Labor unions and payout policy: A regression discontinuity analysis

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Abstract

We study the causal effect of labor unions on corporate payout policy by using a regression discontinuity (RD) design. Passing a union election leads to an 8.7% lower dividend ratio and a 17.9% lower total payout ratio (including both dividends and share repurchases) than failing an election in the following year. Our results are robust to alternative choices of kernels and bandwidths and are absent at artificially chosen thresholds that determine union election outcomes. Furthermore, the negative effect of unions on payout ratios is absent in firms located in states with right-to-work laws but without work stoppage provisions and in firms with strong worker-manager alliance. Operating flexibility and financial constraints are plausible underlying mechanisms through which unions lower payout ratios. Our paper sheds new light on the determinants of firm payout policy and the role of labor unions in corporate finance decisions.

Keywords: Payout policy; operating flexibility; labor unions; regression discontinuity design

JEL Classification: G35; G31; J51

1. Introduction

What determines a firm's payout policy? Since Miller and Modigliani (1961), financial economists have proposed numerous economic factors that determine a firm's payout policy including corporate taxes, signaling concerns, agency considerations, compensation practices, management incentives, and behavioral biases. However, very few studies have analyzed the role played by a firm's employees, one of the most important groups of stakeholders that both contribute to and get affected by firm operations, in shaping its payout decisions.

As a claimant to firms' resources, workers generally compete with shareholders in extracting economic rents created by the business and thus prefer to retain cash flows within the firms as opposed to paying them out.[1] Understanding this motive, shareholders and the management would design payout policies to maximize their own benefits. On the one hand, managers would want to keep a low payout ratio to cater to the preference of their employees so as to minimize the disruptive effect that an unhappy workforce might have on firms' operations. On the other hand, they would want to set a high payout ratio in order to avoid leaving resources behind for labor's rent extraction. The optimal payout policy reflects the above tradeoffs and crucially depends on how labor influences firms' operations and decision making. Since unions represent a prominent form of organized labor that not only helps employees to bargain with their employers but also affects a firm's operational activities in a profound way, we study the influence of labor on corporate payouts from the perspective of a firm's union elections. We develop two competing hypotheses regarding the effect of labor unions on payout policy based on existing evidence and prevailing views.

Our first hypothesis conjectures that labor unions reduce a firm's payout. In order to reduce cash flow risk and make their operations more flexible, firms need to increase the variable component of their cost structure, which entails linking their labor expenses (salaries and other employee compensation) to sales revenue. However, labor unions have a reputation for making wages sticky and layoffs costly, thereby increasing the adjustment cost of a firm's labor stock. Furthermore, unions frequently intervene in a firm's restructuring activities, such as blocking plant closures, to save workers' jobs, which makes it harder for the firm to adjust its physical

[1] A recent anecdote provides a good example in support of this argument: GM announced a dividend cut in February 2006 due to its persistent poor performance in the past few years since 2003. One important underlying force for the dividend cut was to get more concessions from the United Auto Workers, the union that represents GM's employees, because "everyone needs to share the pain, including shareholders." (Dow Jones News Service, February 7, 2006)

capital. As a result, unions will increase a firm's cash flow risk and reduce its operating flexibility.[2] In response to the threat from enhanced labor power, therefore, firms may decrease their payouts to accumulate precautionary cash to hedge against cash flow risk and to save for profitable investment opportunities. Further, labor unions often bargain with their employers for higher and more stable wages and better working conditions, putting an additional financial constraint on firm managers when they make corporate decisions. As a result, an increase in labor power will tighten a firm's financial situation, prompting it to cut down payouts to shareholders so as to free up some internal retained earnings for future investment use. Hence, the first hypothesis we propose, the *flexibility hypothesis*, argues that in response to the negative effect of labor unions on operating and financial flexibility, firms would cut their payouts after labor power increases.

An alternative hypothesis makes the opposite prediction. Firms can take a variety of strategic actions to improve their bargaining position against their workers. For example, DeAngelo and DeAngelo (1991) argue that, to gain concessions from labor unions, managers must create a credible perception that the firm's competitiveness is threatened by current economic conditions. Consistent with this argument, they show that unionized firms manage their earnings downward to create this perception prior to labor negotiations. Moreover, Bronars and Deere (1991), Hanka (1998), and Matsa (2010) find that issuing more debt helps to improve a firm's bargaining position against workers, supporting the idea that by committing itself to paying out a large portion of future cash flows to lenders, a firm can effectively reduce its cash flows available for labor expropriation. Klasa et al. (2009) show that firms in more unionized industries strategically hold less cash to gain more bargaining advantages over labor unions, indicating that a tighter cash position allows a firm to shelter its corporate income from unions' demands. Following the similar logic discussed above, since dividends enable firms to shield their cash flows from union demands, firms would prefer to commit to a high payout level in response to enhanced labor power. Therefore, our second hypothesis, the *bargaining hypothesis*, argues that to improve their bargaining position against workers, firms would increase their payouts after labor power increases.

[2] Chen et al. (2011a) show that reduced operating flexibility due to labor unions increases a firm's cost of equity.

While there might be an element of truth in both hypotheses, in practice it is difficult to identify the causal effect of labor unions on payout policy because of the well-known endogeneity problem. The existence of labor unions in a firm could be correlated with its unobservable characteristics that affect the payout policy (the omitted variable concern). Alternatively, workers in a firm with reduced permanent cash flows and hence lower expected payouts may be more likely to form unions to protect their interests (the reverse causality concern). Both problems could make it very difficult to draw causal inferences from a standard ordinary least squares (OLS) framework that regresses a firm's payout ratio on its unionization status.

To establish causality, we rely on union elections that substantially alter labor power. We collect union election results data from the National Labor Relations Board (NLRB), which allows us to compare changes in payout ratios for firms that elect to become unionized to those that vote against it. Our main identification strategy is to use a regression discontinuity (RD) design that relies on "locally" exogenous variation in union status generated by these elections that pass or fail by a small margin of votes. This approach compares firms' payout ratios subsequent to union elections that barely pass with payout ratios subsequent to elections that barely fail. The RD design is a powerful and appealing identification strategy because for these close-call elections, passing is very close to an independent, random event and therefore is unlikely to be correlated with firm unobservable characteristics.

We first perform a variety of diagnostic tests to ensure that the key identifying assumption of the RD design, namely, there is no precise manipulation of votes by either workers or firms around the known threshold (50%) for a winning union election, is satisfied.

We then show that unionization has a causal, negative effect on firm payout ratios. According to our nonparametric local linear regression estimation, passing a union election leads to an 8.7% lower dividend payout ratio and a 17.9% lower total payout ratio (including both dividends and share repurchases) than failing an election in the following year. This result is robust to alternative choices of kernels and bandwidths, and is absent at artificially chosen thresholds that determine union election outcomes. We also confirm that firms barely passing union elections and those barely failing to pass the elections exhibit similar pre-event characteristics that could affect a firm's payout policy.

Further, we explore how cross-sectional variation in labor power alters the negative effect of labor unions on payout policy. We find that the negative effect of unionization on firm payout is statistically insignificant in firms located in states with right-to-work legislation but without work stoppage provisions where unions have less power to expropriate rents. It is also absent in firms with strong worker-manager alliance. Finally, we explore plausible mechanisms through which unions adversely affect firms' payout ratios. We find that operating flexibility and financial constraints are possible underlying channels. Overall we find evidence consistent with the *flexibility hypothesis* which argues that firms cut down corporate payouts as a response to passing union elections in order to increase or maintain their operating and financial flexibility and to reduce their cash flow risks.

We are not the first to study this topic. The effect of unions on payout policy is first examined by the seminal work of DeAngelo and DeAngelo (1991). Using a sample of seven major US steel firms in the 1980s, they make an important attempt to tackle the question and show that these firms reduce work force, manipulate earnings downward, cut management pay, and reduce dividends during union negotiations. However, we differ from their study in at least three crucial dimensions. First, and perhaps most importantly, we use the RD design as our main identification strategy that allows us to establish a causal link between unionization and payout policy, which the existing literature has not adequately achieved. Second, instead of studying a few major firms in a particular industry, our sample covers all Compustat firms that experience a union election between 1980 and 2011 and it spans across a wide range of industries. Third, we make an attempt to pinpoint possible underlying economic mechanisms through which unions affect corporate payout policy.

Two other closely related studies to ours also examine the implications of labor unions for payout policy. Matsa (2006) finds an insignificantly negative relationship between union bargaining power and dividend policy. However, different from our sample that covers 32 years, his sample covers three cross-sectional snapshots in 1977, 1987, and 1999. Chino (2012) focuses on how industry-level union power affects a firm's payout policy, and finds that firms in industries with stronger labor unions tend to pay lower dividends when they are not profitable but commit to higher payouts when they are highly profitable. Nevertheless, both studies mainly rely on ordinary least squares (OLS) regression to make inference and thus cannot fully address the endogeneity problem in union power.

Our paper adds to the voluminous literature about the costs and benefits of labor unions. This literature generally shows that unions can influence both investment and financing decisions of firms. Bronars and Deere (1991), Hanka (1998), Matsa (2010) find that unionized firms are more likely to increase financial leverage because it allows them to shield their cash flows from union expropriation. Likewise, Klasa et al. (2009) argue that firms in unionized industries strategically hold less cash to maintain bargaining power with unions. Chen et al. (2011a, 2011b) find that the cost of equity is significantly higher but the cost of debt is lower in more unionized industries. Lee and Mas (2012) show negative abnormal stock returns over a long period subsequent to union victories, and Bradley et al. (2013) find that labor unions impede technological innovation. Both these studies - imply that unionization destroys firm value. More broadly, our paper is also closely related to the recent growing literature on how employee preferences and labor power affect firm policies such as capital structure (Berk et al., 2010; Chemmanur et al., 2013; Simintzi et al., 2014), innovation (Acharya et al., 2013), mergers and acquisitions (John et al., 2013), corporate financing decisions (Agrawal and Matsa, 2013), and corporate governance (Atanassov and Kim, 2009).

Our paper is also related to the large literature on payout policy, starting from Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985), which identifies a variety of major factors influencing a firm's payout policy including corporate taxes, signaling motives, agency considerations, compensation practices, and management incentives (See DeAngelo, DeAngelo, and Skinner (2008) and Farre-Mensa et al. (2014) for excellent surveys).[3] Our results suggest that operating and financial flexibility shaped by labor unions could be another important determinant of payout policy, consistent with the findings of Brav et al. (2005) that nowadays financial executives do not consider agency, signaling, or clientele effects as explanations for payout levels but still believe that perceived stability of future earnings affects dividend policy. In addition, our paper makes a direct contribution to a relatively small literature on the causes and consequences of dividend reductions. Kalay and Loewenstein (1986) find that late announcements of dividends are disproportionately associated with dividend reductions.

[3] John et al. (2011) show that a firm's geographic location, besides other well documented determinants, also affects its payout policy.

DeAngelo and DeAngelo (1990) argue that dividend cuts reflect managers' desire to reconcile the interests of various claimants during periods of financial distress. Michaely et al. (1995) study the price reactions to dividend omissions. Healy and Palepu (1988) and Benartzi et al. (1997) show an improvement in operating performance after dividend cuts. Chemmanur and Tian (2012, 2014) find that a significant proportion of dividend cutting firms prepare the market by releasing some information before dividend cuts and these firms perform better after dividend cuts. Our paper documents an additional factor that forces firms to cut dividends.

The rest of our paper proceeds as follows. Section 2 describes the data and presents summary statistics. Section 3 provides our main results and robustness checks. Section 4 investigates underlying economic mechanisms. Section 5 concludes.

2. Data and descriptive statistics

Our data come from several sources. Union election data, including the closing date of an election, the number of eligible participants/voters, and the outcome of the election, are collected from the National Labor Relation Board (NLRB). We study union elections held between 1980 and 2011, and drop those either with a missing voting outcome or with fewer than 50 eligible participating employees.[4] Then we manually match our union election sample to Compustat by company name and address so that we can extract relevant financial statement information and other firm characteristics from Compustat. Since our study aims to analyze corporate payout policies within a three-year period following a labor union election, we need to minimize the confounding effect of other recent elections held by the same firm. To this end, we require a firm conducting a union election to be included in our sample only if it has no other elections during the past three years. In case there are multiple elections held by the same firm within one year, we retain the one with the largest number of eligible voters because this election is likely to matter most for corporate decision making. Our sampling procedure results in 1,234 unique union elections.

Our main payout policy variables are *Dividend Payout* (the dividend-to-earnings ratio), which is the total annual cash dividends distributed by a firm divided by its net income over the

[4] We focus on elections with at least 50 eligible participating employees because union elections with a smaller size may only have a negligible impact on corporate decisions. In addition, elections with fewer participants may also be subject to precise manipulation of votes, which violates the crucial identifying assumption of the RD design. This type of filter is commonly adopted by the labor union election literature (e.g., Lee and Mas, 2012).

same fiscal year, and *Total Payout* (the total-payout-to-earnings ratio), which is the sum of total annual cash dividends and stock repurchases divided by net income. We follow Grullon and Michaely (2002) to measure the amount of stock repurchases. Specifically, we define repurchases as the total expenditures on the purchase of common and preferred stocks minus any reduction in the redemption value of the net preferred stocks outstanding. Following recent literature such as Chay and Suh (2009), we drop firm-years with negative earnings but with non-negative cash dividends or total payouts because it is difficult to interpret such payout ratios. To reduce the concern for outliers (especially due to extremely small earnings), we winsorize payout ratios at the 5% level. All the rest of the firm characteristics, described in Appendix A, have been winsorized at the 1% level.

Panel A of Table 1 reports summary statistics for our union election sample. On average 42.8% of votes are in favor of unionization, with a standard deviation of 20.9%. Out of these 1,234 elections between 1980 and 2011, unions won 28.7% of them. Panel B of Table 1 presents summary statistics of the payout variables as well as other firm characteristics that have been shown to affect a firm's payout decisions, including firm size (*Assets*), profitability (*ROA*), asset tangibility (*PPE/Assets*), investment (*Capx/Assets*), leverage (*Debt/Assets*) and cash holding (*Cash/Assets*). The average dividend payout ratio is 24.0% with a standard deviation of 30.2%, and the average total payout ratio is 44.9% with a standard deviation of 54.7%.

Figure 1 plots the trend of union election frequencies and passage rates across our sample period. There is a considerable decline in the number of union elections over time, which is consistent with recent literature on union membership rate (see, e.g., Visser, 2006). The second graph in Figure 1 describes the passage rates (frequencies) for union elections held in each year. Despite the wide variation in passage rates across time, the majority of union elections fail to pass except for year 2008. The average passage rate of 28.7% in our sample is consistent with recent studies such as Lee and Mas 2012 (29.86%).

3. RDD and main results

We present our main empirical strategy and results in this section. Section 3.1 discusses our empirical strategy and reports various diagnostic tests for the validity of using a regression discontinuity (RD) design. Section 3.2 presents our main RD results. Section 3.3 describes a variety of sensitivity tests to check the robustness of the main results. Section 3.4 explores how cross-sectional variation in labor power alters the effect of unions on corporate payout policy.

3.1 Empirical strategy and diagnostic tests

We estimate the causal effect of unionization on payout policy by adopting a RD design, which assigns a firm's unionization status to our sample firms based on a simple majority (50%) passing rule and exploits a unique feature of the union election data—we observe the percentage of votes for unionization in every union election.

The intuition behind our RD strategy is as follows: elections that pass (leading to unionization in the firm) or fail (not leading to new unions inside the firm) within a narrow bandwidth around the 50% threshold for favorable votes should follow the pattern of a quasi-randomized experiment. Essentially, this empirical approach compares firms' payout policies subsequent to union elections that pass by a small margin to those union elections that do not pass by a small margin. It is a powerful and appealing identification strategy for our purpose because for a close-call labor union election, unionization is "locally" exogenous in the sense that it is unlikely to be systematically correlated with any unobservable characteristics that might lead to its unionization status. In other words, the assignment of a treatment effect (i.e. unionization status) to the group of our sample firms is likely to be random, which helps us to identify the causal effect of unionization on corporate payout policy. This feature of the RD approach means that our empirical test design is not prone to the usual endogeneity problems or sample selection issues. Another advantage of the RD design is that we do not have to include observable covariates in our analysis (as in a standard multiple regression framework) because firms falling in a narrow band around the threshold are similar in all dimensions of characteristics. Hence, firm covariates are unnecessary for identification (see earlier survey papers on RDD such as Imbens and Lemieux, 2008, and Lee and Lemieux, 2010, for a more detailed discussion on this less stringent requirement).

The success of a RD strategy hinges on the satisfaction of the key assumption of imprecise control, which requires that agents (voters and firms) in an election cannot *precisely* manipulate the forcing variable (i.e., the share of favorable votes) near the known cutoff.[5] The implication is that the distribution of the forcing variable should not have any jumps around the discontinuity point (i.e., the 50% threshold). To check the validity of this assumption, we perform two diagnostic tests.

First, Figure 2 plots a histogram of the sample distribution of vote shares (i.e., the percentage of votes in an election in favor of unionization) across 50 equally-spaced bins (with a bin width of 2%). As we can observe, the vote share distribution is continuous within close proximity of the cutoff point (the 50% threshold), which indicates no sign of precise manipulation by voters or firms.

Second, we perform a formal statistical test, developed by McCrary (2008), for discontinuities in the density of the vote shares, which is depicted in Figure 3. The dots represent the density estimate and the bold line is the fitted density function of the forcing variable (union vote shares) surrounded by the 90% confidence interval. As one can observe, the density of vote shares appears smooth and its fitted curves show little indication of a strong discontinuity near the 50% threshold. The Z-statistic for the McCrary test of discontinuity is 1.384 (The coefficient of estimate is 0.299 with a standard error of 0.216), which is statistically insignificant. Thus we are unable to reject the null hypothesis that the density function at the cutoff is continuous, indicating that no agents have precisely manipulated the votes around the known threshold to achieve their desired unionization status. Our finding of no precise manipulation around the known cutoff is consistent with the previous literature (e.g., DiNardo and Lee, 2004).

In sum, the above two tests show that the key identifying assumption of agents' imprecise control is most likely to be satisfied, supporting our test premise that the variation in unionization status is as good as that from a randomized experiment (Lee, 2008).

3.2 Main RD- results

In this subsection, we report the main RD results. Since the passing of union elections may take quite some time to affect firm management and corporate decisions, we examine payout policies one, two, and three years subsequent to the elections.

[5] Note that this assumption does not require the absence of vote manipulation in the elections. As long as agents do not have *precise* control over the forcing variable (even though some manipulation exists), an exogenous discontinuity still allows for random assignment to the treatment (see, e.g., Lee, 2008).

Before we explore the effect of unions on payout policy in rigorous regression analyses, we first check the relation between passing a union election and payout ratios visually. Figure 4 demonstrates the RD results graphically in an intuitive way. Figures in the left column plot *Dividend Payout* and those in the right column describe *Total Payout*. The x-axis is the forcing variable, vote share, which is the percentage of votes in favor of unionization. To the left of the 50% cutoff point, firms fail to unionize after the labor union elections; to the right of the cutoff, firms succeed in becoming unionized. As in previous figures, the spectrum of vote share is divided into 50 equally-spaced bins (with a bin width of 2%).[6] The dots in the graphs represent the average payout ratio in each bin, and the solid line is the result of a fitted quadratic polynomial (with a 90% confidence interval). From Figure 4, we observe a discontinuity in both payout variables across the cutoff in each of the three years post the union election: we observe a significant drop in payout ratios when moving the vote share from the left to the right of the 50% threshold. These patterns are consistent with a negative effect of unionization on payout policies.

Next, we adopt a global polynomial model to implement the RDD (e.g., Cuñat, Gine, and Guadalupe, 2012) using all observations in our sample. The global polynomial model is essentially a pooled ordinary least squares regression with the following specification:

$$Payout\_Ratio_{t+N} = \alpha + \beta Unionization_t + P_l(v, c) + P_r(v, c) + \varepsilon_t \quad (1)$$

where t indexes time (i.e., year of the election) and N = 1, 2, or 3. $P_l\ (v, c)$ is a flexible polynomial function for observations on the left-hand side of the threshold c with different orders; $P_r\ (v, c)$ is a flexible polynomial function for observations on the right-hand side of the threshold c with different polynomial orders; v is the vote share of an election (percentage of votes in favor of unionization). Since union elections win with a simple majority of support among the voters, c equals 50% in our setting. *Payout_Ratio* is either *Dividend Payout* or *Total Payout*, and *Unionization* is a dummy that equals one if the vote share exceeds 50%, and zero otherwise. In this regression, β measures the difference in the slopes of these smoothed functions ($P_l\,(v, c)$ and $P_r\ (v, c)$) at the cutoff point, capturing the causal effect of passing a union election on firm payout ratios N (N=1, 2, or 3) years down the road. However, since RDD estimates are essentially weighted average treatment effects where the weights are the ex-ante probabilities

[6] Alternative choice of bin widths does not change our results qualitatively.

that the vote shares fall in the neighborhood of the win region (Lee and Lemieux, 2010), this coefficient should be interpreted locally within close vicinity of the 50% cutoff.

We present the results estimating Equation (1) in Table 2. Panel A performs the estimation with polynomials of order three. As one can observe, the coefficient estimates on *Unionization* are all negative and statistically significant at the 1% or 5% level in most years, except for *Total Payout* in year 3, suggesting a negative, causal effect of unionization on corporate payout policy. In terms of economic magnitude, the estimates for Year 1 (N= 1) suggest that firms passing union elections will have a cash dividend payout 18.1% lower and a total payout ratio 23.2% lower than those without successful union elections one year after the elections. Panel B and C estimate Equation (1) by using polynomials of order two and one, respectively, and find qualitatively similar results.[7]

The results from a global polynomial model point to a negative effect of unions on payout policy. However, one potential concern with the above methodology is that it uses all elections in the sample, even those with voting shares away from the cutoff point, although they are weighted much less than the elections with voting shares close to the cutoff point during estimation. Hence, in order to provide more convincing evidence on the causal effect of unionization on payout policy, we implement a nonparametric local linear estimation in the vicinity of the 50% threshold using the optimal bandwidth suggested by Imbens and Kalyanaraman (2012) that minimizes the mean squared error in a sharp RD setting. Compared to the global polynomial method, the local linear estimation model has better local fitness (Bakke and Whited, 2012), more attractive rate optimality, and superior bias properties (Fan and Gijbeles, 1992, and Han, Todd, and van der Klaauw, 2001).

Panel A of Table 3 presents the local linear estimation results using the triangular kernel. Consistent with the results from the global polynomial estimation, the coefficient estimates on *Unionization* are all negative and statistically significant at the 1% or 5% level in most years after the union elections. Specifically, firms with winning union elections have a cash dividend payout 8.7% lower and a total payout ratio 17.9% lower than those that fail to pass union elections one year afterwards. While the statistics literature has shown that a triangular kernel is

[7] In untabulated analysis, we repeat the analysis using polynomials of higher order such as four or five, and find similar results. For example, if we use polynomials of order four, the RDD estimate for *Dividend Payout* one year after the union election is -0.174 (with a t-stat of 2.04) and that for *Total Payout* one year after the union election is -0.173 (with a t-stat of 1.65).

optimal for estimating local linear regressions at the boundary as it puts more weight on observations closer to the cutoff point (Fan and Gijbeles, 1992), we still adopt a rectangular kernel in Panel B of Table 3 to check the robustness of our findings. We obtain qualitatively similar results. Overall, the evidence presented in this subsection suggests a negative, causal effect of unionization on firm payout ratios, consistent with the *flexibility hypothesis*.

Panel C of Table 3 reports local linear regression results for other important firm characteristics (covariates) that have been shown to affect corporate payout policies in the literature. One important assumption of the RD design is that there is no discontinuity in firm characteristics other than the assignment of unionization across the known cutoff point. In other words, firms close to the left and the right of the cutoff point (i.e., those with vote shares slightly above or below the 50% threshold) should be similar in terms of observable, predetermined characteristics that might impact the outcome (payout policies) and/or the assignment variable (vote shares). If there are any significant "jumps" in the distribution of these important characteristics near the 50% threshold, then the treatment effect we observe using the RD design could be biased.[8]

Hence, we perform a diagnostic test for this assumption by running local linear regressions on various firm characteristics (summarized in Panel B of Table 1) at a "predetermined date" to the elections, determined as follows. Since unions must collect signatures from all eligible voters (employees) six months before filing the case to the National Labor Relation Board (NLRB) and the average gap between the filing date and the closing date of an election is three months, any events happening to the firm during this 9-month period could potentially affect both the assignment variable (vote shares) and these firm characteristics simultaneously, making the later not predetermined. Therefore, to examine these pre-election covariates in a clean way, we pick the date one year before the reported closing date of the union elections as the "predetermined date" and analyze the covariates at the fiscal year ending date immediately before this date.

[8] Note, however, that this assumption is much less restrictive than textbook assumptions regarding endogeneity (such as the exclusion restrictions) in that it does not require those predetermined characteristics to be exogenous: as long as they are determined prior to the assignment variable (the voting share) and continuously distributed around the cutoff point (i.e. with no jumps), then the RDD procedure will still yield valid and consistent estimates. See Lee and Lemieux (2010) for a more detailed discussion of this assumption and related tests.

As is shown, none of the local linear regression RDD estimates for these firm characteristics are statistically significant, suggesting that there is no discontinuity in the distribution of these covariates around the known threshold. Most importantly, the predetermined values of our key dependent variables, *Dividend Payout* and *Total Payout*, do not show discontinuity around the narrow bandwidth of the cutoff point, suggesting that our main RDD results are unlikely to be driven by *ex ante* differences in payout policies between firms passing union elections and those whose elections fail.

3.3 Robustness checks

In this section, we report a comprehensive set of robustness checks that examine the sensitivity of our RDD results to various model assumptions. First, we check whether our local linear regression estimates are sensitive to the choice of bandwidths, which reflects a classical tradeoff between bias and precision. On the one hand, a bigger bandwidth makes use of more observations within the local neighborhood of the cutoff and thus yields more accurate estimates. On the other hand, such big bandwidths may introduce more noise and bias into the estimation because it has used more "non-local" observations away from the cutoff where linear approximation can be problematic. The converse is true for smaller bandwidths.

Hence, to address the concern that our results in Table 3 are driven by the bandwidth we have chosen, we plot the estimated local RDD coefficients along with their 90% confidence intervals (on the vertical axis) as a function of the chosen bandwidth (on the horizontal axis) in Figure 5. A value of "100" on the horizontal axis represents the optimal bandwidth suggested by Imbens and Kalyanaraman (2012). "200" means 200% of (i.e., two times of) the optimal bandwidth, "300" means 300%, and so forth. The left-hand side figures describe *Dividend Payout* and the right-hand side ones are for *Total Payout*. As one can observe, the local RD estimates are almost always negative and stable, with both economic and statistical significance, over the whole spectrum of bandwidth choices. This result shows that our local linear RDD estimates are unlikely to be driven by any specific choice of bandwidths.

Second, if our RD estimation truly reflects a negative, causal effect of unionization on corporate payout ratios, we should not observe a similar effect if we artificially assume a threshold other than 50% that determines union election outcomes. Hence, we run placebo tests to check whether we still observe a discontinuity in payout ratios at randomly selected thresholds that are different from the true 50% threshold. We run this placebo test 1,000 times and plot a histogram of the distribution of the corresponding local RD estimates in Figure 6. The vertical dashed line stands for the value of the local RDD estimate obtained using the true cutoff point of 50%. As we can see, all of the histograms in Figure 6 are approximately centered around 0, suggesting that the negative effect of unionization on payout ratios disappears if we artificially pick a cutoff point other than 50%. This placebo analysis boosts our confidence in the RDD procedure and the resulting estimates, as it rules out chance as an explanation for our main findings in the previous subsection.

Third, we try alternative ways of constructing our sample and present the results in Table 4. Recall that to construct our main RDD sample, we retain the election with the largest number of eligible voters if there are multiple elections held by the same firm within one year. Another way of dealing with multiple elections held by the same firms is to simply keep the first one. Presented in Panel A of Table 4, the local linear regression results using such "first" elections within a year are both qualitatively and quantitatively similar to our main local RDD results in Table 3. Another filter we apply when constructing our main sample is that we require a firm holding an election to have no union elections in the previous three years so as to avoid the confounding effects of such historical events. An alternative way of tackling the confounding effects of multiple elections held by the same firm is to require it to have no other elections both in the previous and the next three years. Although this is a more stringent filter, which reduces our sample size and thus the power of our tests, we still obtain similar (but slightly weaker) local linear regression results, which are summarized in Panel B. Panel C adopts an even more stricter data filter, requiring a firm to hold only one election throughout our sample period. Despite the fact that this filter substantially reduces our sample size, our local RDD estimates continue to remain significantly negative for almost all columns. Lastly, to check how our results are affected by the confounding effects of multiple elections held by the same firm, we keep all elections held by the same firm in our sample period and run the local linear regressions using this enlarged sample. The results, presented in Panel D, show that unionization still has a significantly negative effect on payout policies within the three-year period after the union elections, though the economic magnitudes of the estimated RD coefficients are much smaller than those in Table 3, possibly due to the confounding (or offsetting) effects of multiple elections.

3.4 Cross-sectional variation in labor power

Having established a causal link between labor unions and payout policy, we next explore how cross-sectional variation in labor power alters the relation between unions and payout ratios.

3.4.1 Right-to-work laws and work stoppage provisions

Since firms in states with right-to-work laws cannot force their employees to join the union and pay union dues as preconditions of employment, unions have significantly less bargaining power in such states than those in non-right-to-work states. As a result of the weaker union bargaining power in a right-to-work state, the passing of unionization elections is likely to have a smaller impact on payout policies in such a state than in states without similar legislations. By the same token, state-level work stoppage provisions, which permit strikers to collect unemployment insurance during a labor dispute if their employer continues to operate at or near normal capacity, have been shown to affect union bargaining power in a positive way because under such regulations labor strikes (often organized by unions) effectively become less costly for participating workers (see, e.g., Matsa, 2010). Consequently, the effect of unionization on corporate payout policies should be stronger for firms located in states that have adopted work stoppage provisions than those states that have not. We test the above conjectures in this subsection.

Table 5 reports the local linear RD estimates for firms located in those states either without right-to-work legislations or with work stoppage provisions (the top panel) as opposed to those located in those states with right-to-work laws but without work stoppage provisions (the bottom panel).[9]

[9] States with right-to-work laws as of 2011 (our union election sample end year) include Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wyoming. States with work stoppage provisions as of 2011 include Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, Washington, West Virginia, and Wyoming.

As expected, firms winning union elections in states either without right-to-work legislation or with work stoppage provisions (which give unions more bargaining power and thus make unionizations more relevant for corporate decision making) have significantly lower payout ratios than those failing the elections, both economically and statistically, within three years after the unionization. This result confirms our main finding that unionization leads to a decline in corporate payouts. On the other hand, the coefficient estimates on *Unionization* for firms located in right-to-work states but without work stoppage provisions (where unions have the weakest power) are negative but statistically insignificant across all three post-election years for the two payout measures, suggesting that unionization has little impact on payout policies in such states where unions are not favored by regulations.

3.4.2 Worker-manager alliance

In this subsection, we study how the effect of labor union on payout policy is shaped by the strength of worker-manager alliances. If the workers in a firm are powerful and are already in a good relationship with the managers in the sense that they are reasonably well paid and their interests and rights are well protected, then whether having a labor union around is unlikely to make a difference on worker or manager behavior, because in such a firm unions are not needed in the first place and workers are unlikely to use them as a tool to bargain with their employers. On the other hand, in firms where workers have a very tense (or even hostile) relationship with the management (and/or the shareholders), labor unions may play a critical role in helping workers gain job-related benefits and protecting their interests from any infringements. Hence, firm managers in such companies will also respond more actively to the establishment of new labor unions. Therefore, we expect that the negative effect of winning union elections on payout policies is stronger when firms have weaker worker-manager alliance.

To test this conjecture, we divide our sample of firms into two groups based on the level of worker-manager alliances in their Fama-French 48 industries, which is constructed in the spirit of Hanka (1998). Specifically, we first regress the per-employee labor related expenses on a firm's log assets, Tobin's Q, leverage, return on assets, industry-average worker wage, capital over labor ratio (book value of assets per employee), sales per employee, and year fixed effects. Then we take the average of the residuals from the above regression for a given industry to proxy for the strength of worker-manager alliance in that industry. Industries with an average residual value above zero have strong worker-manager alliance, while those with a residual value below zero have weak worker-manager alliance. We report the local RD estimation results for the subsample analysis based on strong or weak worker-manager alliances in Table 6.

Consistent with our conjecture, the coefficient estimates on *Unionization* are almost all negative and significant in the bottom panel (i.e. for firms with weaker worker-manager alliances), indicating that the negative effect of unionization on payout ratios is mostly concentrated in firms whose employees have an unfriendly relationship with their employers. In such firms, the passing of union elections will help the workers gain more power within the firm and in turn prompt the managers to alter their corporate policies (such as payout ratios, as examined here) to a greater extent. In contrast, the local RDD estimates for firms with stronger worker-manager alliances (in the top panel) are much smaller in magnitudes than those in the bottom panel and mostly statistically insignificant (other than two coefficients).

The findings in this subsection illustrate that the observed difference in payout policies between firms with close-to-win and close-to-fail union elections is indeed affected by the employer-employee tension along the corporate ladder, reinforcing a causal interpretation for our main RDD results.

4. Underlying channels

So far our empirical evidence suggests a negative, causal effect of labor unions on payout policy, consistent with the *flexibility hypothesis*. In this section, we aim to further understand the underlying mechanisms through which the passing of union elections reduces firm payouts. We achieve this goal by exploring how unionization affects dividend and total payout ratios differently in the cross section. In Section 4.1, we use the cross-sectional variation in a firm's operational leverage to examine whether the relation between labor unions and operating flexibility helps explain their negative effect on payout ratios. In Section 4.2, we explore how the cross-sectional variation in a firm's degree of financial constraints affects the negative link between unionization and corporate payouts.

4.1 Operational leverage

The first underlying mechanism through which labor unions reduce corporate payouts is their adverse effect on firms' operating flexibility. In order to reduce cash flow risk and make their operations more flexible, firms need to increase the variable component of their cost structure, which entails linking their labor expenses (salaries and other employee compensation) to sales revenue. However, labor unions have a reputation for making wages sticky and layoffs costly, thereby increasing the adjustment cost of a firm's labor stock. Furthermore, unions frequently intervene in a firm's restructuring activities, such as blocking plant closures, to save workers' jobs, which makes it harder for the firm to adjust its physical capital. Therefore, unions will increase a firm's cash flow risk and reduce its operating flexibility.

This argument implies a stronger negative effect of the passage of union elections on payout policies for firms with an *ex ante* lower level of operational flexibility because such firms face a larger threat from the winning elections and thus will decrease their payouts to a greater degree. By doing so, these low-operating-flexibility firms will prevent their cash flow risk to go up further, which allows them to become more able to save for profitable investment opportunities in the future. As a result, we expect that the negative effect of wining union elections on payout policies is stronger when firms have higher operational leverage, which implies lower operating flexibility.

We follow Mandelker and Rhee (1984) and estimate a firm's operational leverage as the elasticity of a firm's earnings before interest and taxes (EBIT) with respect to its sales, using the most recent 12 quarterly observations before an election's "predetermined date", which is defined earlier in Section 3.2. Firms with operational leverage higher than the sample median are those with lower operating flexibility. The local RD estimation results for firms in the high operational leverage subsample (the top panel) and the low operational leverage subsample (the bottom panel) are reported in Table 7.

Consistent with our conjecture, the coefficient estimates on *Unionization* are all negative and significant in the top panel (i.e. for firms with high operational leverage), suggesting that the negative effect of unionization on payout ratios is mostly concentrated in firms with less flexible operations. On the contrary, the local RD estimates for firms with low operational leverage (in the bottom panel) are much smaller in magnitude than those in the top panel and statistically insignificant (with small t-statistics), perhaps due to the fact that such firms have flexible operations to begin with and thus the passage of unionization elections would have no material effect on its cash flow risk or operating flexibility, making it less necessary for them to reduce their dividend payouts.

In summary, the evidence presented in this subsection suggests that operating flexibility is likely to be an underlying economic channel through which the passage of union elections reduces firm payouts.

4.2 Financial constraints

The second possible economic mechanism we consider is a firm's financial constraints. On behalf of the employees, labor unions often bargain with their employers for a higher and more stable wage level and better working conditions, putting an additional constraint on the firm management when they make investment decisions. Even if a profitable project suddenly becomes available, the firm managers may not be able to immediately grasp the investment opportunity because the high setup costs at the initial stage and subsequent cash flow uncertainties may lead to volatile cash outflows. This problem results in a possible delay in sending out paychecks or even a drastic restructuring of the company's workforce including layoffs and forced turnovers, all of which will invite severe criticism and face vehement opposition from the union leaders. To the extent that unions have bargaining power with the board and management, the firm may end up having to give up many value-enhancing investment opportunities unless it has enough financial flexibility (e.g., enough internal retained earnings, easy access to external capital, and few pre-commitments to pay out dividends).

Hence, if a firm is already financially constrained, the passage of unionization elections makes its financial situation even tighter, prompting it to cut down payouts so as to free up some internal retained earnings for future investment use. On the other hand, firms with fewer financial constraints do not need to drastically change their payout policies because the newly established unions are unlikely to affect their future investment activities significantly. The above argument suggests a stronger negative effect of the passing of union elections on payout policies for firms with *ex ante* more stringent financial constraints.

To examine this conjecture, we use the Kaplan-Zingales (KZ) index as of the "predetermined date" to proxy for the strength of a firm's financial constraints. Firms with the

KZ index above the sample median are more financially constrained. We report the local RD estimation results for firms in the more financially constrained subsample (the top panel) and the less financially constrained subsample (the bottom panel) in Table 8.

Consistent with our prior, the coefficient estimates on *Unionization* are mostly negative and significant in the top panel (i.e. for firms with more stringent financial constraints), suggesting that the negative effect of unionization on payout ratios is mostly concentrated in financially constrained firms. By contrast, the local RD estimates for less constrained firms (in the bottom panel) are much smaller in magnitudes than those in the top panel and are statistically insignificant (with tiny t-statistics). Moreover, three of the six estimated coefficients are actually positive, though statistically insignificant.

Overall, the evidence presented in this subsection suggests that financial constraints are another possible underlying economic mechanism through which the passage of union elections decreases firm payout ratios.

5. Conclusion

In this paper, we have studied the causal effect of labor unions on corporate payout policy. To establish causality, we have used a regression discontinuity design that relies on "locally" exogenous variation generated by union elections that pass or fail by a small margin of votes. Passing a union election leads to a dividend payout ratio 8.7% lower and a total payout ratio (including both dividends and share repurchases) 17.9% lower than failing the election in the following year. The negative effect of unions on payout ratios is absent in firms located in states with right-to-work laws but without work stoppage provisions, firms with strong worker-manager alliance, firms having high operating flexibility, and firms that are not financially constrained. Our results are robust to alternative choices of kernels and bandwidths and are absent at artificially chosen voting thresholds that determine union election outcomes. We show that operating leverage and financial constraints are likely mechanisms through which unions negatively affect a firm's payout ratio.

Overall we find evidence consistent with the flexibility hypothesis which argues that firms cut down corporate payouts as a response to passing union elections in order to increase or maintain their operating flexibility and reduce their cash flow risks. Our paper sheds new light on the determinants of corporate payout policy.

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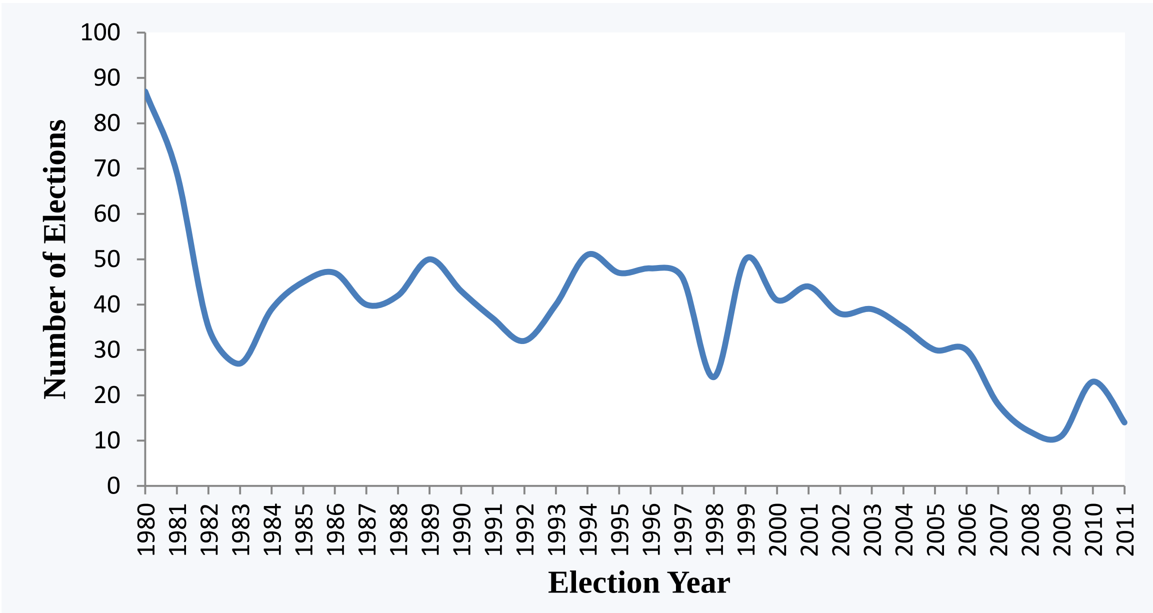
Appendix A: Definition of variables

Variable	Definition
Measures of payout policy	
Dividend Payout	Dividends (Compustat data #21) divided by income before extraordinary items (#237) measured at the end of fiscal year *t*;
Total Payout	Sum of Dividends (#21) and repurchase divided by income before extraordinary items (#237) measured at the end of fiscal year *t*. Repurchase is measured as expenditures on the purchase of common and preferred stocks (#115) minus any reduction in the redemption value of the net number of preferred shares outstanding (#56);
Measures of covariates and other variables	
Assets	Book value of total assets measured at the end of fiscal year *t* (item #6);
Market Value	Market value of equity measured at the end of fiscal year *t*, calculated as #199 × #25;
ROA	Return on assets defined as operating income before depreciation (#13) divided by book value of total assets (#6) measured at the end of fiscal year *t*;
Leverage	Firm *i*'s leverage ratio, defined as book value of long-term debt (#9) divided by book value of total assets (#6), measured at the end of fiscal year *t*;
PPE/Assets	Property, plant & equipment (#8) divided by book value of assets (#6) measured at the end of fiscal year *t*;
Cash/Assets	Cash and short-term investments (#1) divided by book value of total assets (#6), measured at the end of fiscal year *t*;
Capx/Assets	Capital expenditures (#128) divided by book value of total assets (#6) measured at the end of fiscal year *t*;
TobinQ	Firm *i*'s market to book ratio, defined as market value of equity plus book value of assets minus book value of equity minus deferred taxes (set to zero if missing) divided by book value of assets, measured at the end of fiscal year *t*;
Operational Leverage	The elasticity of a firm *i*'s earnings before interest and taxes (EBIT) with respect to its sales using the most recent twelve quarterly observations before the end of fiscal year *t*;
KZindex	Firm *i*'s Kaplan and Zingales index measured at the end of fiscal year *t*, calculated as -1.002 × cash flow [(#18+#14)/#8] plus 0.283 × Q [(#6+#199×#25-#60-#74/#6] plus 3.139 × leverage [(#9+#340/(#9+#34+#216)] minus 39.367 × dividends [(#21+#19/#8] minus 1.315 × cash holding (#1/#8), where #8 is lagged.

Figure 1: Number of union elections and passage rates by year

This figure plots the number of union elections by year (top) and the average passage rates by year (bottom). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011.



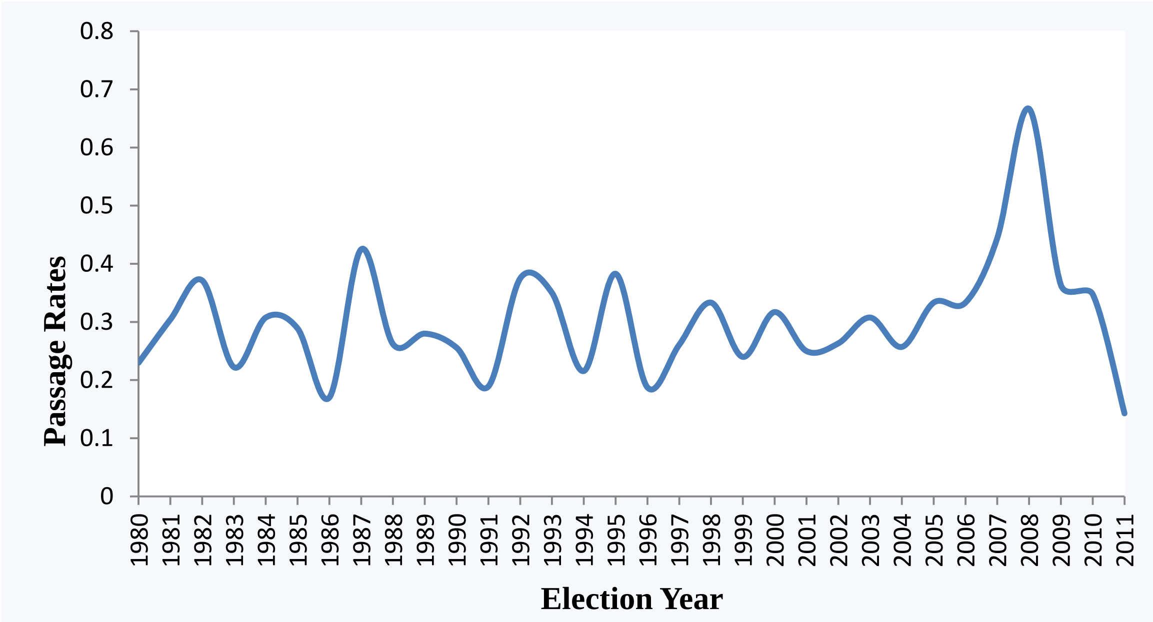


Figure 2: Distribution of votes
This figure plots a histogram of the sample distribution of vote shares (i.e., the percentage of votes in an election in favor of unionization) across 50 equally-spaced bins (with a bin width of 2%). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011.

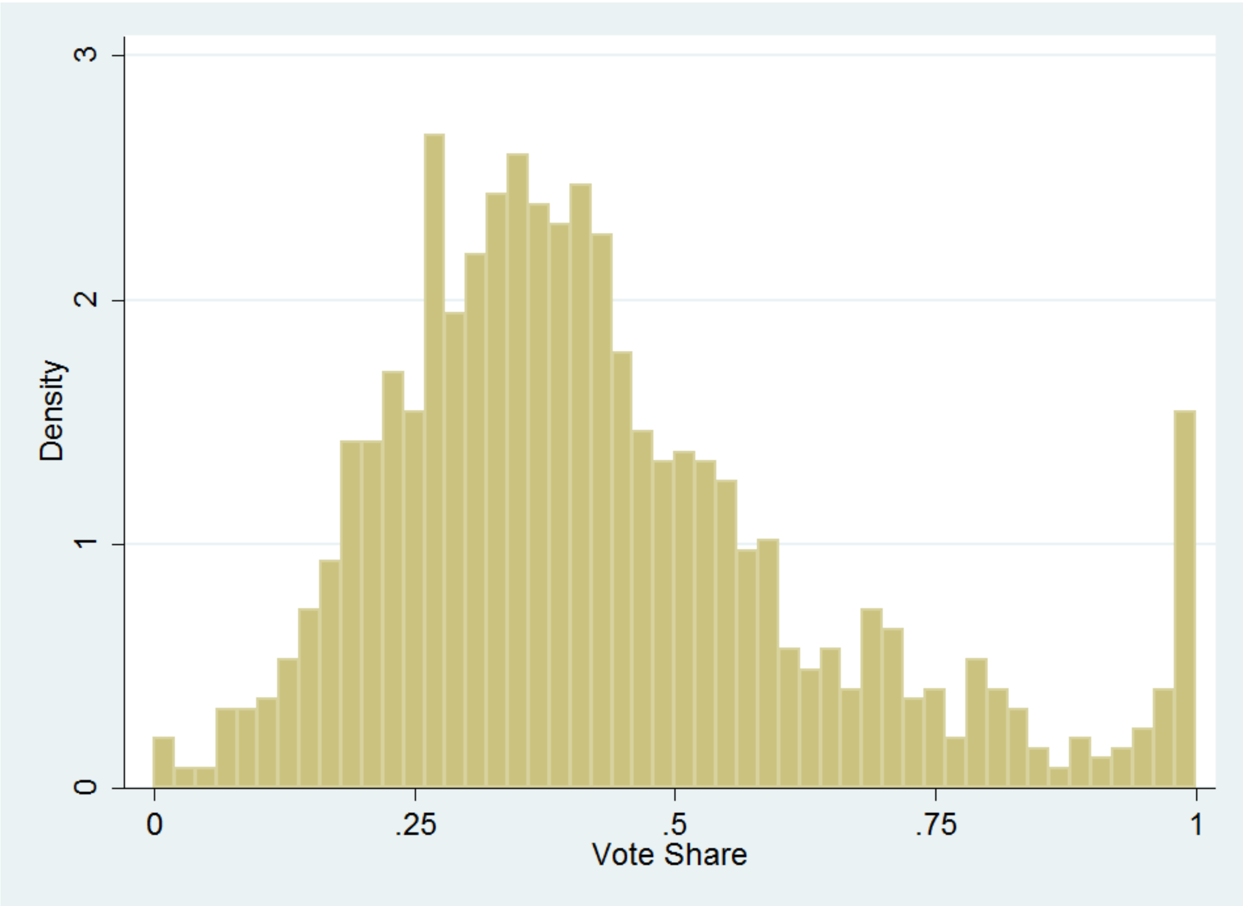


Figure 3: Density of union vote shares

This figure plots the density of union vote share (i.e., the percentage of votes in an election in favor of unionization) following the procedure in McCrary (2008). The x-axis is union vote shares. The dots represent the density estimate for each chosen bin and the bold line is the fitted density function of union vote shares with a surrounding 90% confidence interval. Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011.

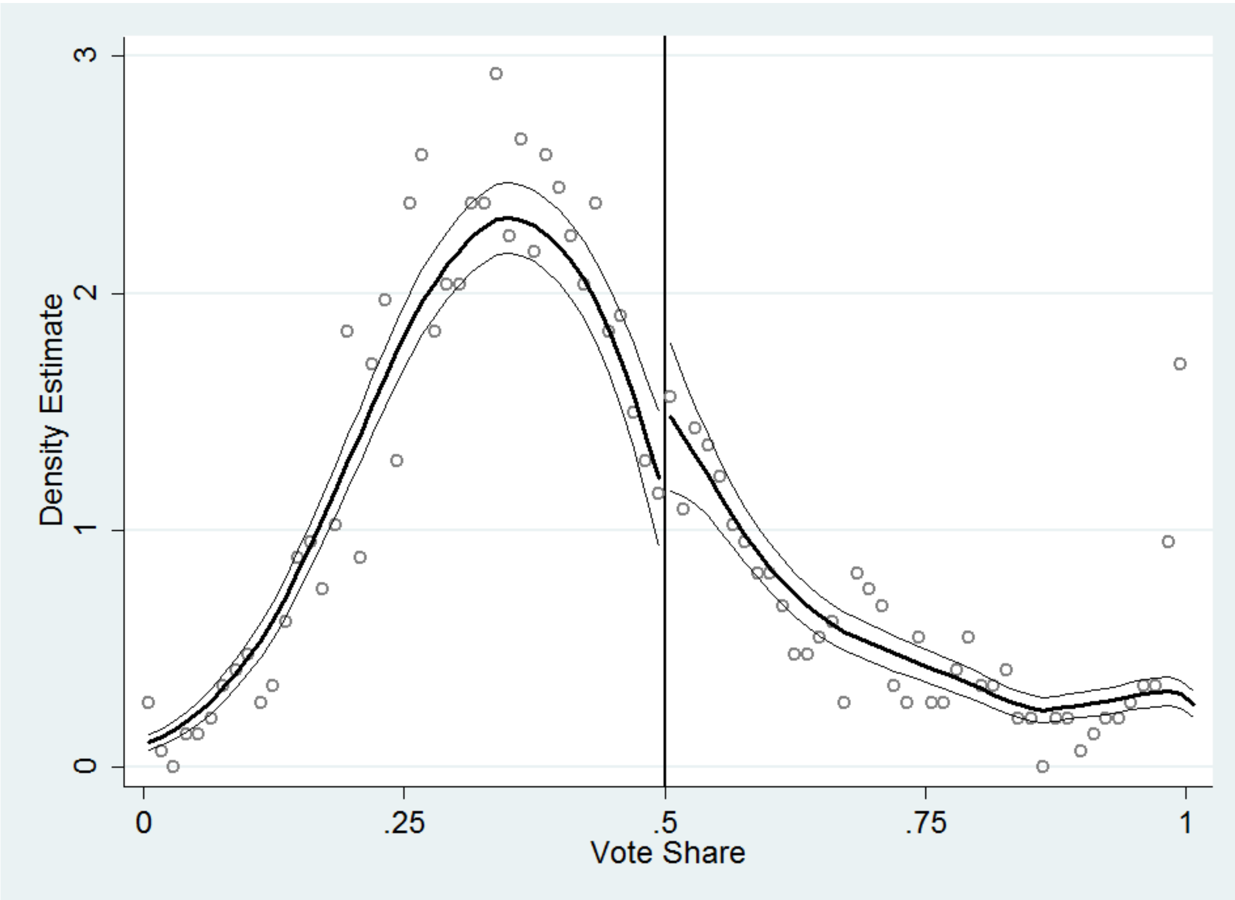


Figure 4: Regression discontinuity plots

This figure presents regression discontinuity plots using a fitted quadratic polynomial estimate with a 90% confidence interval around the fitted value. The x-axis is union vote shares (i.e., the percentage of votes in an election in favor of unionization). The dots depict the average *Dividend Payout* (left) and *Total Payout* (right), defined in Appendix A, in each of the 50 equally-spaced bins (with a bin width of 2%). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat.

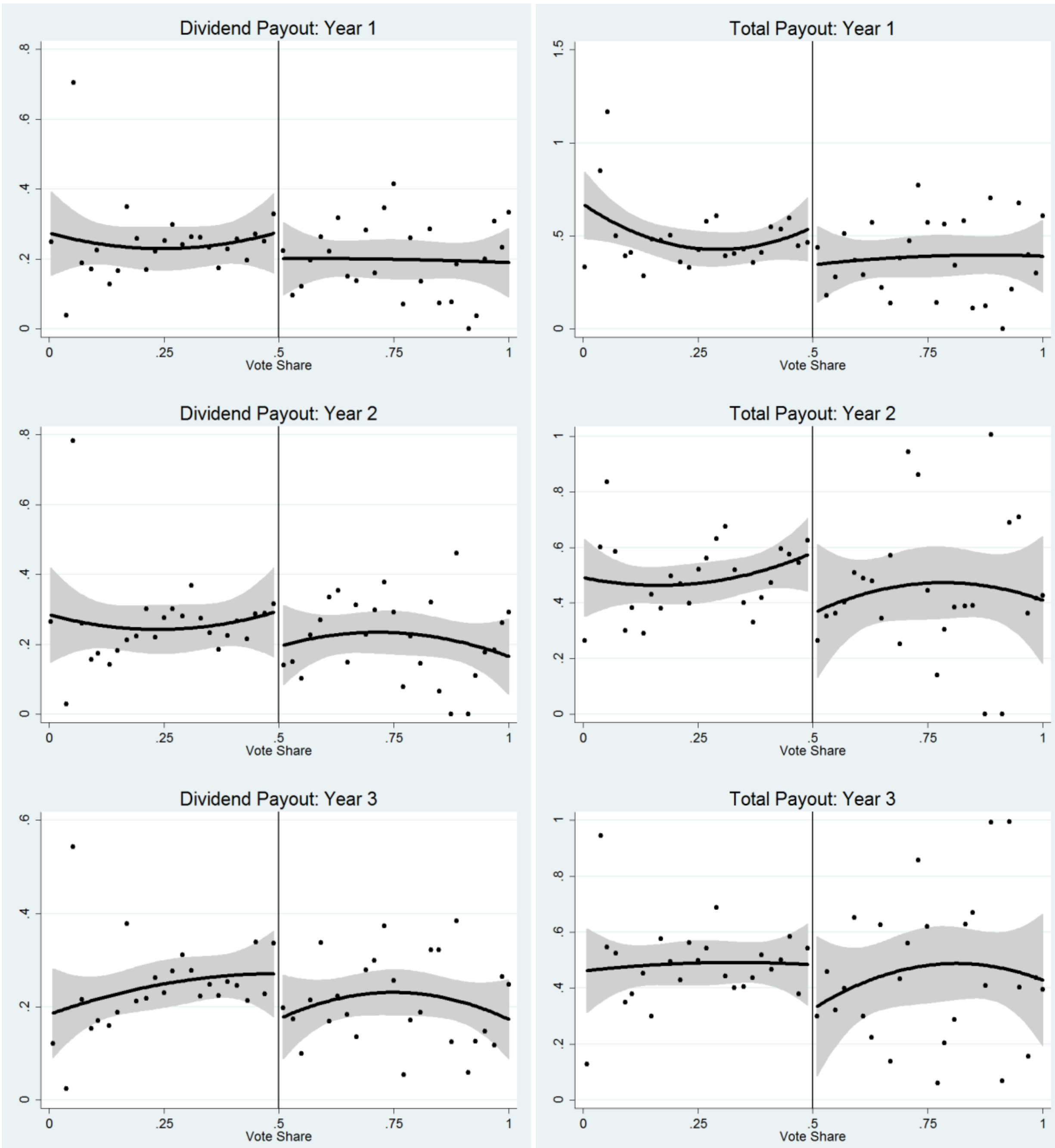


Figure 5: Alternative RDD bandwidths

This figure plots the estimated local RDD coefficients along with their 90% confidence intervals (on the vertical axis) against alternative values of bandwidths (on the horizontal axis). A value of "100" on the horizontal axis represents the optimal bandwidth suggested by Imbens and Kalyanaraman (2012). "200" means 200% of (i.e., two times of) the optimal bandwidth, “300” means 300%, and so forth. The left-hand side figures describe *Dividend Payout* and the right-hand side ones are for *Total Payout*. Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat.

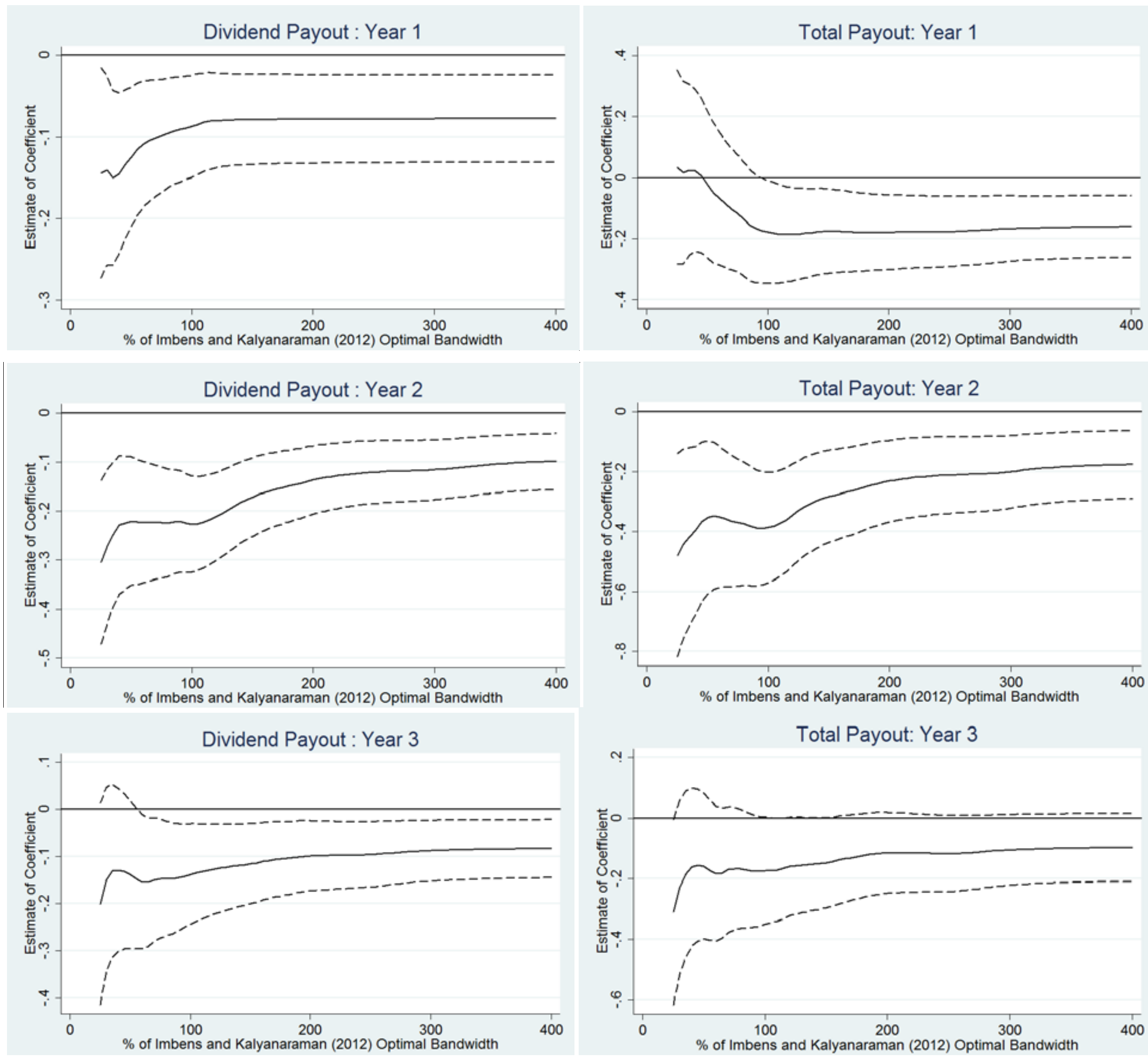


Figure 6: Placebo tests

This figure plots a histogram of the distribution of the local RDD estimates from 1000 placebo tests. The x-axis represents the RDD estimates from the placebo tests that artificially select an alternative threshold other than 50%. The dashed vertical line represents the RDD estimate at the true 50% threshold. The y-axis is the density of the estimated coefficients for *Dividend Payout* (left) and *Total Payout* (right). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat.

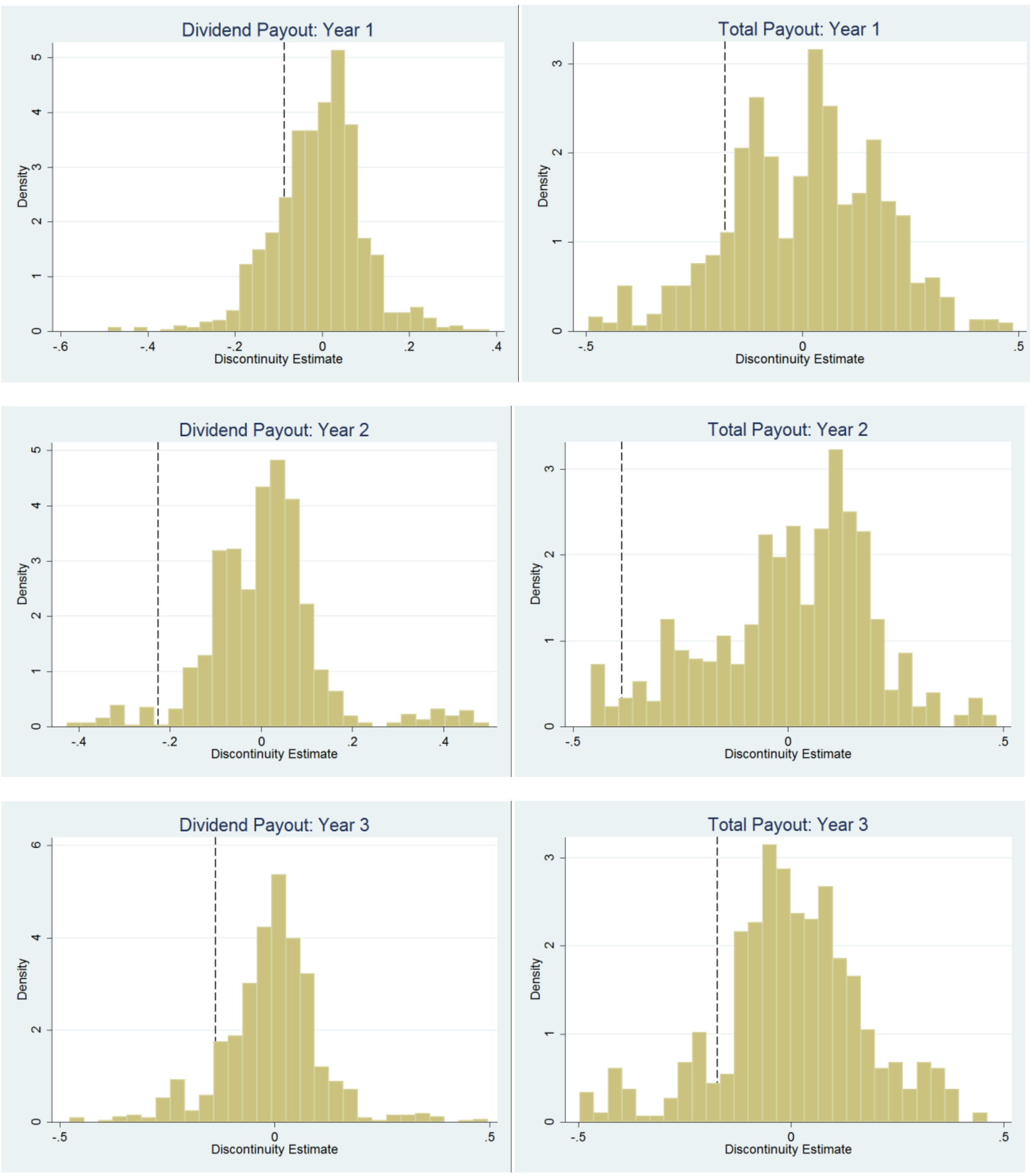


Table 1: Descriptive statistics

This table presents descriptive statistics of our sample, which includes 1,234 union elections taken place between 1980 and 2011. Panel A reports union election statistics. "*Vote Share*" is the percentage of votes in an election in favor of unionization. "*Passage*" is an indicator variable that equals one if a firm is unionized as a result of an election, and zero otherwise. Panel B reports summary statistics of variables used in our study. All variables are defined in Appendix A. Union election results are from the National Labor Relations Board (NLRB). Payout and other financial variables are from Compustat.

Panel A: Election statistics

Variables	Obs.	Mean	Median	Std. Dev.
Vote Share	1,234	0.428	0.388	0.209
Passage	1,234	0.287	0.000	0.452

Panel B: Summary statistics

Variables	Mean	25th pct	Median	75th pct	Std. Dev.
Dividend Payout	0.240	0.000	0.131	0.378	0.302
Total Payout	0.449	0.000	0.272	0.657	0.547
Assets(in Millions)	3833.9	145.9	718.0	2941.6	8639.0
Market Value(in Millions)	3122.0	87.6	467.7	2257.9	7924.5
Leverage	0.247	0.107	0.215	0.344	0.192
PPE/Assets	0.641	0.398	0.602	0.843	0.330
Cash/Assets	0.071	0.013	0.035	0.095	0.090
Capex/Assets	0.068	0.032	0.056	0.088	0.052

Table 2: Regression discontinuity: Global polynomial

This table presents RDD results from estimating a polynomial model specified in Equation (1). The dependent variables are *Dividend Payout* (left) and *Total Payout* (right) and the variable of interest is a unionization dummy. Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Panels A, B, and C use polynomial orders of three, two, and one, respectively. T-statistics adjusted for heteroskedasticity and within-firm clustering are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Payout ratios after the elections (polynomial order of three)

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.181***	-0.207***	-0.175**	-0.232**	-0.332***	-0.180
	(-2.711)	(-3.120)	(-2.415)	(-1.994)	(-2.622)	(-1.419)

Panel B: Payout ratios after the elections (polynomial order of two)

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.090*	-0.119**	-0.112**	-0.221**	-0.221**	-0.128
	(-1.864)	(-2.404)	(-2.128)	(-2.504)	(-2.279)	(-1.309)

Panel C: Payout ratios after the elections (polynomial order of one)

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.080**	-0.087**	-0.084**	-0.164**	-0.150**	-0.089
	(-2.403)	(-2.443)	(-2.295)	(-2.706)	(-2.254)	(-1.332)

Table 3: Regression discontinuity: Nonparametric local linear regression

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012). Results are reported. In Panel A, the dependent variables are *Dividend payout* (left) and *Total Payout* (right) N years (N=1, 2, or 3) using triangular kernels. In Panel B, the dependent variables are *Dividend payout* (left) and *Total Payout* (right) using rectangular kernels. In Panel C, the dependent variables are other firm characteristics as of the predetermined date (defined as the date one year before the reported closing date of the union elections). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Payout ratios after the elections (triangular kernels)

	Dividend Payout$_{t+N}$			*Total Payout*$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.087**	-0.226***	-0.137**	-0.179*	-0.386***	-0.174
	(-2.289)	(-3.787)	(-2.116)	(-1.744)	(-3.447)	(-1.606)

Panel B: Payout ratios after the elections (rectangular kernel)

	Dividend Payout$_{t+N}$			*Total Payout*$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.071**	-0.238***	-0.145**	-0.222**	-0.383***	-0.162
	(-1.880)	(-3.717)	(-2.237)	(-2.079)	(-3.248)	(-1.449)

Panel C: Other firm characteristics at the predetermined date

Variable	Coefficient	T-statistic
Dividend Payout	-0.041	-0.861
Total Payout	0.031	0.293
Assets	-234.5	-0.179
Market Value	-1635.2	-1.366
ROA	-0.006	-0.472
Leverage	0.050	1.305
PPE/Assets	0.004	0.066
Capx/Assets	0.012	1.130
Cash/Assets	-0.011	-0.939

Table 4: Robustness tests for local linear regressions

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) based on alternative ways of constructing the sample. Results using triangular kernels are reported. The dependent variables are *Dividend Payout* (left) and *Total Payout* (right). Panel A keeps the first (earliest) election held by a firm in the fiscal year. Panel B requires a firm holding an election to have no other elections both in the previous and the next three years. Panel C only analyzes firms holding exactly one union election throughout the whole sample period. Panel D keeps all elections held by the same firm in our sample period. Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: First election in a year

	Dividend Payout $_{t+N}$			***Total Payout*** $_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.121**	-0.220***	-0.107**	-0.167*	-0.365***	-0.147
	(-2.321)	(-3.289)	(-1.968)	(-1.650)	(-3.061)	(-1.318)

Panel B: No other elections in the previous and next three years

	Dividend Payout $_{t+N}$			***Total Payout*** $_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.133**	-0.176**	-0.139*	-0.258**	-0.323**	-0.167
	(-2.063)	(-2.341)	(-1.886)	(-2.564)	(-2.426)	(-1.285)

Panel C: Firms with only one election throughout sample period

	Dividend Payout $_{t+N}$			***Total Payout*** $_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.216*	-0.176**	-0.351***	-0.161	-0.292**	-0.488**
	(-2.609)	(-2.238)	(-2.593)	(-1.083)	(-2.429)	(-2.352)

Panel D: All elections

	Dividend Payout $_{t+N}$			***Total Payout*** $_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.066*	-0.090*	-0.058*	0.008	-0.210***	-0.083
	(-1.885)	(-2.560)	(-1.681)	(0.110)	(-3.109)	(-1.373)

Table 5: Subsample analysis based on right-to-work laws and work stoppage provisions
This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms located in states either without right-to-work laws or with work stoppage provisions (Panel A) versus those located in states with right-to-work laws but without work stoppage provisions (Panel B). Results using a triangular kernel are reported. The dependent variables are *Dividend Payout* (left) and *Total Payout* (right). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: States either without right-to-work laws or with work stoppage provisions

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.195**	-0.279***	-0.181**	-0.141*	-0.493***	-0.103
	(-2.351)	(-3.669)	(-2.060)	(-1.676)	(-3.626)	(-0.959)

Panel B: States with right-to-work laws but without work stoppage provisions

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.117	-0.073	-0.039	-0.038	-0.139	-0.237
	(-0.821)	(-0.683)	(-0.284)	(-0.101)	(-0.714)	(-1.226)

Table 6: Subsample analysis based on worker-manager alliance

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms in Fama-French 48 industries with strong worker-manager alliance (Panel A) versus firms in industries with weak worker-manager alliance (Panel B). Following Hanka (1998), we first regress the per-employee labor related expenses on a firm's log assets, Tobin's Q, leverage, return on assets, industry-average worker wage, capital over labor ratio (book value of assets per employee), sales per employee, and year fixed effects. Then we take the average of the residuals from the above regression for a given industry to proxy for the strength of worker-manager alliance in that industry. Industries with the average residual value above zero have strong worker-manager alliance, while those with a residual value below zero have weak worker-manager alliance. Results using a triangular kernel are reported. The dependent variables are *Dividend Payout* (left) and *Total Payout* (right). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Strong worker-manager alliance

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.087	-0.186**	-0.123*	0.345	-0.195	-0.090
	(-0.812)	(-2.033)	(-1.767)	(1.418)	(-1.095)	(-0.705)

Panel B: Weak worker-manager Alliance

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.201**	-0.295***	-0.144*	-0.323***	-0.580***	-0.160
	(-2.638)	(-3.300)	(-1.740)	(-3.720)	(-3.468)	(-1.286)

Table 7: Subsample analysis based on operational leverage

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms with high operational leverage (Panel A) versus firms with low operational leverage (Panel B). We follow Mandelker and Rhee (1984) and estimate a firm's operational leverage as the elasticity of its earnings before interest and taxes (EBIT) with respect to its sales, using the twelve most recent quarterly observations before the predetermined date of the election. We then split the firms into two subsamples based on the sample median operational leverage. Results using a triangular kernel are reported. The dependent variables are *Dividend Payout* (left) and *Total Payout* (right). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: High operational leverage

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.219***	-0.390***	-0.243**	-0.312***	-0.520***	-0.264*
	(-3.065)	(-3.611)	(-2.286)	(-2.682)	(-2.841)	(-1.947)

Panel B: Low operational leverage

	Dividend Payout$_{t+N}$			***Total Payout***$_{t+N}$		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.088	-0.080	0.007	-0.119	-0.237	0.240
	(-0.981)	(-0.863)	(0.054)	(-0.946)	(-1.397)	(1.074)

Table 8: Subsample analysis based on financial constraints

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms that are more financially constrained (Panel A) versus firms that are less financially constrained (Panel B). We use the Kaplan-Zingales (KZ) index to proxy for a firm's financial constraints. Firms with KZ index below sample median are less constrained, and firms with KZ index above sample median are more constrained. Results using a triangular kernel are reported. The dependent variables are *Dividend Payout* (left) and *Total Payout* (right). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2011. Payout data are from the Compustat. Z-statistics are displayed in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: More financially constrained

	Dividend Payout$_{t+N}$			***Total Payout$_{t+N}$***		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.243***	-0.301***	-0.253**	-0.362***	-0.598***	-0.236
	(-2.976)	(-2.705)	(-2.494)	(-3.026)	(-3.584)	(-1.535)

Panel B: Less financially constrained

	Dividend Payout$_{t+N}$			***Total Payout$_{t+N}$***		
	N=1	N=2	N=3	N=1	N=2	N=3
Unionization	-0.026	-0.073	-0.017	-0.001	0.064	0.000
	(-0.269)	(-0.766)	(-0.160)	(-0.004)	(0.307)	(0.002)