44*		*-6.48*		*-6.53*	
Analyst following	0.064		0.013		0.016	**	0.015	*
	4.85		*1.20*		*2.01*		*1.81*	
CEO stock options	-0.006		-0.011	**	0.000		-0.001	
	-0.91		*-2.45*		*-0.05*		*-0.22*	
Firm taxes	0.002		0.001		0.002		0.002	
	1.11		*0.43*		*0.97*		*1.09*	
Liquidity	-0.011		0.013	*	-0.002		-0.002	
	-1.00		*1.66*		*-0.21*		*-0.29*	
Lag Div Change					0.273	***	0.281	***
					7.62		*7.88*	
Industry trend			1.007	***	1.096	***	1.109	***
			20.47		*4.92*		*4.95*	
AGI Equation			-0.004					
Div Change			*-0.33*					
CEO Ownership Equation			0.011					
Div Change			*1.50*					
Number of obs.	5564		5564		4768		4768	
R^2 (within)	0.11							
Pseudo-R^2								
R^2					0.26		0.25	
Adj. R^2					0.25		0.24	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 9. Corporate governance and dividend behavior: interaction effects

Ordinary least squares regressions of changes in dividends defined as current dividend minus lagged dividend, scaled by lagged dividend, where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Stock Performance is the average of the CRSP monthly stock return minus CRSP value-weighted index return. Industry Trend is the change in the industry median dividend. AGI is interacted with the following variables: Cash Flow Change (change in Cash Flow scaled by lagged Cash Flow); High Free Cash Flow (dummy equal to 1 if Cash Flow is positive and either Market-to-Book or growth of net sales is below the three -digit SIC industry median); Equity Dependence Ind. (three-digit SIC industry median ratio of net external equity issues, defined as the sale of common and preferred stock minus purchase of common and preferred stock, replaced by zero if missing, following Frank and Goyal, 2002, to book value of total assets); Past Performance Ind. (three-digit SIC industry median stock return minus CRSP value-weighted index return for the previous year); Past Performance I/Adj (excess return of the firm for the previous year, defined as the average of the CRSP monthly stock return minus CRSP value-weighted index return, minus Past Performance Ind.); Dividend Premium (difference of the log of asset-weighted market-to-book ratio for dividend-paying firms and for zero-dividend firms at the three-digit SIC industry level, two-digit SIC industry level if not available, or one-digit SIC industry level if not available). Fama and French (1997) industry dummies, year dummies, dummies for the year of entry into CRSP database, and the intercept are included but not reported. Robust t-(z-) statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	I		II		III		IV		V		VI	
AGI	-0.237	***	-0.214	***	-0.245	***	-0.226	***	-0.235	***	-0.234	***
	-4.62		*-4.10*		*-4.90*		*-4.24*		*-4.31*		*-4.58*	
AGI*Cash Flow Change	-0.039	**										
	-2.11											
AGI*High Free Cash Flow			-0.037	**								
			-2.41									
AGI*Equity Dependence Ind.					-2.128	***						
					-3.77							
AGI*Past Performance Ind.							2.217	***				
							4.33					
AGI*Past Performance I/Adj									3.843	***		
									7.80			
AGI*Dividend Premium											-0.046	**
											-2.12	
CEO Ownership	0.261	***	0.257	***	0.269	***	0.298	***	0.273	***	0.263	***
	2.69		*2.67*		*2.85*		*3.02*		*2.67*		*2.77*	
Profitability	0.711	***	0.674	***	0.676	***	0.624	***	0.576	***	0.690	***
	8.01		*7.80*		*8.06*		*7.18*		*6.69*		*8.02*	
Firm size	0.027	***	0.026	***	0.025	***	0.023	***	0.023	***	0.025	***
	4.14		*3.91*		*3.82*		*3.24*		*3.33*		*3.85*	
Market-to-Book	-0.002		-0.004		-0.001		-0.004		-0.004		-0.001	
	-0.40		*-0.66*		*-0.18*		*-0.63*		*-0.67*		*-0.12*	
Firm risk	-0.035	***	-0.034	***	-0.036	***	-0.034	***	-0.032	***	-0.034	***
	-5.98		*-5.80*		*-6.26*		*-5.49*		*-5.25*		*-5.85*	
Analyst following	0.032	***	0.032	***	0.035	***	0.039	***	0.035	***	0.033	***
	3.12		*3.23*		*3.47*		*3.75*		*3.33*		*3.31*	
CEO stock options	-0.006		-0.006		-0.008		-0.006		-0.005		-0.007	
	-1.09		*-1.12*		*-1.37*		*-1.10*		*-0.93*		*-1.23*	
Firm taxes	0.001		0.001		0.001		0.001		0.001		0.001	
	0.85		*0.86*		*0.80*		*1.05*		*1.04*		*0.87*	
Liquidity	0.009		0.008		0.009		0.000		-0.007		0.008	
	1.10		*0.97*		*1.11*		*0.02*		*-0.76*		*0.99*	
Equity Dependence Ind.					1.283	***						
					3.81							
Stock Performance							0.263		0.377	*		
							1.32		*1.77*			
Industry trend	0.991	***	0.994	***	0.926	***	0.975	***	1.020	***	0.992	***
	6.78		*6.80*		*6.36*		*6.45*		*6.16*		*6.79*	
Number of obs.	5561		5564		5434		5117		4837		5564	
R^2	0.20		0.20		0.20		0.21		0.23		0.20	
Adj. R^2	0.19		0.19		0.19		0.20		0.22		0.19	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 10. Robustness: alternative governance measures, controls, sample criteria

Panel A. Alternative measures of governance quality and managerial alignment

Instrumental variables regressions of Div Change (current dividend minus lagged dividend, scaled by lagged dividend), where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. Governance variables and instruments for governance and CEO Ownership are described in the Appendix. Column I: AGI – Below (Above) Median is equal to the AGI if the AGI is below (above) the sample median, 0 otherwise. The set of instruments also includes the industry share of firms with AGI above the sample median. Column II: Industry-Adjusted AGI is defined as firm-level AGI minus median AGI at the Fama and French (1997) industry level for a given year. Column III: Abs. AGI is constructed similarly to the AGI, but actual values of the continuous governance variables rescaled to [0,1] are used instead of firm rankings based on governance variables. The set of instruments adjusts the industry median and governance premium instruments using Abs. AGI. Column IV: Aggregate Governance Factors (AGF) are based on the factor analysis (with orthogonal rotation) of the unadjusted underlying governance characteristics of the AGI. The eigenvalue criterion (eigenvalue above 1) was used to select the AGF. AGF labels are based on the list of governance characteristics with the highest factor loadings (at least above 0.40 in absolute terms): AGF1 Blockholder Presence/Concentration (largest blockholding, blockholder presence, concentration of blockholdings); AGF2 Coordination of Blockholders/Board (number of institutional investors, number of public pension fund blockholders, low board size); AGF3 Board Committee/CEO Separation (CEO is not a member of any of the four key committees / nominating committee / corporate governance committee); AGF4 Low Separation of Own-p/Control (rescaled Gompers, Ishii, and Metrick (2005) and IRRC measures of dual classes of shares); AGF5 Bad External Governance (classified board, limits to amend bylaws, limits to call special meetings, limits for written consent); AGF6 Board Independence (fraction of independent directors, low fraction of employee directors, largest public pension fund blockholdings); AGF7 CEO Characteristics (low age, CEO under 65, low tenure). AGF cumulatively explain 86.6% of variation in the underlying variables. Cronbach's alpha is above 0.70 (0.74), indicating a considerable degree of unidimensionality of the underlying variables and reliability of the AGF. The set of instruments (see the Appendix) adjusts the industry median instruments using the AGF. Column V: ISS Factors (ISSF) are based on the factor analysis (with orthogonal rotation) of the annual averages of the Institutional Shareholder Services (ISS) Corporate Governance Quotient characteristics; the data available is available for the 2001-2004 portion of the sample period. The eigenvalue criterion (eigenvalue above 1) was used to select the ISSF. ISSF labels are based on the list of governance characteristics with the highest factor loadings (at least above 0.40 in absolute terms): ISSF1 Boards/Governance 1 (board independence, governance committee, board governance guidelines, stock ownership guidelines); ISSF2 Boards/Governance 2 (committee independence, board governance guidelines, reasonable cost of option plan); ISSF3 Bad External Governance (majority vote requirement to approve mergers, majority vote requirement to amend charter/bylaws, classified board, poison pill). ISSF cumulatively explain 85.4% of variation in the underlying variables. Cronbach's alpha is 0.70, indicating a considerable degree of unidimensionality of the underlying variables and reliability of the ISSF. The set of instruments (see the Appendix) adjusts the industry median instruments using the ISSF. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. Robust t-statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	I		II		III		IV		V	
AGI - Below Median	-1.442	***								
	-3.55									
AGI - Above Median	-1.199	***								
	-3.68									
Industry-Adjusted AGI			-0.714	***						
			-4.34							
AGI (Abs.)					-1.276	***				
					-2.92					
AGF1: Blockholder Presence/Concentration							-0.031	***		
							-2.99			
AGF2: Coordination of Blockholders/Board							-0.036	*		
							-1.68			
AGF3: Board Committee/CEO Separation							-0.001			
							-0.20			
AGF4: Low Separation of Own-p/Control							-0.026	***		
							-2.56			
AGF5: Bad External Governance							-0.001			
							-0.08			
AGF6: Board Independence							-0.046	**		
							-2.44			
AGF7: CEO Characteristics							-0.047	**		
							-2.01			
ISSF1: Boards/Governance 1									-0.038	**
									-2.00	
ISSF2: Boards/Governance 2									0.000	
									-0.02	
ISSF3: Bad External Governance									0.033	**
									1.98	
CEO Ownership	-1.382	*	-1.191		1.337	***	-2.087		0.003	
	-1.72		*-1.63*		*3.05*		*-1.54*		*0.01*	
Cash Flow	0.646	***	0.666	***	0.667	***	0.620	***	0.944	***
	6.88		*7.24*		*7.63*		*6.13*		*3.43*	
Firm size	0.005		0.008		0.023	***	-0.009		0.023	
	0.47		*0.76*		*2.61*		*-0.58*		*1.43*	
Market-to-Book	0.000		0.000		-0.007		-0.004		-0.028	
	-0.05		*-0.01*		*-0.89*		*-0.57*		*-1.43*	
Firm risk	-0.029	***	-0.029	***	-0.033	***	-0.031	***	-0.052	***
	-4.18		*-4.33*		*-5.02*		*-4.37*		*-3.23*	
Analyst following	0.015		0.013		0.044	***	0.006		0.067	***
	1.01		*0.92*		*3.58*		*0.35*		*2.58*	
CEO stock options	-0.013		-0.011		0.001		-0.009		0.020	*
	-1.64		*-1.55*		*0.13*		*-1.16*		*1.92*	
Firm taxes	0.001		0.001		0.001		0.001		0.005	
	0.76		*0.84*		*0.85*		*0.90*		*1.10*	
Liquidity	0.013		0.012		0.009		0.012		-0.018	
	1.37		*1.34*		*1.05*		*1.25*		*-0.51*	
Industry Trend	1.013	***	1.015	***	0.984	***	1.002	***	1.159	***
	7.00		*6.98*		*6.89*		*6.87*		*3.74*	
Number of obs.	5564		5564		5564		5564		1077	
R^2	0.11		0.15		0.13		0.11		0.32	
Adj. R^2	0.10		0.14		0.12		0.10		0.28	

*** significance at 1%; ** significance at 5%; * significance at 10%

Panel B. Alternative controls and sample selection criteria

Instrumental variables regressions of changes in dividends defined as current dividend minus lagged dividend, scaled by lagged dividend, where dividend is the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits (Column I); change in annual cash dividends (replaced by zero if missing following Frank and Goyal, 2002) multiplied by hundred and scaled by lagged firm market value, which is defined as the market value of common equity minus book value of common equity plus book value of total assets from Compustat Industrial Annual (Columns II, VI); change in the ratio of annual cash dividends to market value (Column III); change in the annual ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits, scaled by lagged average price (Column IV); current dividend minus lagged dividend (Column V). Regressions with correction for endogeneity use instruments for governance variables and CEO Ownership (described in the Appendix). Columns IV-VI use the full sample, including observations with zero dividends in the previous period. Governance variables are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Asset Size is the log of lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Cash Flow Volatility is the log of the standard deviation of income before extraordinary items based on up to 12 quarters of data. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Firm Taxes is the ratio of income taxes to pretax income. Liquidity is the log of the annual average bid-ask spread (CRSP). Retained Earnings is the ratio of retained earnings to book value of total assets. Stock Performance is the average of the CRSP monthly stock return minus CRSP value-weighted index return. Tangible Assets is the ratio of property, plants, and equipment (net) to book value of total assets. Bond Rating is the dummy equal to 1 if the firm has a long-term domestic issuer credit rating in Compustat; 0 otherwise. Industry Trend is the change in the industry median dividend. Fama and French (1997) industry dummies, year dummies, dummies for the year of entry into CRSP database, and the intercept are included but not reported. Robust t-(z-) statistics (with clustering by firm) are in the parentheses. The sample uses Compustat Industrial Annual (1993-2004), excluding firms with total assets under 20 mln., financials (SIC codes 6000-6999), and regulated utilities (SIC codes 4949-4999).

	Sample of past dividend payers						Full sample (includes zero-dividend firms)					
	I		II		III		IV		V		VI	
AGI	-0.809	***	-0.420	***	-0.653	***	-1.407	***	-0.232	***	-0.523	***
	-3.98		*-2.81*		*-2.72*		*-4.43*		*-3.88*		*-3.76*	
CEO Ownership	-1.973	**	-0.073		-1.938	*	-3.618	***	-0.627	***	-0.939	
	-2.09		*-0.12*		*-1.87*		*-2.62*		*-2.58*		*-1.57*	
Profitability	0.598	***	0.576	***	0.118		0.244	***	0.051	***	0.198	***
	6.35		*6.77*		*1.02*		*3.42*		*3.83*		*5.76*	
Firm size	0.017		0.022	**	0.035	**	-0.033	*	-4.2E-04		0.001	
	1.37		*2.47*		*2.30*		*-1.89*		*-0.12*		*0.11*	
Market-to-Book	-1.4E-04		-0.009		-0.003		0.002		0.001		0.002	
	-0.02		*-1.48*		*-0.32*		*0.27*		*1.12*		*0.79*	
Firm risk	-0.024	***	-0.014	***	-0.033	***	-0.015	*	-0.003	**	-0.008	**
	-3.23		*-2.57*		*-3.56*		*-1.88*		*-2.03*		*-2.43*	
Analyst following	-0.002		0.016		0.002		0.018		0.001		0.004	
	-0.11		*1.39*		*0.12*		*1.03*		*0.22*		*0.48*	
CEO stock options	-0.015	*	-0.003		-0.011		-0.019	**	-0.004	**	-0.005	
	-1.74		*-0.63*		*-1.03*		*-2.04*		*-2.11*		*-1.26*	
Firm taxes	0.001		3.3E-04		-0.001		-0.001		-4.0E-04		-1.5E-04	
	0.66		*0.18*		*-0.47*		*-0.42*		*-0.66*		*-0.13*	
Liquidity	0.018	*	-0.010		-0.005		-0.008		-0.006	**	-0.007	
	1.68		*-1.36*		*-0.41*		*-0.69*		*-2.22*		*-1.20*	
Retained Earnings	0.167	***	0.080	***	0.206	***	0.021		0.004		0.005	
	4.98		*2.97*		*5.00*		*1.57*		*1.59*		*0.95*	
Stock Performance	0.125		0.298	*	-3.955	***	0.186		0.021		0.107	
	0.63		*1.76*		*-11.91*		*1.29*		*0.79*		*1.46*	
Tangible Assets	-0.037		-0.036		0.030		-0.013		-0.003		-0.002	
	-0.91		*-1.29*		*0.67*		*-0.25*		*-0.35*		*-0.07*	
Bond Rating	-0.028	*	-0.015		-0.050	***	-0.041	**	-0.009	**	-0.016	*
	-1.80		*-1.44*		*-2.79*		*-2.07*		*-2.43*		*-1.89*	
Industry trend	0.979	***	0.225	***	0.703	***	0.320	***	0.078	***	0.103	***
	6.51		*4.20*		*3.63*		*4.66*		*4.43*		*3.29*	
Number of obs.	5523		6043		6043		9802		9802		9804	
R^2	0.12		0.14		0.11		-0.18		-0.07		0.01	
Adj. R^2	0.10		0.12		0.09		-0.19		-0.09		-4.0E-03	

*** significance at 1%; ** significance at 5%; * significance at 10%

Table 11. Market reaction to dividend announcements

Regressions of cumulative abnormal returns on announcement of dividend changes. Dividend is the quarterly ordinary dividend per share (CRSP, distribution code 1232) adjusted for stock dividends and splits. The sample of dividend increases and dividend decreases (excluding omissions) is based on CRSP monthly data. The dates of dividend omissions for firms that suspended or discontinued a quarterly dividend payment were identified using announcements in major business publications. CARs are based on the [-1,+1] window in Columns I-III and on the [-2,+2] window in Column IV, where 0 is the day of the announcement. Dividend increases and decreases (excluding omissions) are used in Columns I, II, and IV; dividend omissions are included in the sample in Column III. CARs were computed using the market model for returns (CRSP value weighted return) and the estimation window of up to 150 days, ending 45 days before the event. The following controls are used: Div Change (change in quarterly dividends per share), D_Decrease (dummy equal to 1 if Div Change is negative; 0 if positive). Interactions of Div Change with the following controls were used. Governance variables and instruments for governance and CEO Ownership are described in the Appendix. CEO Ownership is the ratio of shares owned by the CEO to common shares outstanding (Execucomp). Cash Flow is the ratio of EBITDA to lagged total assets. Market-to-Book is the ratio of firm market value (market value of common equity minus book value of common equity plus book value of total assets) to book value of total assets. Analyst Following is the log of the number of one-year-ahead analyst earnings forecasts (I/B/E/S). CEO Stock Options is the percentage of stock option holdings of the CEO in common shares outstanding (Execucomp). Industry Median is the industry median of the dependent variable. Fama and French (1997) industry dummies, year dummies, and the intercept are included but not reported. Robust t-statistics (with clustering by firm) are in the parentheses. The sample uses observations for ordinary common shares with a positive past quarterly dividend per share, excluding companies incorporated outside the US, Americus Trust components, closed-end funds, closed-end fund companies incorporated outside the US, and REITs, firms with total assets under 20 mln., financials (SIC codes 6000-6999), regulated utilities (SIC codes 4949-4999), and firms with missing Compustat Industrial Annual, governance or compensation data.

	[-1,+1]		[-1,+1]		[-1,+1] (incl. omissions)		[-2,+2]	
	I		II		III		IV	
Div Change	0.514	**	0.758	***	0.851	***	0.922	***
	2.55		*2.98*		*3.17*		*3.26*	
D (Decrease)	-0.013	***	-0.012	***	-0.020	***	-0.011	*
	-2.86		*-2.79*		*-2.72*		*-1.83*	
Div Change x D (Decrease)	-0.354		-0.420		-0.568		-0.537	
	-0.92		*-1.09*		*-1.36*		*-1.20*	
Div Change x AGI	-0.882	**	-0.891	**	-0.843	**	-0.835	**
	-2.38		*-2.43*		*-2.18*		*-2.09*	
Div Change x D (Decrease) x AGI	0.803		0.829		1.096		1.039	
	1.15		*1.19*		*1.47*		*1.27*	
Div Change x Cash Flow			-0.557		-0.405		-0.762	
			-1.24		*-0.88*		*-1.36*	
Div Change x Market-to-Book			0.019		-0.012		-0.007	
			0.52		*-0.36*		*-0.18*	
Div Change x CEO Ownership			-0.004		-0.002		-0.005	
			-0.66		*-0.36*		*-0.99*	
Div Change x CEO Stock Options			-0.032	*	-0.055		-0.026	
			-1.75		*-1.63*		*-1.05*	
Div Change x Analyst Following			-0.054		-0.083	*	-0.094	*
			-1.15		*-1.76*		*-1.75*	
Industry Median	0.757	***	0.758	***	0.832	***		
	10.70		*10.55*		*9.86*			
Number of obs.	3385		3334		3413		3334	
R^2	0.12		0.12		0.14		0.11	
Adj. R^2	0.10		0.10		0.13		0.10	

*** significance at 1%; ** significance at 5%; * significance at 10%