Dividend Signaling and Unions

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Abstract

Dividend signaling models suggest that dividends are used to convey information about future earnings to investors. However, in a world where unions also receive these signals, managers are less inclined to send the signal in order to avoid the union capturing these future earnings through higher salaries. Using information from IRS 5500 Forms to measure firm level unionization, I found that the power of dividends as predictors of future earnings tends to be higher for non-unionized firms. Moreover, I use the variation at the state level in the adoption of right-to-work laws to overcome the possible endogeneity of unionization with an instrumental variables approach. The empirical results are robust to different specifications and time periods.

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1 Introduction

This paper is part of the literature on the dividend signaling hypothesis, according to which managers possess superior information about the earnings capacity of the firm than investors do and, therefore, can use dividends to convey information to the market about their firm's future stream of earnings.[1] A key element of this literature is that these dividend payments are costly, and so this cost makes possible the existence of a separating equilibrium in which managers of firms with better future earnings prospects pay higher dividends.

Even if managers have an incentive to convey information about future earnings to investors (and in that way increase the price of firm's shares), they also face the incentive not to do so since the signal can also be received by the union, which could bargain for higher salaries. In this paper, I present an extension of the dividend signaling model developed by Bhattacharya (1979) to include unions, and obtained the result that dividends are used less as a signal by highly unionized firms.

According to Allen and Michaely (2002), asymmetric information (signaling) models of dividends result in two major empirical predictions: First, unanticipated changes in dividends should be accompanied by stock price changes in the same direction. Second, dividend changes should be followed by changes in earnings in the same direction. Previous empirical tests have supported the first prediction: in general, dividend increases are taken as good news by the market, and decreases as bad news.[2]

However, the empirical evidence for the second prediction is still mixed. In general, researchers have found no relationship between future changes in earnings and current changes in dividends. For example, in some earlier work Watts (1973), Haely and Papelu (1988), Brickley (1983) showed small and insignificant effects, in some cases even in the wrong direction. More recently, Benartzi, Michaely, and Thaler (1997) show that dividends are more related to past and present earnings than to future earnings. In contrast, Nissim and Ziv (2001) find a positive

[1] Bhattacharya (1979), Bernheim and Wantz (1995), Bernheim (1991), John and Williams (1985), Williams (1988). See Allen and Michaely (2002) for a comprehensive literature review on Payout Policy.

[2] See for example Pettit (1972), Aharony and Swary (1980), Haely and Papelu (1988), Grullon, Michaely, and Swaminathan (2002).

relationship between future earnings and current dividend changes.[3]

In this paper, I improve the predictive power of dividends by using quarterly data, thus supporting the results of Nissim and Ziv (2001). Moreover, this paper is the first to test the prediction that unionization affects dividend policy in a general setting.[4] In particular, I test the prediction that dividends have less predictive power for future earnings in highly unionized firms. Consistent with the model presented in Section 3, I find that the predictive power of dividends is negatively related to the unionization of the firm. The results are economically as well as statistically significant, and robust to different specifications.

The rest of the paper is organized as follows: Section 2 presents a review of the relevant literature. Section 3 presents the theoretical model and its prediction. Section 4 describes the empirical strategy and Section 5 presents the results of the econometric analysis. Finally, Section 6 concludes.

2 Literature Review

In a seminal contribution, Miller and Modigliani (1961) demonstrated that, under certain specific conditions, the dividend policy of a firm does not affect its value. This dividend irrelevance result is based on the existence of perfect capital markets, rational behavior and perfect certainty.[5] A large part of the literature on Financial Economics in the past 40 years has been devoted to explain the effects of relaxing some of these assumptions and reconciliate the result of Miller and Modigliani (1961) with the real corporate world, in which more than 400 billion dollars are paid as dividends.

Explaining this large amount of dividend payments is even harder given the historical tax disadvantageous treatment to which dividend income was subjected as compared to capital gains, previous to the enactment of the Job Growth Taxpayer Relief Reconciliation Act (JGTRRA) in

[3]Nevertheless, in a more recent working paper, Benartzi, Grullon, Michaely, and Thaler (2004) demonstrate that the effect found by Nissim and Ziv (2001) vanishes when using a non-linear mean reversion model for earnings, like the model proposed by Fama and French (2000)

[4]DeAngelo and DeAngelo (1991) analyze the relationship between executive compensation, income reporting and dividend payments around union renegotiations for a handful of financially distressed firms in the Steel Industry during the 1980s.

[5]The exact definition of each of these concepts can be found in Miller and Modigliani (1961) p. 412.

2003.

Allen and Michaely (2002) suggest a classification of these research efforts based on five possible imperfections that managers might consider when deciding about their dividend payments: taxes, asymmetric information, incomplete contracts, institutional constraints and transaction cost.

In the next pages, I will concentrate on Asymmetric information models, in which, by definition, one party (the manager) has superior information (about the quality of the firm) than the rest of the agents in the model.

2.1 Asymmetric Information (Signaling) Models of Dividends

Asymmetric information models of dividend payments have generally been Signaling Models. In these models, it is assumed that managers know more about the true value of the firm (stream of earnings) than investors do. Managers of undervalued firms are thus eager to convey information about the quality of the firm to investors, using all the tools (signals) available to them. For these signals to be credible, they need to represent a higher cost for firms with poor earnings than to firms that actually have very optimistic earnings forecasts.

Bhattacharya (1979) presents the first dividend signaling model, in which dividends reduce the amount of free cash flow available to the firm, thus increasing the probability that the firm will need outside financing to cover all the projects it wants to undertake. He assumes the existence of an exogenous transaction cost of outside financing that makes dividends costly for firms. In the resulting equilibrium, firms with better earnings prospects are those that increase dividends the most, and this relationship is monotonic.

Similarly, Miller and Rock (1985) assume that paying dividends is costly because it prevents firms from attaining their optimal investment levels. This distortion of optimal investment unambiguously reduces the value of the firm. Thus, in equilibrium, more profitable firms are the ones paying more dividends, and the relation is also monotonic. Moreover, the firm with the minimum level of earnings is the only one that does not need to signal its type (it is fully revealed in equilibrium) and consequently is the only one paying zero dividends.

Other signaling models (Bernheim (1991), Bernheim and Wantz (1995), John and Williams (1985), Williams (1988)) take the disadvantageous tax treatment of dividends, relative to capital gains, as the explicit cost of dividends.[6] The advantage of these models is that there is no need to assume an exogenous cost of outside financing; however, they face the challenge of explaining why payout is not made by share repurchases instead of dividends.[7]

2.2 Empirical Test of the Signaling Hypothesis

The literature documenting empirical tests of the Signaling Hypothesis is extensive; the most important contributions are reviewed in this subsection. The literature consists primarily of studies that use dividends to explain future changes in profitability.

In a seminal contribution, Watts (1973) was the first to test directly the relationship between future changes in profitability and current and past dividend policy. He uses Compustat files from 1947 to 1966 for a total of 310 firms with complete information for the period and run firm by firm time series estimations. The average and median coefficients, although positive, are small and insignificantly different from zero in most of his specifications. He thus argues that there must be other reasons besides signaling for the positive reaction of stock prices to dividends.

Later, the work of Brickley (1983) and Haely and Papelu (1988) provided support for the signaling hypothesis. Brickley (1983) analyzes the behavior of stock prices, earnings and dividends around dividend announcements and compares the relationship between these variables for special dividends versus regular dividends. He finds that regular dividend increases convey the most positive information to the market. Haely and Papelu (1988) also test directly whether current dividends have a positive relationship with future earnings. Their test benefits from the fact that they use dividend initiations and omissions only, and so they find strong effects. These authors find that firms that initiate (omit) dividends payments have positive (negative) earnings changes both before and after the dividend policy change.

[6] Before JGTRRA, dividends faced a top marginal tax rate of 38.6 percent, while capital gains faced a top statutory rate of 20 percent. JGTRRA equalized both tax rates at 15 percent. See Poterba (2004).

[7] The substitution hypothesis, i.e., how share repurchases have been progressively substituting for dividends in the past two decades is one area of extensive research. See for example, Grullon and Michaely (2002).

More recently, a significant step towards our understanding of dividend signaling was made by Benartzi et al. (1997). This paper represents the first attempt to test the predictive power of dividends for explaining future changes in profitability using a more representative database (more than one thousand firms and several years, 1990-1997). The conclusion of this paper is, however, that dividends are more related to present and past changes in profitability than to future changes in profitability, thus challenging the dividend signaling hypothesis.

Using a similar database, Nissim and Ziv (2001) get very different conclusions. They use a linear mean reversion model of earnings and scale dividend payments differently than Benartzi et al. (1997) and find that dividends are related to both future changes in earnings levels and future changes in profitability.

Trying to get the final word on this debate, in a more recent working paper, Benartzi et al. (2004) show that the effect found by Nissim and Ziv (2001) vanishes once a non-linear mean reversion model for earnings is used.

2.3 Link Between Payout Policy and the Labor Market

Previous literature has not paid attention to the relationship between payout policy and labor market conditions. DeAngelo and DeAngelo (1991) analyze union negotiations and corporate policy for the steel industry during the 1980s. The paper studies how executive compensation, financial reporting, and dividend rates varied as seven major firms in the industry faced severe financial problems during the first half of the 1980s. According to the evidence presented in the paper, these seven firms reduced their work force by three hundred thousand workers. Most importantly, they find that during union renegotiations, firms reported lower income (controlling for cash flows) and reduced executive compensation. Finally, they also find that dividend reductions were targeted to match union renegotiations. The reasoning behind this behavior, the authors argue, is that dividend reductions are a credible signal of financial distress, which allows managers to reduce the pressure to increase wages during wage renegotiations.

Gertner, Gibbons, and Scharfstein (1988) study the equilibrium of signaling games with more than one audience. In their model, the signal is the corporate structure of the firm (the decision to issue equity or debt). The second audience is an uninformed competitor firm.

In their model, the existence of a second audience influences the payoffs of the firm. In this sense, the payoff structure is endogenous. Gertner et al. (1988) include the second audience by designing a game with two stages. In the first stage, the firm sends a signal to investors by choosing to issue debt or equity. In the second stage, the firm plays a Cournot game with the competitor firm. The competitor firm, however, also receives the signal sent to investors in the first period.

The main result of the paper is that the most likely outcome is a pooling equilibrium. This result is in sharp contrast to one-audience models of corporate structure, where the separating equilibrium is the most likely outcome, like the model of Myers and Majluf (1984). Gertner et al. (1988) suggest that the model can be easily generalized to other signals (like dividends) and other second audiences (like unions). However, the prediction of a pooling equilibrium is not realistic for dividends (a pooling equilibrium would yield zero dividend payments).

There is also extensive literature that studies the effects of unionization on leverage (for example Sarig (1998), Bronars and Deere (1991)). A contemporaneous work in this area by Matsa (2006) studies how liquidity and suppliers' market power can interact to affect the optimal debt policy of a firm. His results show that as predicted, firms use financial leverage to influence collective bargaining negotiations. However, his results also show that dividends are not used for this purpose (contrasting the result of DeAngelo and DeAngelo (1991)). This finding that dividends are not used as a commitment device (as free cash flow theories suggest) provides more support for the dividend signaling hypothesis and is consistent with my results, in which the interaction of unionization and dividend policy is shown to come from signaling effects.

3 Modified Bhattacharya (1979) Dividend Signaling Model

The following is an extension of the dividend signaling model presented in Bhattacharya (1979), allowing for the existence of a union that controls part of firm's earnings. The model is almost identical to the one presented in Bhattacharya (1979) and for this reason, I only include the most important equations.

3.1 Assumptions

The model assumptions are the same as in the cited paper: in each period each firm has a different earnings potential t, known by managers at the beginning of the period, but not by investors. The realization of future earnings is a random variable X which, for simplicity, is assumed to be uniformly distributed over the interval $[0, t]$, i.e., $X \sim U[0, t]$.

To abstract from the effects of diversification to hold and sell securities, the model assumes that all valuations are risk neutral. Also, each firm has enough investment opportunities for any cash flow level. This means that investment is always at its optimal level. This assumption yields a different signaling equilibrium than the model presented in Miller and Rock (1985).

Although agency issues have considerably gained importance in payout policy models, the model does not consider any agency problems: managers are assumed to care only about shareholders utility. Dividends are taxed at a rate τ. For simplicity I assume no tax on capital gains.[8]

Investment can be done using two sources of funds. The first, and cheapest, is internal cash flow. Bhattacharya (1979) assumes the existence of an exogenous cost of external financing, β. I follow this assumption as well.[9]

I extend the model of Bhattacharya (1979) by including one additional parameter, δ, which represents the fraction of firm's profits taken by the union in each period. The specific bargaining power of the union might be different in each firm; for this reason, I allow different firms to have different values of δ. I call the amount taken by the union, δX, "wages".

[8] These assumptions correspond to the pre-JGTRRA period. This is consistent with the period used in the empirical analysis.

[9] One of the main concerns that the literature has had about Bhattacharya (1979) model is the exogeneity of the cost of outside financing. In this paper, I will not try to address this issue. I will just say that several asymmetric information issues might cause this cost, like Myers and Majluf (1984).

3.2 The role of dividends as a signal

The role of dividends as a signal is easy to develop in this setting. Managers can signal the true value of t, by promising to pay dividends D. The signal works because only those managers with high enough expected earnings will be able to minimize the risk of using costly outside financing and at the same time pay dividends.

Formally, I assume that if there is enough cash flow to pay dividends plus wages $(D + \delta X)$, then no other cost is incurred. In fact, if cash flow exceeds dividends and wages, the amount of costly outside financing is reduced by this difference. So, if $(1 - \delta)X > D$, investors get the dividend D, and gain $(1 - \delta)X - D$ from less costly outside financing. The union gets δX.

In contrast, if cash flow is insufficient to cover promised dividends and wages, then investors pay the cost of outside financing. So, if $(1 - \delta)X < D$, investors get $(1 - \delta)X$ and lose the cost of financing the shortfall: $\beta((1 - \delta)X - D)$. The union still gets δX.

Note that the union is not taking any action or decision in this setting, but it simply takes wages from the firm. Although the model can be generalized to other settings where the union acts rationally, the main intuition can be derived from this simplistic version. I also derived more general versions of the model and obtained the same qualitative results.

3.3 Maximizing Behavior

In order to determine the equilibrium conditions of the model, I first solve for the maximizing behavior of managers. As noted above, the model assumes that managers care about the utility of investors. Equation 1 shows the utility function of investors, which is the sum of four terms. The first term is the value of the shares in the next period (as a function of D). The second term is the value of the after-tax promised dividend. The third and fourth terms are the expected values (under the distribution of X) of the gain when the cash flow is greater than dividends plus wages and the loss in costly outside financing when cash flow is lower than dividends plus wages, respectively:

$$I(D) = \frac{1}{1+r}\Big(V(D) + (1-\tau)D + \int_{\frac{D}{1-\delta}}^{\infty} \Big((1-\delta)X - D\Big) f(x)dx + \int_{-\infty}^{\frac{D}{1-\delta}} (1+\beta)\Big((1-\delta)X - D\Big) f(x)dx\Big). \tag{1}$$

Under the assumption that X is uniformly distributed, Equation 1 can be reduced to Equation 2:

$$I(D) = \frac{1}{1+r}\left(V(D) - \tau D + \frac{t(1-\delta)}{2} - \frac{\beta D^2}{2t(1-\delta)}\right). \tag{2}$$

The utility function of investors is maximized by managers, who know the true value of t and choose dividends. Then, the First Order Condition of the maximization of Equation 2 with respect to D yields:

$$V'(D^*) = \tau + \frac{\beta D^*}{t(1-\delta)}. \tag{3}$$

3.4 Equilibrium

The equilibrium condition assumes rational behavior and beliefs of all agents, including implicitly the capital market. Therefore, as in Bhattacharya (1979), the equilibrium function $V(D)$, must be "equal to the true value of future cash flows for the project whose cash flows are signaled with dividend D."[10] Assuming stationary dividends, the equilibrium condition is therefore:

$$V(D^*(t)) = \frac{1}{r}\left(\frac{t(1-\delta)}{2} - \tau D^*(t) - \frac{\beta D^*(t)^2}{2t(1-\delta)}\right). \tag{4}$$

Totally differentiating the equilibrium condition, Equation 4, and substituting for Equation 3, we get a First Order Ordinary Differential Equation in $D(t)$:

$$\left(\tau + \frac{\beta D}{t(1-\delta)}\right)\frac{dD}{dt} = \frac{1}{r}\left(\frac{(1-\delta)}{2} - \tau\frac{dD}{dt} - \frac{\beta D}{t(1-\delta)}\frac{dD}{dt} + \frac{\beta D^2}{2t^2(1-\delta)}\right) \tag{5}$$

[10]Bhattacharya (1979), p. 264.

As in many applications, the solution to this first order ODE can be found by assuming a linear solution of the form $D(t) = At$, where A is a known constant. The factorization used in Equation 5 gives clear indication that a linear solution is correct. This endogenous parameter A measures the sensitivity of dividends to the earnings potential, i.e., the slope of the signaling function.

The particular solution for the constant A is shown in Equation 6. Note how A depends on the different parameters of the model: the interest rate (r), the cost of outside financing (β), the fraction of earnings taken by the union (δ), and the tax rate on dividends (τ).

$$A = \frac{(1-\delta)(1+r)}{\beta(1+2r)} \left(\sqrt{\tau^2 + \frac{\beta(1+2r)}{(1+r)}} - \tau \right) \tag{6}$$

3.5 Empirical Prediction

Using Equation 6, it is straightforward to show that the derivative of A with respect to δ is negative.

$$\frac{\partial A}{\partial \delta} < 0. \tag{7}$$

In the model, δ can be interpreted as the power of the union in each particular firm. Therefore, the model predicts that the sensitivity of dividends to earnings is inversely related to the bargaining power of the union. This theoretical prediction leads to a very natural empirical test: *Whether dividends have less predictive power for explaining future changes in earnings in unionized firms.*

Section 4 describes in detail how this test is conducted, the main specification, the database used and some robustness checks.

4 Empirical Strategy

4.1 Database

4.1.1 Firm Unionization (Becker and Olson)

This database consists of firm level unionization data for 675 firms for the year 1977. This database is derived from a unique feature of the 1977 IRS Forms 5500. The US Department of Labor matched a union code to a sample of more than 1,000 pension plans. Becker and Olson aggregate over firms to get the number of total and unionized employees in each of the firms in the sample. From this sample of firms, I was able to match only 675 to the CRSP-COMPUSTAT Merged Database. This database has been used in other studies like Becker and Olson (1989) and Becker and Olson (1992). I define firm unionization as the percentage of firm employees that are unionized.

4.1.2 Collectively Bargained Pension Plans (Rauh)

This database consists of all the pension plans that fill up an IRS 5500 Form. The database is collected directly from the 5500 Forms and is publicly available from the US Department of Labor. When matched to the CRSP-COMPUSTAT Merged Database, I obtain 15,035 firm-year observations, with an average of 712 firms between 1990-1998.

For this sample of firms, I define firm unionization as the percentage of active employees for whom their pension plan was collectively bargained divided by the total number of active employees covered by these plans for the whole period.

4.1.3 Quarterly CRSP-COMPUSTAT Merged Database

I retrieved financial information for firms in either of the aforementioned databases from CRSP-COMPUSTAT Merged Files. For the firms matched to the database of Becker and Olson (1989), I use quarterly financial information for the period 1975Q1 to 1980Q4.

For the firms matched to the database of Rauh (2006), I use information from 1990Q1 to 1998Q4, which is the period for which the data is available. Table 1 presents summary statistics for the most important variables used in the empirical analysis.

4.2 Main specification

The main specification is similar to those used in the literature testing the power of dividends as predictors of future earnings (Benartzi et al. (1997), Nissim and Ziv (2001), Benartzi et al. (2004)). In this specification, the future change in earnings (scaled either by the value of assets or by book equity) is regressed on the current value of the percentage change in dividends, controlling for profitability as well as other characteristics of the firm.

Furthermore, I also include firm unionization and the interaction between changes in dividends and firm unionization in the regressions. The interaction variable is important to test the union effect of dividend payments. The model presented in Section 3 predicts that this coefficient should be negative, i.e., the predictive power of dividends should be lower for highly unionized firms.

$$\begin{aligned} \frac{(E_{it+1} - E_{it})}{A_{it}} &= \beta_0 + \beta_1 \Delta\% DIV_{it} + \beta_2 (U_i \times \Delta\% DIV_{it}) \\ &\quad + \beta_3 \frac{E_{it}}{A_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}, \end{aligned} \tag{8}$$

where, E_{it}: Earnings; A_{it}: Assets; $\Delta\% D_{it}$: Percentage change in dividends; U_i: Firm Unionization; X_{it}: Matrix of controls (change in assets, change in sales, Market-to-book value, and market value percentile). I also perform regressions scaling by book equity (B_{it}), instead of assets.

5 Results

5.1 OLS results, 1975-1980

Table 2 presents the first set of results. Here, the future change in earnings scaled by the value of assets is explained by current changes in dividends for 1975-1980. The results support the dividend signaling hypothesis, i.e., the coefficient of the change in dividends is positive and significant. The result is robust to the inclusion of controls. The table also shows the separate effect of dividend increases (ΔDIV_{it}^{+}) and decreases (ΔDIV_{it}^{-}). Note that the results are basically driven by dividend decreases.

The most important result however is that of the interaction term $U_{it} \times \Delta DIV_{it}$. The coefficient is negative and statistically very significant, but only for dividend decreases. This finding confirms the hypothesis of the theoretical model. This result is also robust to the inclusion of controls.

Next, in Table 3, I also present results scaling the earnings change by book equity. The results also support the signaling hypothesis. The coefficient on the dividend change is positive and statistically significant. Moreover, the interaction term is also negative and statistically significant in the first two columns, where dividend decreases and increases are pooled, although the effect still seems to be driven by dividend decreases. These results confirm the hypothesis that unionization has an effect on payout policy.

The use of quarterly data is one of the reasons for the difference between these findings and those of previous studies, which relied on annual data (i.e., missing the variation that occurs at more frequent intervals).

5.2 Instrumental variables approach to unionization

A common critique to the results shown in the previous tables is that unionization might be endogenous in the model. I overcome this problem by using instrumental variables. Specifically, I use Right-to-Work Laws to instrument for unionization. These laws, which give workers the freedom not to join a union and avoid paying the fees, might explain firm unionization but are probably uncorrelated with the disturbance term of the regression.[11] One drawback of the use of this variable, however, is that I was not able to assign it at the plant level, but only to the state of incorporation of the firm. This aggregation can be misleading.

Table 4 presents the results of these regressions scaling earnings changes by the value of assets.

[11] For example, in Non-Right-to-Work Law States, unions can require union membership. For details on Right-to-Work Laws and its effects on unionization see Farber (1984).

In the model, firm unionization and the interaction between unionization and the percentage change in dividends are instrumented with a Right-to-Work Law dummy and the interaction between this dummy and the percentage change in dividends.

The signaling effect is strong and not only significant for dividend decreases but also for dividend increases. Moreover, the interaction effect is negative and significant, even for dividend increases. This table confirms that unionization is important in determining dividend policy.

The first stage of this set of regressions is shown in Table 5. Overall, Right-to-Work Laws explain firm level unionization accurately.

Scaling the earnings variable with book equity does not change the conclusions of Table 4. This is shown in Table 6; the first stage is displayed in Table 7.

The coefficients are greater than in the OLS case, and highly significant. All these results support the signaling and the unionization hypothesis, and are robust to the inclusion of controls.

5.3 Results for 1990-1998

Given that I was able to construct two databases for different time periods, a natural robustness check is testing whether the results vary between periods and databases.

Table 8 shows the OLS regressions for this period. Overall, the results are less precise than those for the 1975-1980 period, which was expected since the power of unions in the US has decreased substantially during the last two decades. Nevertheless, the signaling effect is present, and the interaction effect is also significant in some of the cases.

6 Conclusions

In this paper I show that unionization has an effect on the determination of dividend policy for US firms. The results support the dividend signaling hypothesis, according to which managers use dividends to convey information about future earnings to investors. Moreover, I find strong evidence that managers take into account the bargaining power of its union before signaling future earnings through dividends. In particular, using information from IRS 5500 Forms to measure unionization at the firm level, I find that the power of dividends as predictors of future earnings is higher for non-unionized firms than for highly unionized firms. These empirical results are consistent with the model presented here, which is an extension of the dividend signaling model developed by Bhattacharya (1979). Moreover, I use the variation at the state level in the adoption of Right-to-Work Laws to overcome the possible endogeneity of unionization with an instrumental variables approach. The results are robust to different specifications and time periods.

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Tables

Table 1: Summary Statistics

	Mean	Std. Dev.	25%	Median	75%	N
$\Delta\%DIV_{it}$	0.039	0.324	0.000	0.000	0.000	13,256
$\Delta\%DIV_{it}^{+}$	0.211	0.633	0.100	0.143	0.250	2,974
$\Delta\%DIV_{it}^{-}$	-0.381	0.375	-0.667	-0.286	0.000	302
$\frac{(E_{it+1}-E_{it})}{A_{it}}$	0.001	0.017	-0.004	0.001	0.005	14,129
U_i	0.304	0.308	0.000	0.211	0.566	16,346
E_{it}/B_{it}	0.032	0.081	0.022	0.035	0.047	15,943
E_{it}/A_{it}	0.017	0.017	0.010	0.017	0.025	15,094
Market Value$_{it}$	1,103	3,002	130	319	941	14,350
MtoB Equity$_{it}$	1.19	0.89	0.66	0.96	1.48	15,209

E_{it} is earnings, A_{it} is assets, $\Delta\%D_{it}$ is the percentage change in dividends ($\Delta\%DIV_{it}^{+}$ denotes only positive changes and $\Delta\%DIV_{it}^{-}$ only negative changes), U_i is firm unionization and B_{it} is book equity.

Table 2: OLS regressions scaling by value of assets, 1975-1980

$$\frac{(E_{it+1}-E_{it})}{A_{it}} = \beta_0 + \beta_1 \Delta\% DIV_{it} + \beta_2 (U_i \times \Delta\% DIV_{it}) + \beta_3 \frac{E_{it}}{A_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$$

	(1)	(2)	(3)	(4)
$\Delta\% DIV_{it}$	0.004***	0.003***		
	(0.001)	(0.001)		
$\Delta\% DIV_{it}^{+}$			0.001	0.000
			(0.001)	(0.001)
$\Delta\% DIV_{it}^{-}$			0.013***	0.012***
			(0.002)	(0.002)
$\Delta\% DIV_{it} \times U_i$	-0.002	-0.001		
	(0.003)	(0.003)		
$\Delta\% DIV_{it}^{+} \times U_i$			0.003	0.004
			(0.003)	(0.003)
$\Delta\% DIV_{it}^{-} \times U_i$			-0.018***	-0.016***
			(0.005)	(0.005)
E_{it}/A_{it}	-0.885***	-0.992***	-0.888***	-0.995***
	(0.011)	(0.014)	(0.011)	(0.014)
Observations	11,942	10,889	11,942	10,889
Number of firms	649	644	649	644
R-squared	0.386	0.421	0.387	0.422
Firm and Time FE	Y	Y	Y	Y
Controls	N	Y	N	Y

E_{it} is earnings, A_{it} is assets, $\Delta\% D_{it}$ is the percentage change in dividends ($\Delta\% DIV_{it}^{+}$ denotes only positive changes and $\Delta\% DIV_{it}^{-}$ only negative changes) and U_i is firm unionization. Controls include change in assets, change in sales, Market-to-book value, and market value percentile. Robust standard errors in parentheses. *,**,*** significant at 10%, 5% and 1%, respectively.

Table 3: OLS regressions scaling by book equity, 1975-1980
$\frac{(E_{it+1}-E_{it})}{B_{it}} = \beta_0 + \beta_1 \Delta\% DIV_{it} + \beta_2 (U_i \times \Delta\% DIV_{it}) + \beta_3 \frac{E_{it}}{B_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$

	(1)	(2)	(3)	(4)
$\Delta\% DIV_{it}$	0.010***	0.008***		
	(0.002)	(0.002)		
$\Delta\% DIV_{it}^{+}$			0.003	0.001
			(0.002)	(0.002)
$\Delta\% DIV_{it}^{-}$			0.036***	0.035***
			(0.005)	(0.005)
$\Delta\% DIV_{it} \times U_i$	-0.019***	-0.018***		
	(0.005)	(0.005)		
$\Delta\% DIV_{it}^{+} \times U_i$			0.004	0.004
			(0.006)	(0.007)
$\Delta\% DIV_{it}^{-} \times U_i$			-0.079***	-0.072***
			(0.010)	(0.010)
E_{it}/B_{it}	-0.877***	-0.958***	-0.879***	-0.961***
	(0.010)	(0.012)	(0.010)	(0.012)
Observations	12,358	10,889	12,358	10,889
Number of firms	652	644	652	644
R-squared	0.404	0.452	0.407	0.454
Firm and Time FE	Y	Y	Y	Y
Controls	N	Y	N	Y

E_{it} is earnings, B_{it} is book equity, $\Delta\% D_{it}$ is the percentage change in dividends ($\Delta\% DIV_{it}^{+}$ denotes only positive changes and $\Delta\% DIV_{it}^{-}$ only negative changes) and U_i is firm unionization. Controls include change in assets, change in sales, Market-to-book value, and market value percentile. Robust standard errors in parentheses. *,**,*** significant at 10%, 5% and 1%, respectively.

Table 4: IV regressions (Right-to-Work Laws) scaling by value of assets, 1975-1980
$\frac{(E_{it+1}-E_{it})}{A_{it}} = \beta_0 + \beta_1 \Delta\% DIV_{it} + \beta_2 (U_i \times \Delta\% DIV_{it}) + \beta_3 \frac{E_{it}}{A_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$

	(1)	(2)	(3)	(4)
$\Delta\% DIV_{it}$	0.014***	0.010**		
	(0.004)	(0.004)		
$\Delta\% DIV_{it}^{+}$			0.014**	0.011*
			(0.006)	(0.006)
$\Delta\% DIV_{it}^{-}$			0.019***	0.012**
			(0.006)	(0.006)
$\Delta\% DIV_{it} \times U_i$	-0.041***	-0.032**		
	(0.015)	(0.016)		
$\Delta\% DIV_{it}^{+} \times U_i$			-0.050**	-0.043*
			(0.025)	(0.025)
$\Delta\% DIV_{it}^{-} \times U_i$			-0.033*	-0.017
			(0.017)	(0.018)
E_{it}/A_{it}	-0.882***	-0.990***	-0.886***	-0.994***
	(0.011)	(0.014)	(0.011)	(0.014)
Observations	11,942	10,889	11,942	10,889
Number of firms	649	644	649	644
Firm and Time FE	Y	Y	Y	Y
Controls	N	Y	N	Y

E_{it} is earnings, A_{it} is assets, $\Delta\% D_{it}$ is the percentage change in dividends ($\Delta\% DIV_{it}^{+}$ denotes only positive changes and $\Delta\% DIV_{it}^{-}$ only negative changes) and U_i is firm unionization. Controls include change in assets, change in sales, Market-to-book value, and market value percentile. Robust standard errors in parentheses. *,**,*** significant at 10%, 5% and 1%, respectively.

Table 5: IV first stage (Right-to-Work Laws) scaling by value of assets, 1975-1980
$(U_i \times \Delta\%DIV_{it}) = \beta_0 + \beta_1 \Delta\%DIV_{it} + \beta_2(RTWL_{it} \times \Delta\%DIV_{it}) + \beta_3 \frac{E_{it}}{A_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\%DIV_{it}$	0.298***	0.293***				
	(0.003)	(0.003)				
$\Delta\%DIV_{it}^{+}$			0.257***	-0.001	0.255***	-0.002
			(0.003)	(0.002)	(0.003)	(0.002)
$\Delta\%DIV_{it}^{-}$			0.005	0.404***	0.003	0.395***
			(0.005)	(0.003)	(0.005)	(0.004)
$RTWL_{it}$	-0.009	-0.010	-0.008	-0.001	-0.010	-0.001
	(0.009)	(0.010)	(0.007)	(0.005)	(0.008)	(0.005)
$\Delta\%DIV_{it} \times RTWL_{it}$	-0.114***	-0.111***				
	(0.006)	(0.006)				
$\Delta\%DIV_{it}^{+} \times RTWL_{it}$			-0.080***	0.002	-0.080***	0.003
			(0.006)	(0.004)	(0.006)	(0.004)
$\Delta\%DIV_{it}^{-} \times RTWL_{it}$			-0.001	-0.205***	0.001	-0.198***
			(0.010)	(0.006)	(0.010)	(0.007)
E_{it}/A_{it}	0.122***	0.123**	0.048	0.011	0.043	0.016
	(0.040)	(0.049)	(0.032)	(0.021)	(0.039)	(0.027)
Observations	12,597	11,526	12,597	12,597	11,526	11,526
Number of firms	654	651	654	654	651	651
R-squared	0.451	0.447	0.410	0.566	0.411	0.551
Firm and Time FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y

Dependent variable in columns (1) and (2) is $\Delta\%DIV \times U_i$; in columns (3) and (5) is $\Delta\%DIV^{+} \times U_i$; in columns (4) and (6) is $\Delta\%DIV^{-} \times U_i$. Variable definitions specified in Equation 8. Robust standard errors in parentheses.*,**,*** significant at 10%, 5% and 1%, respectively.

Table 6: IV regressions (Right-to-Work Laws) scaling by book equity, 1975-1980

$$\frac{(E_{it+1}-E_{it})}{B_{it}} = \beta_0 + \beta_1 \Delta\% DIV_{it} + \beta_2 (U_i \times \Delta\% DIV_{it}) + \beta_3 \frac{E_{it}}{B_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$$

	(1)	(2)	(3)	(4)
$\Delta\% DIV_{it}$	0.036***	0.026***		
	(0.009)	(0.008)		
$\Delta\% DIV^+_{it}$			0.039***	0.026**
			(0.014)	(0.012)
$\Delta\% DIV^-_{it}$			0.042***	0.032**
			(0.013)	(0.013)
$\Delta\% DIV_{it} \times U_i$	-0.119***	-0.088***		
	(0.034)	(0.033)		
$\Delta\% DIV^+_{it} \times U_i$			-0.153**	-0.107**
			(0.061)	(0.051)
$\Delta\% DIV^-_{it} \times U_i$			-0.093***	-0.063*
			(0.036)	(0.037)
E_{it}/B_{it}	-0.872***	-0.955***	-0.876***	-0.960***
	(0.011)	(0.012)	(0.011)	(0.012)
Observations	12,358	10,889	12,358	10,889
Number of firms	652	644	652	644
Firm and Time FE	Y	Y	Y	Y
Controls	N	Y	N	Y

E_{it} is earnings, B_{it} is book equity, $\Delta\% D_{it}$ is the percentage change in dividends ($\Delta\% DIV^+_{it}$ denotes only positive changes and $\Delta\% DIV^-_{it}$ only negative changes) and U_i is firm unionization. Controls include change in assets, change in sales, Market-to-book value, and market value percentile. Robust standard errors in parentheses. *,**,*** significant at 10%, 5% and 1%, respectively.

Table 7: IV first stage (Right-to-Work Laws) scaling by book equity, 1975-1980
$(U_i \times \Delta\%DIV_{it}) = \beta_0 + \beta_1\Delta\%DIV_{it} + \beta_2(RTWL_{it} \times \Delta\%DIV_{it}) + \beta_3\frac{E_{it}}{B_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\%DIV_{it}$	0.295***	0.292***				
	(0.003)	(0.003)				
$\Delta\%DIV^{+}_{it}$			0.255***	-0.001	0.255***	-0.002
			(0.003)	(0.002)	(0.003)	(0.002)
$\Delta\%DIV^{-}_{it}$			0.004	0.397***	0.002	0.394***
			(0.005)	(0.003)	(0.005)	(0.004)
$RTWL_{it}$	-0.009	-0.010	-0.009	0.000	-0.010	-0.001
	(0.009)	(0.010)	(0.007)	(0.005)	(0.008)	(0.005)
$\Delta\%DIV_{it} \times RTWL_{it}$	-0.104***	-0.111***				
	(0.006)	(0.006)				
$\Delta\%DIV^{+}_{it} \times RTWL_{it}$			-0.068***	0.002	-0.080***	0.002
			(0.006)	(0.004)	(0.006)	(0.004)
$\Delta\%DIV^{-}_{it} \times RTWL_{it}$			-0.001	-0.199***	0.001	-0.198***
			(0.010)	(0.006)	(0.010)	(0.007)
E_{it}/B_{it}	0.076***	0.093***	0.025*	0.023**	0.019	0.039***
	(0.017)	(0.021)	(0.014)	(0.009)	(0.017)	(0.012)
Observations	13,016	11,526	13,016	13,016	11,526	11,526
Number of firms	657	651	657	657	651	651
R-squared	0.449	0.448	0.407	0.565	0.411	0.551
Firm and Time FE	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y

Dependent variable in columns (1) and (2) is $\Delta\%DIV \times U_i$; in columns (3) and (5) is $\Delta\%DIV^{+} \times U_i$; in columns (4) and (6) is $\Delta\%DIV^{-} \times U_i$. Variable definitions specified in Equation 8. Robust standard errors in parentheses.*,**,*** significant at 10%, 5% and 1%, respectively.

Table 8: OLS regressions, 1990-1998

$$\frac{(E_{it+1}-E_{it})}{Z_{it}} = \beta_0 + \beta_1 \Delta\%DIV_{it} + \beta_2(U_i \times \Delta\%DIV_{it}) + \beta_3 \frac{E_{it}}{Z_{it}} + \beta_4 X_{it} + \alpha_i + \eta_t + \epsilon_{it}$$

	(1)	(2)	(3)	(4)
$\Delta\%DIV^{+}_{it}$	0.002**	0.002**	0.001	0.005
	(0.001)	(0.001)	(0.015)	(0.009)
$\Delta\%DIV^{-}_{it}$	0.008***	0.008***	0.009	0.031*
	(0.002)	(0.002)	(0.028)	(0.017)
$\Delta\%DIV^{+}_{it} \times U_i$	0.003	0.001	0.002	-0.010
	(0.003)	(0.003)	(0.055)	(0.036)
$\Delta\%DIV^{-}_{it} \times U_i$	-0.014**	-0.012**	-0.050	-0.041
	(0.006)	(0.005)	(0.091)	(0.057)
E_{it}/Z_{it}	-0.917***	-0.935***	-0.371***	-0.469***
	(0.007)	(0.007)	(0.008)	(0.005)
Observations	21,577	21,179	21,577	21,179
Number of firms	851	851	851	851
R-squared	0.451	0.488	0.108	0.683
Firm and Time FE	Y	Y	Y	Y
Controls	N	Y	N	Y

In Columns (1) and (2) is $Z_{it} = A_{it}$; in Columns (3) and (4) is $Z_{it} = B_{it}$. E_{it} is earnings, A_{it} is assets, B_{it} is book equity, $\Delta\%D_{it}$ is the percentage change in dividends ($\Delta\%DIV^{+}_{it}$ denotes only positive changes and $\Delta\%DIV^{-}_{it}$ only negative changes) and U_i is firm unionization. Controls include change in assets, change in sales, Market-to-book value, and market value percentile. Robust standard errors in parentheses. *,**,*** significant at 10%, 5% and 1%, respectively.