

## **Hard Marriage with Heavy Burdens: Labor Unions as Takeover Deterrents \***

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This version: December 2014

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\* We thank Nishant Dass (CFEA discussant), Gerard Hoberg, and Fei Xie for their useful discussions. We also appreciate comments from conference and seminar participants at the 2014 Conference of Financial Economics and Accounting, 2014 Indiana Finance Symposium, and Indiana University. We remain responsible for any errors or omissions.

# **Hard Marriage with Heavy Burdens: Labor Unions as Takeover Deterrents**

## **Abstract**

We examine the causal effect of unionization on a firm's takeover exposure and merger gains. To establish causality, we use a regression discontinuity design that relies on "locally" exogenous variation generated by elections that pass or fail by a small margin of votes. Barely passing a union election leads to a significant reduction in a firm's probability of receiving takeover bids. Conditional on receiving a takeover bid, barely unionized targets enjoy a lower announcement return, receive a lower offer premium, and experience longer bid duration. The negative effect of unions on targets' takeover exposure and merger gains is more pronounced when the mergers are horizontal, the firms have large unions, and the unions locate in states without right-to-work laws or states with more union-friendly successor statutes. Bidders of unionized targets seem to have more experience in making merger deals, possess a higher bargaining power, and face less union threat by themselves. Our paper provides new insights into the real effects of unionization regarding the market for corporate control.

Key words: Takeover exposure; Labor unions; Regression discontinuity design

JEL classification: G34, G30, J51

## 1. Introduction

There has been an intensive debate among academics, practitioners, and regulators about the real economic effect of labor unions in the past a few decades. Advocates argue that unions lead to increased productivity by reducing employee turnover, improving cooperation among workers, and implementing better policies that reflect the aggregate preferences of all employees. However, critics of unions claim that they raise wages above the equilibrium level, encourage shirking, and lower society's output through the ability (and realization) of workers to go on strike. In this paper, we focus on a specific effect of labor unions, firms' takeover exposure, which is perhaps one of the most important disciplining mechanisms the markets impose on firms (e.g., Marris, 1964; Manne, 1965; Jensen, 1993; Edmans, Goldstein, and Jiang, 2012) and has significant impact on equity returns and firm valuation (e.g., Bates, Becher, and Lemmon, 2008; Cremers, Nair, and John, 2009).

While there are likely merits to both sides of the above debate, identifying the causal effect of labor unions on a firm's takeover exposure remains a challenge because of the endogenous nature of unionization: workers forming labor unions could give rise to or result from the underlying characteristics that are related to a firm's exposure to takeovers. For example, unionization status could be correlated with unobservable firm heterogeneity that also affects a firm's takeover exposure (the omitted variable concern) or firms that want to deter takeovers may be more likely to pass unionization elections (the reverse causality concern).<sup>1</sup>

In this paper, to tackle the above endogeneity problem and provide the first empirical study that examines the causal effect of labor unions on a firm's takeover exposure and merger gains, we focus on a sample of firms that hold union elections and use a regression discontinuity

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<sup>1</sup> Pagano and Volpin (2005) advance that often times incumbent management form alliances with employees by offering them higher wages to fend against takeover threat.

design (RDD) that relies on “locally” exogenous variation in unionization status generated by these elections that pass or fail by a small margin of votes. This approach compares takeover exposure of firms that barely pass the union election to that of firms that barely fail to pass the union election. It 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 propose two competing hypotheses developed from the prevailing views of unionization. Our first hypothesis postulates that labor unions increase a firm’s takeover exposure. Firms with labor unions tend to have sticky wages and rigid employment contracts, which dramatically increases its operating cost and risk. If acquirers actively try to identify under-performing targets and aim to achieve higher post-merger operation efficiency through aggressive cost-cutting restructuring (consistent with the *Q*-theory of M&A proposed by Jovanovic and Rousseau, 2002), targets with labor unions may appear more attractive to potential acquirers because acquirers can unlock greater efficiency gains by reducing the targets’ union power and constraints. Shleifer and Summers (1988) propose a theory, arguing that takeovers breach implicit labor contracts between incumbent managers and workers. Li (2012) finds that the effects of labor unions on wages and employment are weakened after takeovers, supporting a possible source of takeover gains as unlocking the operation efficiency through weakening the target unions.

An alternative hypothesis makes the opposite empirical prediction. Precisely because firms with labor unions tend to have sticky wages and rigid employment contracts, they are less attractive to potential acquirers if the acquirers aim to gain more general synergistic benefits such as achieving the scale of economy, combining complementary assets, or simply replacing

entrenched managers. Labor unions could be treated as a heavy burden and hurdle to potential acquirers to create synergies. In addition, negotiation between target unions and acquirer managers may significantly increase the uncertainty of deal closure. Even after mergers are closed, potential conflicts between target unions and acquirer management threaten efficient integration of these two firms, supported by abundant anecdotal evidence.<sup>2</sup> In the best-case scenario, even if the mergers consummated with blessing of labor unions, numerous studies painted a negative picture of unions in destroying firms' value (e.g., Grout, 1984; Connolly, Hirsch, and Hirschey, 1987; Malcomson, 1997; Lee and Mas, 2012; Bradley et al, 2013). Overall, taking over target unions without a good way to deal with them leaves a significant burden to acquirers both in the short run and in the long run. Therefore, our second hypothesis argues that unions reduce a firm's takeover exposure and possibly diminish the firm's merger gains.

We test the above two hypotheses by examining the effect of labor unions on a firm's takeover exposure and merger gains. We collect firms' union election results from the National Labor Relations Board (NLRB) over years from 1978 to 2008 and collect mergers and acquisitions information from the SDC database over 1978 to 2008. We capture a firm's takeover exposure and merger gains by measuring the firm's probability of receiving a takeover bid, its abnormal returns as a target upon the takeover announcement, the offer premium it receives, and the duration of bid negotiation (i.e., bid duration).

After performing various diagnostic tests to ensure that the key identifying assumptions of the RDD are satisfied, we show that unionization has a causal, negative effect on firms'

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<sup>2</sup> Abundant union battles regarding union representation and contract seniority ruling occurred during the merger talks or after merger completion in airline industries. For example, in the case of the merger between American Airline and US Airways, rival unions represent cabin crews at two airline companies, and they fight to represent the 24,000 flight attendants in the combined company. In the case of the merger between US Airways and America West, pilots from the two airlines fight for a controversial seniority ruling that appears to favor West pilots. In the case of the merger between Delta Airline and Northwest Airline, it remains unsettled whether the flight attendants and ground workers would unionize even 3 years after the merger completion.

takeover exposure and merger gains. According to our nonparametric local linear regression estimation, barely passing a union election reduces the average number of takeover bids a firm receives by 0.072 within 3 years post the union election. Given the number of takeover bids being 0.05 each year for an average firm, the takeover exposure for firms that marginally unionized is reduced by as much as 48% over a 3-year horizon.

Conditional on receiving a takeover bid, barely unionized targets on average receive a significantly lower offer premium (24.5 percentage points lower) and experience a much lower price run-up and 3-day announcement return (19.6 percentage points lower in total) than targets that barely fail to pass union elections. It also takes 88 more days for the barely unionized targets to close their deals, which is about 63% longer than the average bid duration of 140 days in our full sample.

These results are robust to alternative choices of bandwidths, and become absent in two falsification tests in which we chose fictitious thresholds to determine union election outcomes or replace the unionized firms with a group of non-unionized matching firms that are matched in industry, size and book-to-market value. Overall, our findings are consistent with the second hypothesis that labor unions reduce a firm's takeover exposure and diminish its merger gains.

Next, we explore how cross-sectional variation in the importance of labor unions alters our baseline results. We perform four subsample tests. We first use the state-level right-to-work laws to capture labor unions' bargaining power. In states that have adopted right-to-work legislation, unions cannot force employees to join the union and pay union dues as preconditions of employment. Hence, in right-to-work states, unions have considerably less bargaining power than in non-right-to-work states. We find that the negative effect of unionization on takeover exposure is particularly strong in firms whose union elections were held in states without right-

to-work laws, and the effect is absent in firms whose union elections were held in states with right-to-work laws. Similar to this exercise, we explore the difference in state-level successor statutes and show that our baseline results become stronger for firms whose union elections were held in the states with more union-friendly successor statutes. In the third subsample test, we demonstrate that the existence of labor unions affects the horizontal mergers more negatively, in which the potential conflicts between target unions and acquirers are expected to be more severe. In our last subsample test, we verify that the baseline results are more pronounced in the subsample of large union elections. These findings are consistent with our second hypothesis that unions are obstacles to takeovers, especially when unions have larger bargaining power and are more likely to create conflicts between target employees and acquirers.

Last, we document that though labor unions appear a heavy burden to target firms, they surprisingly do not seem to reduce the total value created in mergers. The combined firms involving unionized targets perform as well as the ones involving non-unionized targets in terms of announcement returns, improvement in post-merger profitability and changes in long-term market valuation. We find that bidders of unionized targets on average conduct more merger deals in the past, possess higher bargaining power, and are subject to less threat from their own unions.

Overall, our analysis suggests that unions may deter part of potential bidders, reducing the targets' outside options in the takeover market and diminishing their bargaining power and merger gains. Bidders of the unionized targets differ from the bidders of non-unionized targets, and the difference seems to make the former more capable of dealing with target unions and create more value for the combined firms.

Our paper contributes to two strands of literature. First, our paper is related to the literature on M&A and unions. While little is known regarding the causal effect of unionization on takeover exposure, there is a strand of research studying how completed takeovers affect labor and labor unions. This literature tends to provide mixed results. In the very first study in this area, Brown and Medoff (1988) find, depending on the type of takeovers, a wage effect between -5% ~ 5% and an employment effect between -5% ~ 9%. On the negative side, Kaplan (1989) finds significant loss of employment (12%) for the target firms after leveraged buyouts (LBOs). Lichtenberg (1992) finds that ownership change results in a reduction in employment and wages at central offices but not at establishments. Davis et al. (2011) and Li (2012) use Census Bureau's data to track employment and wage changes post takeovers, respectively, and both find job destruction post takeovers. However, on the positive side, McGuckin and Nguyen (2001) show that takeovers improved jobs, wages, and survival probability at plant level. Ouimet and Zarutskie (2009) use micro-data from the US Census and document that employee wages increase by 9.4% post mergers.

Several other papers take one step further to investigate how much takeover gains to shareholders can be attributed to the wealth transferred from unionized workers. Rosett (1990) and Becker (1995) reach the conclusion that only a small portion of the gains (1~2%) from a takeover can be attributed to a reduction in workers' wages, suggesting little evidence that acquirers may gain from reducing target union power post mergers. Bhagat, Shleifer, and Vishny (1990) find layoffs in hostile takeover attempts accounts for about 11~26% of the premium, though this ratio is much lower in friendly takeover bids. Overall, the evidence in this literature seems to be quite limited, if ever exists, that acquirers can significantly reduce target union power and unlock great efficiency gains.

Second, our paper also contributes to the literature that examines various effects of labor unions on corporate investment and financial policies. Lee and Mas (2012) show negative abnormal returns over a long period to union victories, implying that unionization destroys shareholder wealth. Bradley, Kim, and Tian (2013) show an underlying mechanism through which unions destroy firm value: their hindrance on firm innovation. Klasa, Maxwell, and Ortiz-Molina (2009) and Matsa (2010) finds that unionized firms strategically hold less cash and are more likely to use financial leverage, which allows them to shield their cash flows from union demands. Chen, Kacperczyk, and Ortiz-Molina (2011a, 2011b) find that the cost of equity is significantly higher in more unionized industries but the cost of debt is lower in these industries. Chyz et al. (2013) show unionized firms are less likely to engage in aggressive tax strategies. Our paper complements this literature by showing a tight link between unionization and firms' subsequent exposure to takeovers, an important field of corporate investment and financial policies.

The rest of our paper proceeds as follows. Section 2 describes the data and presents descriptive statistics. Section 3 provides our main results of RDD. Section 4 presents the subsample tests aiming to show the underlying mechanisms. Section 5 performs several robustness checks, and Section 6 concludes.

## **2. Data and descriptive statistics**

We compile our data from multiple sources. The union election data are collected from the NLRB over 1978 to 2008. It contains the employer name, location, SIC code, the date of the election, the number of participants, and the outcomes of the voting.<sup>3</sup> We eliminate observations

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<sup>3</sup> For a thorough discussion of the union election process, see DiNardo and Lee (2004, pages 1,388 - 1,392).

if the election outcome is not available or if the number of employees participating in the election is less than 100, consistent with Lee and Mas (2012). The analysis of takeover premium, announcement returns and other measures of interest require data on firms' performance and valuation, so we restrict our union election sample to publicly traded firms only. We identify 4,160 unique union elections for public firms in total. In the data, some firms have union elections in consecutive years, and a few even have multiple union elections occurring in the same year (for different plants). To mitigate the confounding effects of multiple union elections on firms' takeover exposure, we only keep the union elections that have no preceding elections in the last 4 years and no subsequent elections in the next 4 years of the election close date.<sup>4</sup> We also require that the state information of union elections is available. Our final sample consists of 1,814 union elections over 1978 to 2004.

We plot a time series of union election frequencies and passage rates across our sample period in Figure 1. There is a considerable spike followed by a sharp decline in the number of firms holding union elections in the early 1980s. Beyond this period, there is a quite stable trend with roughly 50 elections per year. The second plot in Figure 1 shows passage rates for union elections across time. There is considerable variation through time, but in each year the majority of union elections fail to pass, which is consistent with the general downtrend of unionization rates in the U.S. The time series of union elections do not exhibit obvious comovement with merger waves.

We collect all takeover bids from SDC Mergers and Acquisitions database over 1978 to 2008. Our takeover sample stops at year 2008 because we investigate firms' takeover exposure up to 3 years post the union elections. We require that deal values exceed one million dollars,

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<sup>4</sup> We investigate firms' takeover exposure within 3 years after the union elections, so a 4-year screening window ensures that no multiple union elections exist during this period.

and the bidder seeks to acquire more than 50 percent of target shares to gain control of the firm and holds less than 50 percent of target shares beforehand. We link the takeover data to the union election data, and keep the takeover bids received by these firms within 3 years post union elections.

We report summary statistics in Table 1, which describes the union election and takeover data. Aggregating the votes from the 1,814 elections in our sample, 44% are in favor of unionization with a standard deviation of 21%. The unionization passage rate is 30%, which suggests that on average approximately one third of elections lead to unionization. We identify 119 bids received by the firms in our sample within 3 years post their union elections. The average offer premium is about 45%, the average 3-day cumulative abnormal return for the targets is 19%, and the 1-month target price run-up is about 9% in our sample of bids. We compare these summary statistics of our sample with those computed from the full sample of all takeovers over 1978 to 2008 and find that they are quite close. We also compute the average duration of bid negotiation for all single-bidder mergers, defined as the total number of days between the date of bid announcement and the date when bid outcome is made public. The average bid duration in our sample is 134 days, closely resembling the sample mean of 142 days reported for the sample of all takeover bids. The only bid characteristic that differs significantly between our sample and the sample of all takeover bids is the percentage of equity bids. In our sample, only 15% of bids are made with all equity, while in the sample of all takeover bids, about 34% of bids are made with pure equity.

### **3. RDD and main results**

We present our main empirical results in this section. Section 3.1 discusses our empirical strategy and reports various diagnostic tests for the validity of using the regression discontinuity design (RDD). Section 3.2 presents our main RDD results. Section 3.3 reports two falsification tests to provide complementary evidence.

### 3.1 Empirical strategy and diagnostic tests

A naïve approach to evaluate the effect of unionization on firms' takeover exposure is to estimate the following model using the ordinary least squares (OLS) in a firm-year panel:

$$TakeoverExposure_{i,t \rightarrow t+N} = \alpha + \beta Unionization_{i,t} + \gamma' Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

where  $i$  indexes firm,  $t$  indexes time and  $N$  indexes the horizon of our study on takeover exposure. The dependent variable, *Takeover Exposure*, is one of the measures of takeover exposure such as the number of bids received, offer premium, announcement returns, and bid duration, etc. The variable of interest is *Unionization*, which is a binary variable that equals one if the union election passes and leads to unionization, and zero if the union election fails to lead to unionization.  $Z$  is a vector of observable determinants of a firm's takeover exposure.

However, firm unobservable characteristics related with both union election results and takeover exposure could bias the results (omitted variables), or firms' takeover exposure may affect union election results (reverse causality). Thus,  $\beta$  from equation (1) cannot be interpreted as a causal effect of unionization. To establish causality, we use RDD that rests on the assignment of a firm's unionization status based on a simple majority (50%) passing rule and exploits a unique feature of the union election data—we observe the percentage vote for unionization in every union election.

The RDD relies on “locally” exogenous variation in unionization generated by union elections that pass or fail by a small margin of votes around the 50% threshold. Conceptually, this empirical approach compares firms’ takeover exposure subsequent to union elections that pass by a small margin to those union elections that do not pass by a small margin. It is an appealing and powerful identification strategy because for these close-call elections, randomized variation in firm unionization status is a consequence of the RDD, which helps us to identify the causal effect of unionization on firms’ takeover exposure. Another advantage of the RDD is that we do not have to include observable covariates,  $Z$ , in the analysis because the inclusion of covariates is unnecessary for identification (Lee and Lemieux, 2010). Thus, we are able to make use of nearly all our observations even though some of them have missing data on covariates.

A key identifying assumption of the RDD is that agents (both voters and employers in our setting) cannot *precisely* manipulate the forcing variable (i.e., the number of votes) near the known cutoff (Lee and Lemieux, 2010).<sup>5</sup> If this identifying assumption is satisfied, the variation in union recognition status is as good as that from a randomized experiment. To check the validity of this assumption, we perform two diagnostic tests.

First, Figure 2 shows a histogram of the sample distribution of union vote shares in 40 equally-spaced vote share bins (with a bin width of 2.5%) and the x-axis represents the percentage of votes favoring unionization. If there is a systematic sorting of firms within close proximity of the threshold, this sorting would be observed by a discontinuity in the vote share distribution at the 50% vote threshold. The figure shows that the vote share distribution is continuous within close proximity of the cutoff. Therefore, there is no evidence of precise manipulation by either workers or firms at the cutoff point.

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<sup>5</sup> Lee (2008) shows that even in the presence of manipulation, as long as firms do not have precise control over the forcing variable, an exogenous discontinuity still allows for random assignment to the treatment.

Second, we follow McCrary (2008) and provide a formal test of a discontinuity in the density. Using the two-step procedure developed in McCrary (2008), Figure 3 plots the density of union vote shares.<sup>6</sup> The x-axis represents the percentage of votes favoring unionization. The dots depict the density and the solid line represents the fitted density function of the forcing variable (i.e., the number of votes) with a 95% confidence interval around the fitted line. The density appears generally smooth and the estimated curve gives little indication of a strong discontinuity near the 50% threshold. The discontinuity estimate is 0.30 with a standard error of 0.19. Therefore, we cannot reject the null hypothesis that the difference in density at the threshold is zero. Overall, the above two tests suggest that the validating assumption that there is no precise manipulation by voters at the known threshold is not violated, and this finding is consistent with previous studies that use the same union election data (e.g., DiNardo and Lee, 2004; Lee and Mas, 2012; Bradley et al., 2013).

Another important assumption of the RDD is that there should not be discontinuity in other covariates that are correlated with firm takeover exposure at the cutoff point. In other words, firms that vote to unionize should not be systematically different ex ante from firms that vote not to unionize. We perform this diagnostic test by comparing the covariates of firms that fall in a narrow band of vote shares [48%, 52%] around the winning threshold. Therefore, we are comparing firms that win or lose by a very small margin.

We report the results in Table 2. Observable covariates include firm size ( $\ln(Size)$ ), profitability ( $ROA$ ), capital structure ( $Leverage$ ), growth opportunities ( $Q$ ), cash holdings ( $Cash/Assets$ ), asset structure ( $PPE/Assets$ ), external blockholders ( $BLOCK$ ), and industry takeover activities ( $Industry Bid$ ). We also compare important anti-takeover provisions firms

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<sup>6</sup> See <http://emlab.berkeley.edu/~jmccrary/DCdensity> for a detailed discussion of the algorithm.

may adopt such as staggered board, golden parachute, poison pill, and requirement of supermajority in approving mergers and acquisitions. They are coded as dummy variables that equal one if the firm adopts corresponding provision. Those covariates have been used in the prior literature seeking to explain the probability of takeovers (see, for example, Cremers, Nair and John, 2008; Hasbrouck, 1985; Palepu, 1986; and Ambrose and Megginson, 1992). Some of them are also important determinants of offer premium and target announcement returns (see, for example, Bradley, 1980; Walkling, 1985; Officer, 2003, 2004; Bates and Lemmon, 2003; Barger, 2005; Betton, Eckbo and Thorburn, 2008; and Betton et al., 2014). The covariates are similar between firms that barely unionize and those that barely elect not to.

Overall, the diagnostic tests presented above suggest that there does not appear a precise manipulation by voters within close proximity of the 50% threshold. Further, there is no discontinuity in other covariates at the cutoff point.

### *3.2 Main RDD results*

We present the main RDD results in this subsection. Takeovers are rare events. On average, only about less than 5% of public firms receive takeover bids each year, so a very short horizon (e.g., less than 1 year) suffers from a small sample problem that may create significant noises. However, over an excessively long horizon (e.g., more than 5 years) there might be other firm activities that affect takeover exposure and contaminate the results. Therefore, we examine the effect of unionization on firms' takeover exposure over a three-year horizon post-election.

We first present RDD results in Figure 4 to visually check the relation around the cutoff. We investigate the number of bids that firms receive within 3 years past union election (left-top panel), duration of bid negotiation (right-top panel), bid offer premium (left-bottom panel), and

firms' abnormal announcement returns (right-bottom panel).<sup>7</sup> The x-axis represents the percentage of votes for unionization. We once again divide the spectrum of vote shares into 40 equally-spaced bins (with a bin width of 2.5%).<sup>8</sup> In all plots displayed, firms that fail to unionize are to the left of the 50% threshold and firms that succeed in unionizing are to the right of the threshold. The dots depict the average value of the corresponding variables in the bins. The solid line represents the fitted local polynomial kernel estimate with a 90% confidence interval around the fitted value.

The figures show significant discontinuity in all measures of interest at the threshold. Specifically, within close proximity of the threshold, the number of bids a firm receives within 3 years past union elections drops significantly if the percentage of votes in favor of unionization just crosses the 50% cutoff point. This finding suggests that, *ceteris paribus*, the existence of union reduces a firm's exposure to takeover attempts. Conditional on receiving a bid, firms that barely pass union elections on average receive a significantly lower offer premium than the ones that barely fail the union elections. Consistent with this finding, these firms also experience a significantly lower price run-up and abnormal return when the takeover bids are publicly announced. Bid negotiation process involving these barely unionized targets also seems to take much longer.<sup>9</sup> These findings suggest that labor unions may reduce firms' takeover exposure and decrease the firms' expected gains from mergers and acquisitions. Overall, our observations from

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<sup>7</sup> A large number of research document that target runup is significantly positive and comparable in size to 3-day announcement return, reflecting possible information leakage or anticipation of the bid announcements. Therefore, we include a 1-month runup in our announcement return to capture the whole effect. As we show in Table 1, target 1-month run-up accounts for about 1/3 of the total target announcement returns we report here.

<sup>8</sup> The choice of the bin width reflects a tradeoff discussed in Imbens and Lemieux (2008). The bin width needs to be large enough to have a sufficient amount of precision so that the plots look smooth on either side of the threshold, but small enough to make the jump around the threshold clear. We use alternative bin widths and get similar results from both plots and regressions.

<sup>9</sup> Note that firms without unions are more likely to receive multiple competing bids than unionized firms do, and the bid duration of the contested bids is often longer than that of the single-bidder bids. To make a fair and meaningful comparison, we only contrast the average duration of all single-bidder bids received by firms in our sample.

the visual check point to a strong negative, causal effect of unionization on a firm's takeover exposure.

We next employ a nonparametric local linear estimation to deliver our RDD results formally. The estimation uses the optimal bandwidth defined by Imbens and Kalyanaraman (2012) that minimizes the mean squared error (MSE) in a sharp regression discontinuity setting. In Table 3, we report the local linear estimation results using both a triangular kernel and a rectangular kernel.<sup>10</sup> The coefficient estimates on *Unionization* are all statistically significant and remain quantitatively close in both specifications, suggesting a negative, causal effect of unionization on firms' takeover exposure. Economically, the estimates suggest that passing a union election reduces the number of bids received by a magnitude of 0.072 within 3 years past union elections, which is a roughly 50% reduction from the average number of bids a typical public firm receives within a 3-year period (the average probability for a public firm to receive a bid within a 3-year period is about 15%).

Conditional on receiving a takeover bid, firms that barely pass the union election receive a significantly lower offer premium and enjoy a much lower announcement return. The magnitudes of the reductions are economically sounded. For example, barely unionized targets receive an average offer premium that is 24.5 percentage points lower than non-unionized targets do. They also experience an announcement return that is 19.6 percentage points lower on average. Meanwhile, acquirers seem to spend much more time on negotiating with unionized targets, and the bid duration is about 88 days longer when the mergers or acquisitions involve unionized targets.

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<sup>10</sup>As Imbens and Lemieux (2008) point out, the choice of kernel typically has little impact on estimation in practice. The statistics literature has shown that a triangular kernel might be optimal for estimating local linear regressions at the boundary, because it puts more weight on observations closer to the cutoff point.

In an unreported analysis, we contrast other aspects of deal characteristics between the unionized and non-unionized targets. We find that the probability of deal completion is also lower for unionized targets, though the difference is not statistically significant. The methods of payment, in general, do not exhibit strong correlation with the targets' unionization status though.

Overall, these RDD test results confirm our visual observation presented in Figure 4 regarding the sharp discontinuity in a firm's takeover exposure at the cutoff point. In Section 5, we perform a variety of robustness checks that examine the sensitivity of our RDD results, and show that our baseline results are robust to alternative choice of bandwidth and alternative specifications of regression discontinuity analysis.

### *3.3 Falsification tests*

In this subsection, we conduct two falsification tests to provide complementary evidence to support our main findings documented above.

In the first falsification test, we argue that if our main RDD results truly reflect a causal effect of labor unions on a firm's takeover exposure, the results should be absent at alternative cutoff along the spectrum of union election votes, because firms falling in the small intervals around any fictitious cutoff point do not actually differ in their unionization status, and therefore we shall not be able to observe significant discontinuity in takeover exposures at the fictitious cutoff points that are different from the true threshold of 50%.

To test this, we first randomly select an alternative cutoff point along the spectrum of union vote shares between 0 and 1 other than 0.5. We then assume that it is the threshold that determines union election outcomes and re-estimate the local linear model with a triangular

kernel. We repeat this placebo estimation 1,000 times and plot a histogram of the distribution of the RDD estimates from these placebo tests in Figure 5. We also include a dashed vertical line that represents the RDD estimate at the true threshold reported in Table 3.

The histogram is centered at zero and the estimate with the true cutoff point is significantly different from zero in these empirical distributions, which is consistent with the conjecture that the treatment effect of unionization on firm takeover exposure is absent at artificially chosen vote thresholds and only present at the true cutoff point. It also suggests that the negative effect of unionization on firm takeover exposure we document is unlikely driven by chance and therefore our RDD estimates are unlikely spurious.

In the second falsification test, we keep the observations of the failed union elections unchanged in our sample (i.e., the elections falling to the right of the true cutoff), but for each passed union election (i.e., the elections falling to the left side of the true cutoff), we replace the original firm with a matched firm that has no union in place by the time of observation. The non-unionized matched firm is required to be in the same industry as the original firm and has close size and book-to-market ratio. For each matched firm, we obtain the number of bids it receives within 3 years post the original firm's union election. If the matched firm receives any bids, we also obtain the announcement returns, offer premium, and bid duration. The matched firms are therefore expected to face a similar environment of mergers and acquisitions as the original firms, because we match them by industry, size, and book-to-market ratio and we examine their takeover exposure for the same time period (i.e., within 3 years post the original firm's union election). The only significant difference between the original firms and their matched firms is their unionization status. By construction, the original firms are unionized and the matched firms are non-unionized. So if our main RDD results truly capture a causal effect of labor unions on a

firm's takeover exposure and is not driven by possible omitted variables, the results should be absent for the matched firm group. We rerun our RDD regression with the original firms with passed union elections replaced by their non-unionized matched firms, and find that all coefficients are insignificant and the signs of the estimation are mixed, implying that the unionization status is the underlying driver of our baseline results.

#### **4. Possible Mechanisms**

In this section, we explore possible underlying economic mechanisms through which the labor union may affect firms' takeover exposure and merger gains. We first explore how cross-sectional variation in target union power and conflicts between target unions and potential acquirers alter our baseline RDD results. We do the analysis through four subsample tests: the right-to-work legislation and the state-level successor statutes create significant variation in union power across different states; the horizontal and non-horizontal mergers differ much in potential conflicts between target unions and acquirers in post-merger integration; the size of target unions reflects both the union power and the potential conflicts between target employees and acquirer management.

##### *4.1 Right-to-work legislation*

As discussed in the introduction of the paper, states that have adopted right-to-work legislation cannot force employees to join the union and pay union dues as preconditions of employment. Therefore, in states with right-to-work legislation, unions have considerably less bargaining power than the ones in non-right-to-work states. A potential consequence of weaker union bargaining power is that a unionized workforce in a right-to-work state will have less

impact on firms' takeover exposure than in states without similar legislation. We test this conjecture in this subsection.

We first collect the information regarding the right-to-work laws in each state, including whether and when they were first enacted. We then classify each observation in our sample to the subsample with right-to-work laws or the subsample without right-to-work laws. The classification is done on a panel basis. For example, Oklahoma enacted the right-to-work laws at year 2001, so any union election occurring in Oklahoma before 2001 is classified to the subsample without right-to-work laws, and any union election occurring in Oklahoma after 2001 is classified to the subsample with right-to-work laws.

Table 4 reports the results for firms whose union elections were held in states with right-to-work laws (top panel), compared to firms whose union elections were held in states without right-to-work laws (bottom panel), using the local linear RDD estimation.<sup>11</sup>

In states with right-to-work laws, we find that the coefficient estimates on *Unionization* are mixed, and statistically insignificant across all measures of interest. On the other hand, as reported in the bottom panel, firms winning union elections in states without right-to-work legislation (which affords unions more bargaining power) have a much larger economic and statistical impact on firm takeover exposure. The results are consistent with the conjecture that unions in states with right-to-work law legislation have lower a bargaining power and therefore have a much smaller effect on a firm's exposure to takeovers.

## 4.2 Horizontal mergers

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<sup>11</sup> States with right-to-work legislation as of 2004 (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.

Acquirers pursue takeovers for different reasons. Horizontal mergers have been documented to have more impact on target firm operation, which usually involve more aggressive integration between the acquirer and target, leading to efficiency improvement through target plant shutdown or large scale layoff. Meanwhile, if the acquirer and target operate in the same industry, they are more likely to have labor unions representing the same type of employees on both sides. Anecdotal evidence suggests that rival unions representing the same type of employees in acquirers and targets are more likely to fight for the union representation in the combined firm or for other issues such as differences in contract seniority rulings. Overall, the target unions may create more conflicts and therefore appear more troublesome in horizontal mergers, so we expect the negative effect of labor unions to be more pronounced for the subsample of horizontal mergers.

Table 5 presents the results for this subsample test. For non-horizontal mergers (top panel), the coefficients of local RDD regression remain the same signs as those in our baseline results, but all of them decrease in magnitude and four out of five lose statistical significance. For instance, the difference of announcement returns and offer premium between the barely unionized targets and non-unionized targets drop by more than 60%, implying that the impact of unionization is muted in non-horizontal mergers.

On the contrary, our results become stronger for horizontal mergers (bottom panel). The discrepancy in announcement returns and offer premium between the two groups of targets increases by four percentage points each from our baseline results and reaches -23.6% and -28.1% respectively. Note that the discrepancy in the average number of bids received by the two groups of targets seems to shrink in the subsample of horizontal mergers compared to our baseline results, but this does not reflect a weaker result for horizontal mergers. Because we

classify all bids into two categories (horizontal V.s. non-horizontal), and it is mechanically true that the probability for a firm to receive a certain category of bid is always lower than the probability of simply receiving a bid regardless of its category. After taking this into account, the discrepancy in the number of bids received by the two groups of targets is actually more pronounced in the subsample of horizontal mergers.

### *4.3 Union size*

It is intuitively true that large unions in target firms may possess more bargaining power and impose heavier burdens on acquirers in mergers, *ceteris paribus*. Therefore, we check whether our baseline results become stronger for firms with large unions.

We first sort all union elections by the number of eligible employees, and take the bottom half as the subsample of small union elections and the top half as the subsample of large union elections.<sup>12</sup> The average (median) number of eligible employees in the small union subsample is 136 (133) and the average (median) number of eligible employees in the large union subsample is 507 (338), so the two subsamples exhibit substantial difference in union size.

Table 6 presents the local RDD regression results for the small union subsample (top panel) and the large union subsample (bottom panel). The results for the large union subsample are similar to, if not apparently stronger than, our baseline results, and the results for the small union subsample are much weaker. The announcement returns and offer premium do not seem to differ significantly for the barely unionized targets and non-unionized targets in the small union subsample, though the discrepancy in the number of bid received persists between the two groups of targets.

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<sup>12</sup> Note that our sample screening criteria already excludes very small union elections whose participants are less than 100.

#### *4.4 State successor statutes*

In this subsection, we explore the variation in state laws that regulate the successorship and collective bargaining agreement (CBA) in the context of mergers and acquisitions.

Labor unions and employers bargain through the collective bargaining process, in which they reach collective bargaining agreement (CBA) to establish wages, hours, and conditions of employment. The National Labor Relation Act (NLRA) does not specifically address the continuation of employee's union representation or the continuation of unexpired CBA during corporate ownership transfer, and the NLRB and Supreme Court have attempted to fill these gaps with federal common law. This body of law, known as the "successorship doctrine," defines the rights of employees and the obligations of employers when a business changes ownership. However, the Supreme Court has not provided a fixed definition of when a purchasing employer is a successor or a uniform declaration of what obligations follow a finding of successorship (Huggett 1997). Federal successor doctrine, therefore, offers limited protection to unionized employees in takeover target companies (Sweeney 1991).

This leaves much room for state laws to play an important role in protecting union employees, and state laws differ in defining the successorship and imposing obligations on successors. We manually search related state-level statutes and identify a subgroup of states which we believe have more union-friendly laws in regulating the successor liability, and we expect target unions in these states have a higher bargaining power with acquirers. These states include Illinois, Minnesota, Delaware, Massachusetts, Pennsylvania, Rhode Island, California, and Ohio. We explain in the Appendix the related state-level successor statutes and how these

statutes favor unions in regulating the transfer of CBA liability during the change of corporate control in these states.

Ideally, we want to check whether our results become stronger for the states with more union-friendly laws as we identify above. However, only about 30% of our observations fall into this subsample and they are not sufficient for performing the RDD regression. Alternatively, we exclude these states with more union-friendly successor statutes from our full sample and check whether our results become *weaker* for the remaining observations.

Table 7 compares the results for this subsample with our baseline results obtained from the full sample. The results appear weaker when we exclude the states with more union-friendly successor statutes. Specifically, though the probability of receiving bids do not change much, both the announcement returns and offer premium drop more than 60% and become statistically insignificant. The discrepancy in bid duration between the two groups of targets also disappears. Overall, the results seem to be consistent with our hypothesis that labor unions reduce firms' bargaining power in mergers, especially for the firms whose union elections were held in the states with more union-friendly successor statutes.

Admittedly, our list of states with union-friendly statutes might not be comprehensive, but arguably, failing to exclude some states with union-friendly statutes from our subsample is likely to bias against finding results.

#### *4.5 Value creation and bidder characteristics*

Given our findings that labor unions appear heavy burdens to target firms, we further explore whether labor unions also negatively affect the total value created in mergers and acquisitions. To do so, we compute the combined firms' announcement returns and the change in

firms' performance and valuation after the completed mergers. We measure the change in performance and valuation as follows:

$$\Delta ROA = \frac{1}{3} \left( \sum_{n=1}^3 ROA_{c,t+n} - \sum_{n=1}^3 ROA_{w,t-n} \right) \quad (2)$$

$$\Delta Q = \frac{1}{3} \left( \sum_{n=1}^3 Q_{c,t+n} - \sum_{n=1}^3 Q_{w,t-n} \right) \quad (3)$$

where  $ROA_{c,t+n}$  is the combined firm's return-on-asset in the  $n$ th year after the merger, and  $ROA_{w,t-n}$  is the weighted average of the acquirer's and target's return-on-asset in the  $n$ th year before the merger. Similar interpretation applies to the change in valuation  $Q$ .

We perform a local RDD regression analysis on the combined firm's announcement returns,  $\Delta ROA$  and  $\Delta Q$ . The coefficient for the combined firm's announcement return is 0.023 with a t-statistic of 0.4. The coefficient for  $\Delta ROA$  and  $\Delta Q$  are also statistically insignificant and economically small. The results suggest that quite surprisingly, mergers involving unionized targets do not exhibit poorer performance than those involving non-unionized targets from the perspective of the combined firms.

Given our findings above that unionized targets suffer from lower announcement returns while the total value created in the mergers seems to be unaffected, we conjecture that the bidders of unionized targets may differ from the bidders of non-unionized targets. We explore this conjecture by examining bidders' experiences in making mergers and acquisitions in the past, the performance of their past deals, and their bargaining power relative to targets in these deals. Since the number of deals a bidder made in the past is highly skewed to the right in our sample, we define a dummy variable called "experienced bidder" which equals 1 if the bidder conducted five or more deals in the past 15 years and equals 0 otherwise. We also compute the bidder's bargaining power relative to its target in each bid following Ahern (2012). Specifically,

we measure the bidder's relative bargaining power using the difference between the bidder's dollar gain and the target's dollar gain, normalized by the sum of the bidder's and target's pre-merger market values. We capture the performance of the merger deals using the change in ROA and the change in Q as defined in Equations (2) and (3).

The top panel of Table 8 reports the RDD regression results. Compared with bidders of non-unionized targets, bidders of unionized targets are 46.5% more likely to be experienced bidders. They possess higher bargaining power, and their relative share of merger gains in past deals is on average 22% higher than bidders of non-unionized targets. They also appear to experience more improvement in post-merger performance (ROA) and valuation (Q), implying more value creation in the merger deals they completed in the past.

We then investigate both the explicit and implicit union threat a bidder faces. We measure the explicit union threat by the number of existing unions a bidder has and the total eligible employees covered by these unions. We measure the implicit union threat by the total number of union elections a bidder had in the past and the total participants in these union elections. The intuition for the implicit union threat is that, even if the union elections failed in the past, the employees have the option to pursue union elections again in the future, and this threat is expected to become more substantial and realistic if the bidder acquires a unionized target.

We again run a RDD regression to test whether bidders of unionized targets differ from bidders of non-unionized targets in facing the explicit and implicit union threat. The bottom panel of Table 8 presents the results. Bidders of unionized targets on average have 1.2 less union elections in the past, and the total number of participants in these union elections is also much smaller. Though bidders of unionized target do not have significantly less number of unions in

place, the total number of eligible employees covered by existing unions is significantly lower for these bidders.

Overall, our analysis in this subsection shows that bidders of unionized target differ significantly from bidders of non-unionized targets. They are more likely to be experienced bidders, possess a higher bargaining power, conduct better merger deals in the past, and are subject to less explicit and implicit threat from their own unions. These differences seem to make these bidders more capable of dealing with target unions and create value for the combined firms.

## 5. Robustness Checks

In this section, we perform a variety of robustness checks that examine the sensitivity of our baseline RDD results. First, we present an alternative regression discontinuity analysis using an estimation of a global polynomial series model (e.g., Cuñat, Gine, and Guadalupe (2012)). This model uses the entire support of all union election observations in our sample. Specifically, we estimate the following model:

$$TakeoverExposure_{t \rightarrow t+N} = \alpha + \beta Unionization_t + P_l(v, c) + P_r(v, c) + \varepsilon_t \quad (4)$$

where  $t$  indexes time and  $N$  represents the horizon post union elections.  $P_l(v, c)$  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 a total vote share (percentage of votes in favor). Because union elections win with a simple majority of support among the voters,  $c$  equals 50% in our setting.

In this estimation,  $\beta$  is the key variable of interest and its magnitude is estimated by the difference in these two smoothed functions at the cutoff, which captures the causal effect of passing a union election on firm takeover exposure over  $N$  years post-election. Note, however, that because RDD estimates are essentially weighted average treatment effects where the weights are the ex-ante probability that the value of an individual union elections falls in the neighborhood of the win threshold (Lee and Lemieux, 2010), this coefficient should be interpreted locally in the immediate vicinity of the win cutoff.

We present the results estimating Equation (4) in Table 9. We report the result with polynomials of order three and four, but our results are qualitatively similar using other polynomial orders. The coefficient estimates on *Unionization* all have the right signs and in most cases statistically significant, suggesting a negative, causal effect of unionization on firms' takeover exposure and merger gains. The number of observations differs for each regression. For the number of bids received, we have data for all firms in our union election sample. For the bid-related variables such as announcement return, offer premium, and bid duration, we only have data for the announced deals whenever data is available. Since only a relatively small fraction of firms receive takeover bids in our sample period, the numbers of observations in these tests are much smaller. All the results obtained from the global polynomial series model are consistent with the conclusions we draw from local linear estimation of RDD.

Next, we examine whether our local linear estimates are robust to alternative bandwidths. The choice of bandwidth reflects a tradeoff between precision and bias. Using a wider bandwidth includes more observations and yields more precise estimates. However, a wider bandwidth can bias the estimates because the linear specification is less likely to be accurate. The reverse occurs

if we use a narrower bandwidth. Therefore, we perform the first robustness test to ensure that our results are not sensitive to alternative bandwidths.

Specifically, we repeat the regression for different bandwidths around the threshold with a triangular kernel, and plot the results in Figure 6. The x-axis represents bandwidths where “100” represents the optimal bandwidth based on Imbens and Kalyanaraman (2012) and used in the estimations reported in Table 3, “200” represents twice the optimal bandwidth, and so forth. The solid line represents the RDD estimators and the dotted lines represent 90% confidence intervals.

From Figure 6, we observe that the RDD estimates are mostly stable in both economic and statistical significance over the spectrum of bandwidth choices, except for the bid duration which remains positive but becomes less statistically significant as we increase the bandwidth. This observation suggests that the baseline RDD results using local linear regressions are mostly robust to alternative choices of bandwidths.

## **6. Conclusion**

In this paper, we examine the causal effect of unionization on a firm’s takeover exposure and merger gains. To establish causality, we use a regression discontinuity design that relies on “locally” exogenous variation generated by elections that pass or fail by a small margin of votes. Barely passing a union election leads to a significant reduction in a firm’s probability of receiving a takeover bid. Conditional on receiving a bid, firms that are barely unionized enjoy a lower announcement return, receive a lower takeover premium, and experience a longer duration of bid negotiation. The negative effect of unions on takeover exposure and merger gains is more pronounced when the mergers are horizontal, the firms have large unions, and the unions locate

in the state without right-to-work laws and states with more union-friendly successor statutes. We also document that the negative impact of unionization on target firms do not seem to affect the combined firms, and the combined firms involving unionized targets perform as well as the ones involving non-unionized targets. Acquirers of unionized targets appear to make this happen, because they have more experiences in conducting mergers in the past, enjoy better performance in these past deals, possess a higher bargaining power relative to their targets, and face less threat from their own unions.

Our paper provides new insights into the effects of unionization on corporate control. In addition, given that labor unions in the U.S. are regulated and can be altered by labor laws and regulations over time, our paper also provides important policy implications for policy makers when they alter union regulations or labor laws to affect the market for corporate control.

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## Appendix

### A. State-level successor statutes

We focus on the state-level successor statutes, which may give union employees much greater protection than they enjoy through the federal successor doctrine.

#### 1. Successor clause statutes

Make the successor liable for the obligation of the predecessor's CBA where that agreement contains a successor clause.

In addition, place an affirmative duty upon a selling employer to disclose the existence of a collective bargaining agreement with a successor clause to a purchaser.

State: Illinois, Minnesota

Statutes: ILL. ANN. STAT. ch. 48, para. 2571-72 (Smith-Hurd Supp. 1991). MINN. STAT. ANN. § 338.01 (West Supp. 1995) (enacted 1990);

#### 2. Blanket statutes

Make the successor liable for the predecessor's CBA regardless of whether the CBA itself contains a successor clause.

State: Delaware, Massachusetts, Pennsylvania, Rhode Island

1) Delaware: regulates private businesses as well as corporations; does not distinguish between the sale, merger, or other disposition of all or part of a business.

2) Massachusetts, Pennsylvania: apply only to the sale, merger or other disposition of corporations (no private businesses); events have to be affecting all or substantially all the property or assets, including good will, or the business operation.

3) Rhode Island: mixes of both Delaware/Massachusetts/Pennsylvania.

Statutes: DEL. CODE ANN. tit. 19, § 706 (1990); MASS. GEN. LAWS ANN. ch. 149, § 20E (West Supp. 1991); 1990 PA. LAWS 36 § 2585-88; R.I. GEN. LAWS § 28-7-19.1 (1991).

#### 3. Other statutes:

1) Make the successor liable for the predecessor's CBA, provided the purchaser was conducting the same or similar business at the same facilities. Do not make a determination of successorship under the NLRA.

State: California, Ohio, Massachusetts

Statutes: CAL. LAB. CODE § 1127 (Deering 1991) (enacted 1975); OHIO REV. CODE ANN. § 4113.30 (Page 1991) (enacted 1978); MASS. GEN. LAWS ANN. ch. 149, § 179C (West 1996) (enacted 1979).

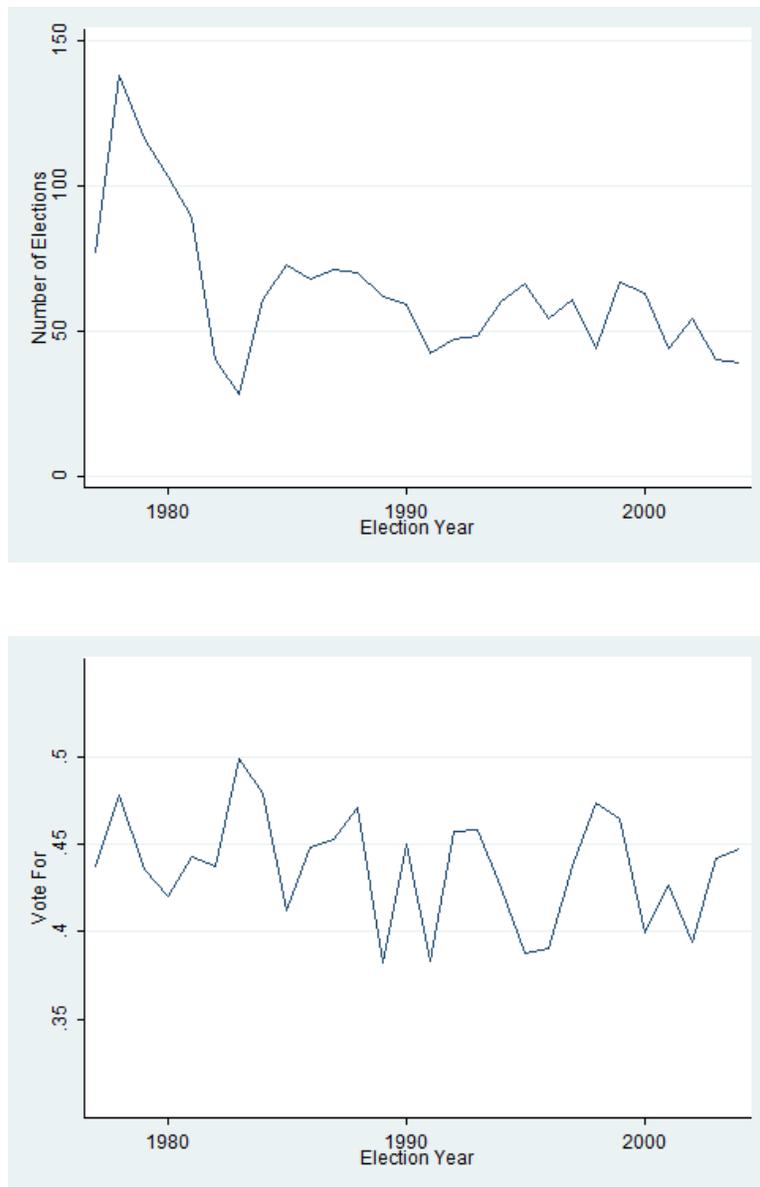
2) Mandates continuation of all collective bargaining agreements in effect before a sale or merger, does not require that the collective bargaining agreement contain a successor clause. (Notice: The Alaska statute's effect is limited to electric and telephone cooperatives)

State: Alaska

Statutes: ALASKA STAT. § 10.25.240(b).

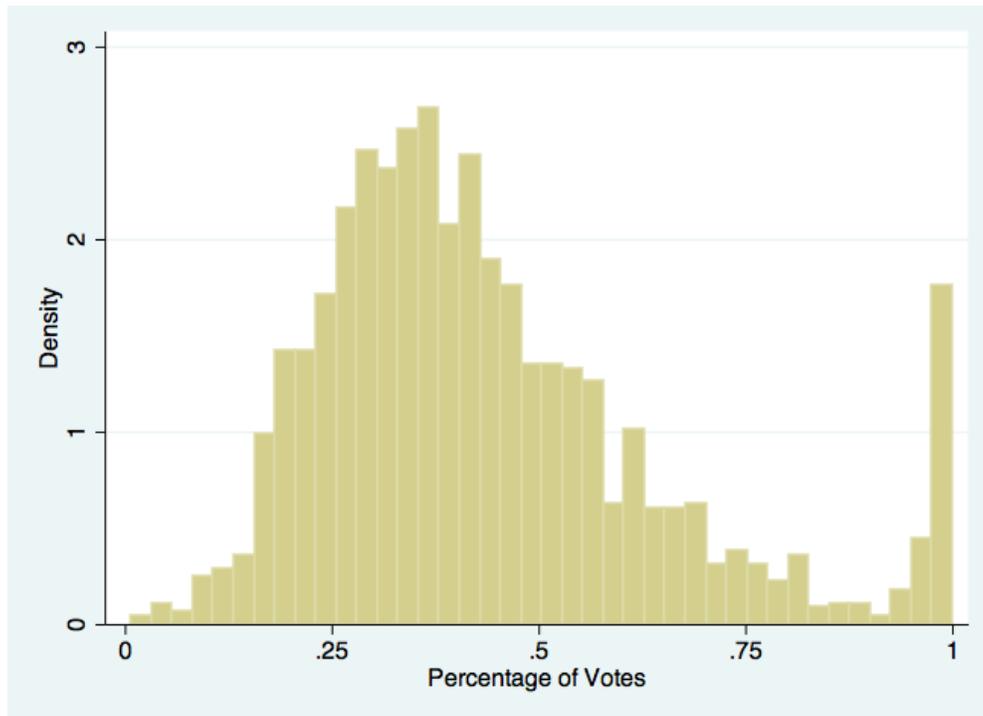
**Figure 1**  
**Number of union elections and passage rates by year**

This figure plots the number of union elections by year (top) and the average passage rates by year (bottom) in our final sample. Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004.



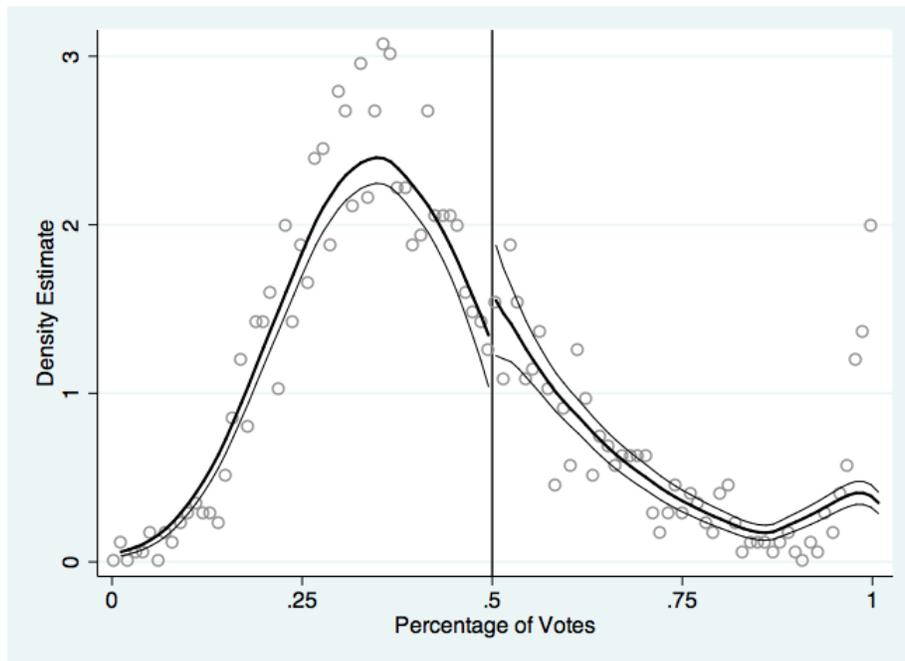
**Figure 2**  
**Distribution of votes**

This figure plots a histogram of the distribution of the number of elections with the percentage of votes for unionizing in our sample across 40 equally-spaced bins (with a 2.5% bin width). Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004.



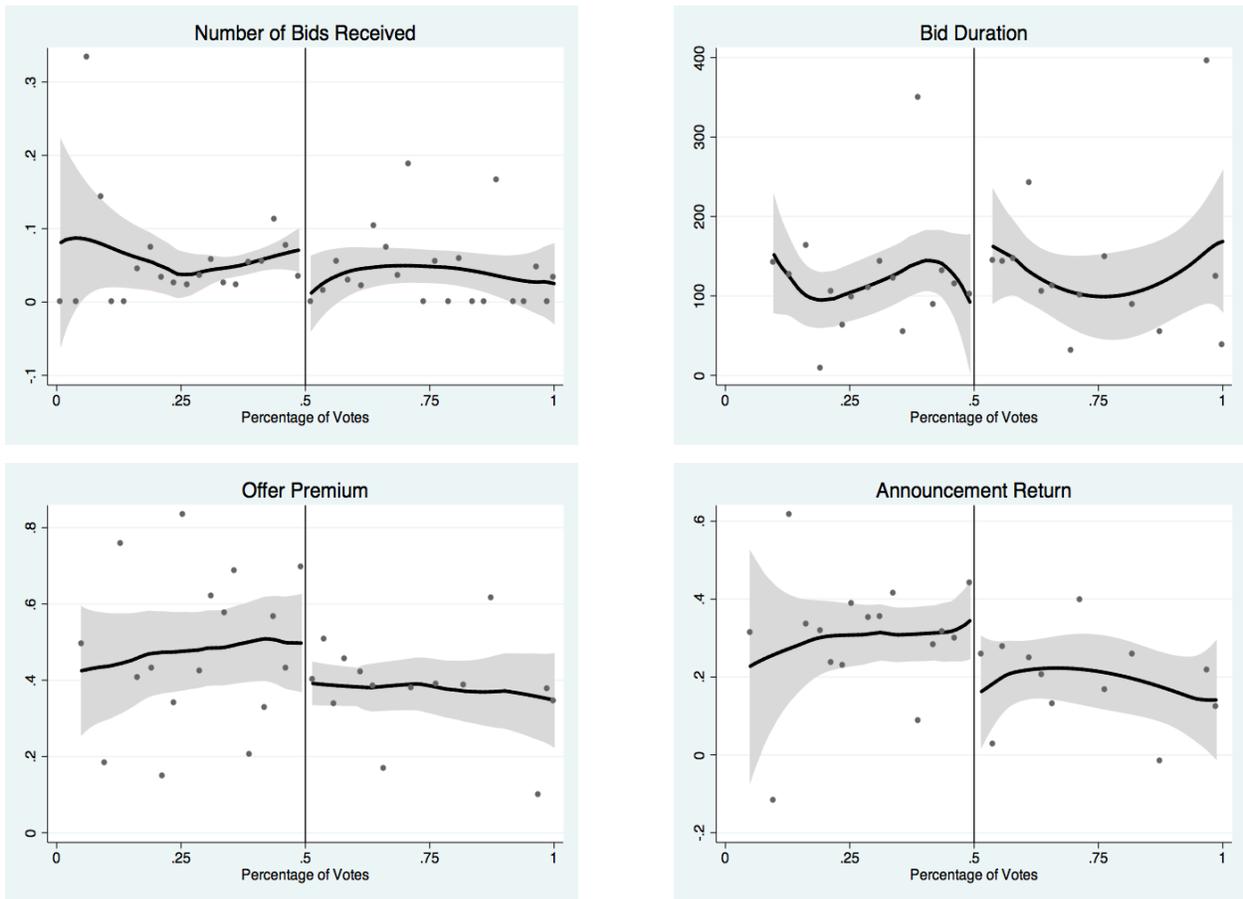
**Figure 3**  
**Density of union vote shares**

This figure plots the density of union vote shares following the procedure in McCrary (2008). The x-axis is the percentage of votes favoring unionization. The dots depict the density estimate. The solid line represents the fitted density function of the forcing variable (the number of votes) with a 95% confidence interval around the fitted line. Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004.



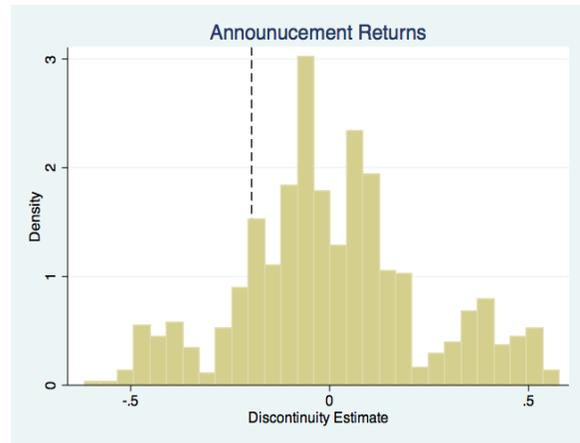
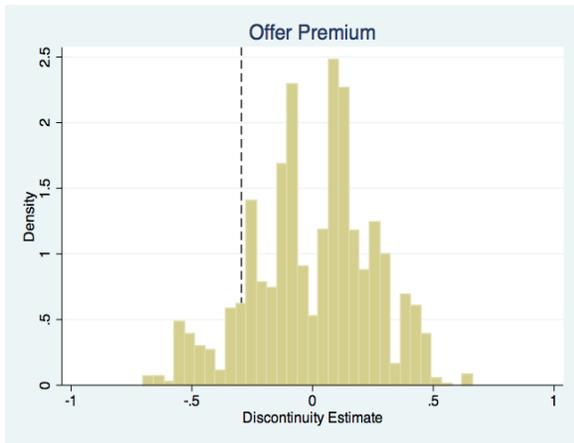
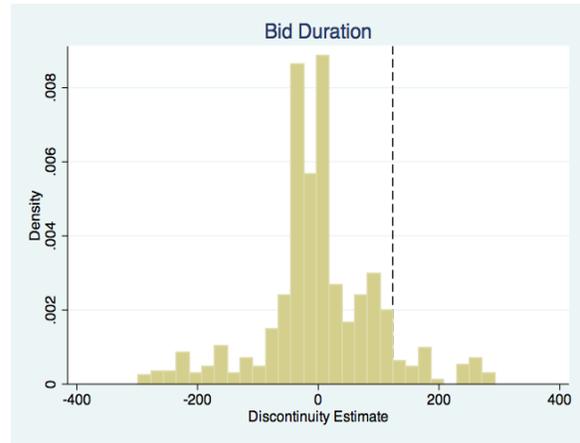
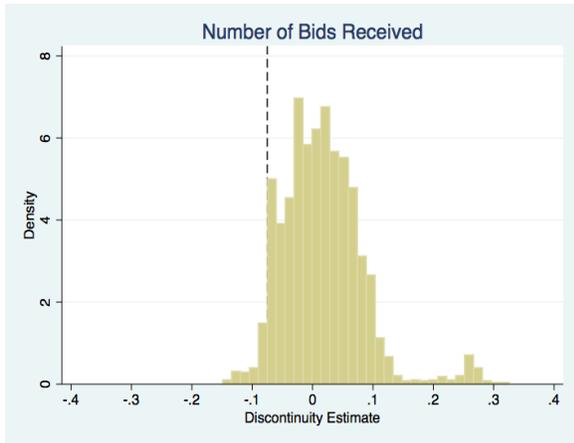
**Figure 4**  
**Regression discontinuity plots**

This figure presents regression discontinuity plots using a fitted local kernel estimate with a 90% confidence interval around the fitted value. The x-axis is the percentage of votes favoring unionization. The dots depict different takeover exposure variables in each of 40 equally-spaced bins (with a bin width of 2.5%). Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover and stock valuation data are collected from SDC database and CRSP over the 1978 to 2008 time period.



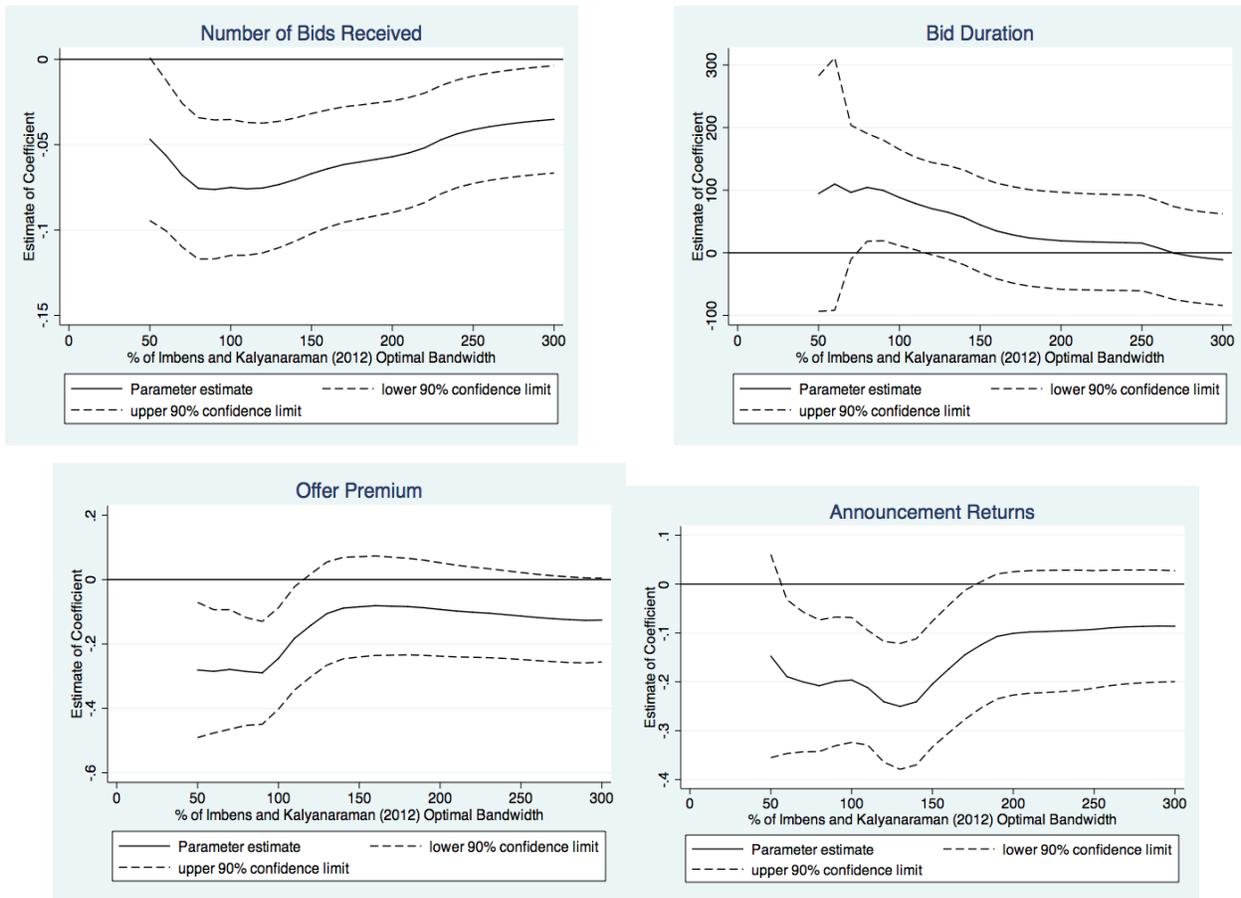
**Figure 5**  
**Placebo tests**

This figure plots a histogram of the distribution of the RDD estimates from placebo tests. The x-axis represents the RDD estimates from a placebo test that artificially assumes an alternative threshold other than 50%. The dashed vertical line represents the RDD estimate at the true 50% threshold. Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.



**Figure 6**  
**RDD bandwidths**

This figure plots the RDD estimates with alternative bandwidths using the local linear regression with the choice of optimal bandwidth following Imbens and Kalyanaraman (2012). The x-axis represents the bandwidth where '100' is the optimal bandwidth reported in Table 3, '200' is 2 times the optimal bandwidth, etc. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.



**Table 1**  
**Descriptive statistics**

This table presents descriptive statistics of our sample. We report union election statistics and takeover statistics. “Vote for union” is the total number of votes for unionization divided by total votes in a given election. “Passage” is an indicator variable that equals one if a firm is unionized as a result of an election and otherwise zero. “Offer premium” is defined as the bid price per share divided by the price of target stock 4 weeks before takeover announcement. “Tar 3-Day Ann. Ret.” is the target’s 3-day CAR around the bid announcement. “Tar 4-Wk Run-up” is the target’s 4-week price runup before the bid announcement. “Tar Run-up + Ann. Ret.” is the sum of target’s 3-day CAR and 4-week runup. “Bid duration” is the number of days between the bid announcement and bid outcome for single-bidder bids. “Bid completion rate” is the number of completed bids divided by the total number of all bids. “Cash bids” is the number of all-cash bids divided by the total number of bids whose methods of payment are available. “Equity bids” is the number of all-equity bids divided by the total number of bids whose methods of payment are available. Union election results are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

	<b>Obs.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Median</b>
<b>Union election statistics</b>				
Vote for union	1,814	0.44	0.21	0.39
Passage	1,814	0.30	0.46	0.00
<b>Takeover statistics (bids received by firms in our sample)</b>				
Offer premium	96	0.45	0.26	0.43
Tar 3-Day Ann. Ret.	96	0.19	0.19	0.16
Tar 4-Wk Run-up	96	0.09	0.16	0.07
Tar Run-up + Ann. Ret.	96	0.28	0.22	0.26
Bid duration (days)	95	134	127	99
Bid completion rate	119	0.76	0.35	1.00
Cash bids	82	0.45	0.50	0.00
Equity bids	82	0.15	0.35	0.00
<b>Takeover statistics (all merger bids for US public targets from 1978 to 2008)</b>				
Offer premium	7,490	0.43	0.35	0.35
Tar 3-Day Ann. Ret.	7,604	0.20	0.19	0.15
Tar 4-Wk Run-up	7,604	0.09	0.17	0.06
Tar Run-up + Ann. Ret.	7,604	0.29	0.26	0.26
Bid duration (days)	9,282	142	122	121
Bid completion rate	10,306	0.80	0.39	1.00
Cash bids	8,848	0.40	0.49	0.00
Equity bids	8,848	0.34	0.47	0.00

**Table 2**  
**Difference in observable characteristics between unionized and non-unionized firms**

This table shows differences in observable characteristics between firms that participate in union elections and win versus those that lose by a small margin (vote shares within the interval of [48%, 52%]). Union election results are from the National Labor Relations Board (NLRB) over 1980 to 2005. Firm characteristics are from Compustat, measured at one year prior to the union election close date. Size is firm's market equity. ROA is the return on assets. Leverage is the book debt to asset ratio, Q is the ratio of market-to-book value of assets, where market assets are defined as total assets plus market value of common stock minus book common equity and deferred taxes. Cash is cash and short-term investments. PPE is property, plant, and equipment. BLOCK is a dummy variable equal to 1 if (at least) one institutional investor holds more than 5% of the company stock and 0 otherwise. Industry bid equals to 1 if, based on the Fama-French 48-industry classifications, there was a takeover in a firm's industry in the prior year. Staggered board, Golden parachute, Poison pill, and Supermajority to approve a merger are dummy variables that equal 1 if certain provision is adopted by the firms.

	<b>Win = 1</b>	<b>Win = 0</b>	<b>Difference</b>	<b>P-Value</b>
Ln(Size)	6.017	5.273	0.744	0.116
ROA	0.041	0.024	0.017	0.541
Leverage	0.432	0.394	0.038	0.590
Q	1.193	1.293	-0.010	0.442
Cash/Asset	0.074	0.070	0.004	0.862
PPE/Asset	0.401	0.350	0.051	0.300
BLOCK	0.581	0.529	0.051	0.684
Industry Bid	0.806	0.764	0.042	0.688
Staggered board	0.600	0.714	-0.114	0.653
Golden parachute	0.500	0.571	-0.071	0.788
Poison pill	0.500	0.571	-0.071	0.788
Supermajority to approve a M&A	0.100	0.428	-0.328	0.131

**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 using triangular kernels (top panel) and rectangular kernels (bottom panel) are reported. The dependent variables are the number of bids received within 2 or 3 years past union election, bid offer premium, target firm announcement return, and bid duration. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Triangular Kernel**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.075*** (-3.02)	-0.072** (-2.26)	-0.196** (-2.45)	-0.245** (-2.49)	88.3** (1.98)

**Rectangular Kernel**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.089*** (-3.15)	-0.058* (-1.73)	-0.219*** (-2.72)	-0.297*** (-2.89)	99.0* (1.68)

**Table 4**  
**Right-to-work law**

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms located in states with right-to-work laws versus in states without right-to-work laws. Results using a triangular kernel are reported. The dependent variables are the number of bids received within 2 or 3 years past union election, bid offer premium, target firm announcement return, and bid duration. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**State with Right-to-work law**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.038 (-1.58)	0.023 (0.34)	-0.121 (-0.98)	0.006 (0.03)	-73.0 (-0.23)

**State without Right-to-work law**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.088** (-2.45)	-0.115*** (-2.90)	-0.281** (-1.98)	-0.289* (-1.67)	94.6** (2.04)

**Table 5**  
**Horizontal Mergers**

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for horizontal and non-horizontal mergers. Horizontal mergers are defined as the mergers and acquisitions in which acquirers and targets are in the same industry, and non-horizontal acquisitions are defined as the mergers and acquisitions in which acquirers and targets are in different industries. Results using a triangular kernel are reported. The dependent variables are the number of bids received within 2 or 3 years past union election, bid offer premium, target firm announcement return, and bid duration. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Non-Horizontal Mergers**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.040** (-2.05)	-0.029 (-0.97)	-0.087 (-0.87)	-0.141 (-1.38)	66.5 (1.15)

**Horizontal Mergers**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.045*** (-2.90)	-0.035* (-1.69)	-0.236*** (-4.28)	-0.281*** (-3.27)	81.7 (0.77)

**Table 6**  
**Size of Unions**

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for firms with large and small unions. Results using a triangular kernel are reported. The dependent variables are the number of bids received within 2 or 3 years past union election, bid offer premium, target firm announcement return, and bid duration. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Firms with Small Union Elections**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.075** (-2.26)	-0.077** (-2.25)	0.010 (0.09)	0.149 (1.01)	18.9 (0.21)

**Firms with Large Union Elections**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.070** (-2.01)	-0.070* (-1.72)	-0.203** (-2.20)	-0.273** (-2.11)	52.7 (1.00)

**Table 7**  
**State Successor Statutes**

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012) for the full sample and the subsample excluding the states with union-friendly successor statutes. Results using a triangular kernel are reported. The dependent variables are the number of bids received within 2 or 3 years past union election, bid offer premium, target firm announcement return, and bid duration. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Subsample Excluding States with Union-Friendly Successor Statutes**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.071*** (-2.52)	-0.075* (-1.79)	-0.081 (-1.02)	-0.112 (-0.92)	-22.1 (-0.60)

**Full Sample**

	<b>Average Number of Bids Received</b>		<b>Announcement Return</b>	<b>Offer Premium</b>	<b>Bid Duration (days)</b>
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.075*** (-3.02)	-0.072** (-2.26)	-0.196** (-2.45)	-0.245** (-2.49)	88.3** (1.98)

**Table 8**  
**Who Acquire Unionized Targets**

This table presents local linear regression results using the optimal bandwidth following Imbens and Kalyanaraman (2012). Results using a triangular kernel are reported. The dependent variables are the acquirers' experiences in past M&A deals and the potential threat of unions these acquirers face. We measure acquirers' M&A experiences by the number of M&A deals they have conducted before the current bids (experienced acquirers are the acquirers that conducted more than 5 deals in the past 15 years) and their performance of these past deals, including the relative share of total gains accrued to acquirers, change in the combined firms' operating performance (ROA) and change in the combined firms' valuation (Tobin's Q) post mergers in these deals. We measure the potential union threat to acquirers by the number of union elections the acquirers have experienced by the time of making the bids, the total number of participants in these union elections, the number of passed elections that lead to existing unions in the acquiring firms, and the total labor covered by these existing unions. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Acquirers' Experiences in Mergers and Acquisitions**

	<b>Experienced Acquirer</b>	<b>Acquirer's Relative Share</b>	<b>Change in ROA</b>	<b>Change in Tobin's Q</b>
Unionization	0.465** (1.99)	0.221** (2.03)	0.079** (2.01)	0.310 (0.40)

**Union Threat to Acquirers**

	<b>Implicit Threat</b>		<b>Explicit Threat</b>	
	<b>Number of Past Elections</b>	<b>Total Election Participants</b>	<b>Number of Existing Unions</b>	<b>Total Eligible Employees</b>
Unionization	-1.231*** (-2.55)	-211.7** (-1.98)	-0.166 (-1.04)	-43.2* (-1.67)

**Table 9**  
**Regression discontinuity: Global polynomial**

This table presents RDD results from estimating a polynomial model specified in Equation (2). The dependent variables are the number of bids received within 2 and 3 years past union election, bid offer premium, target firm announcement return, and bid duration. The independent variables are unionization dummy, total votes for unionization and the cross effect between them. Union election data are from the National Labor Relations Board (NLRB) over 1978 to 2004. Takeover data are from the SDC database over 1978 to 2008.

**Third Order Global Polynomial Regression**

	Average Number of Bids Received		Announcement Return plus runup	Offer Premium	Bid Duration (days)
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.082** (-2.09)	-0.083* (-1.76)	-0.164* (-1.75)	-0.055 (-0.25)	177.5 (1.14)
Constant	0.076*** (2.81)	0.092*** (2.82)	0.369*** (3.44)	0.527*** (4.54)	59.13 (0.88)
Poly. Order	3	3	3	3	3
Observations	1814	1814	96	96	95

**Fourth Order Global Polynomial Regression**

	Average Number of Bids Received		Announcement Return plus runup	Offer Premium	Bid Duration (days)
	<u>N=2</u>	<u>N=3</u>			
Unionization	-0.071* (-1.79)	-0.073* (-1.71)	-0.227* (-1.69)	-0.274* (-1.65)	20.8 (0.10)
Constant	0.058* (1.89)	0.081** (1.96)	0.477*** (3.51)	0.713*** (4.90)	43.9 (0.57)
Poly. Order	4	4	4	4	4
Observations	1814	1814	96	96	95