Labor Unionization and Real Earnings Management: Evidence from Labor Elections

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ABSTRACT

By exploiting the local randomness in close-call labor elections, the authors find a negative impact of labor unionization at a firm on its real earnings management (REM). The finding suggests a managerial pressure effect of increased labor power. In a local regression discontinuity (RD) analysis, firms that narrowly pass the 50% threshold show a significant decrease in REM, relative to their peers that narrowly fail. This effect is stronger for firms headquartered in right-to-work states and when managers have less pressure to manage earnings. Evidence from a global parametric RD analysis and a multivariate OLS test using industry-level unionization measures confirms the external validity of results in local RD analysis. Overall, the research sheds new light on the economic consequence of labor unionization on employers' accounting decisions.

Keywords: Labor Unionization; Earnings Management; Regression Discontinuity

"If a significant portion of our employees were to become unionized, our labor costs could increase and our business could be negatively affected by other requirements and expectations that could increase our costs, change our employee culture, decrease our flexibility, and disrupt our business" (Starbucks Corporation in its 2022 annual filing with the U.S. Securities and Exchange Commission, p. 18).

INTRODUCTION

Drives to unionize labor in the United States are on the rise. Since December 2021, high-profile companies—such as Amazon, Apple, Chipotle, Delta Air Lines, Google, Starbucks, and Trader Joe's—and even rail companies and political parties—have been exposed to labor unionization. This trend is unlike any seen in the past. For example, on December 9, 2021, the National Labor Relations Bureau (NLRB) certified the employees at a Starbucks store in Buffalo, New York, to form a union (Isidore 2021). Until the end of 2022, the NLRB had certified unions at 133 (that is, 2.05% of) Starbucks Corporation's stores and 3,400 (i.e., 1.4% of) Starbucks employees (Wiener-Bronner 2022)[1]. These numbers become alarming when one juxtaposes them with a unionization rate of 4.6% among retail workers and 1.2% among food service employees in the United States (Isidore 2021). The opening quote from Starbucks indicates the threat that a firm foresees because of labor unionization.

In another example, the United Auto Workers' 40-day strike against General Motors (GM) is estimated to have cost the company about $4 billion for the year. This loss made GM managers do "a lot of work to do in an attempt to make up losses from the strike" (*CNBC*, October 29, 2019).[2] Because the growing power of a firm's labor increases the firm's operating risk (Campello et al. 2018, Chen, Kacperczyk, and Ortiz-Molina 2011), how to manage the firm's earnings becomes a first-order concern of managers. This concern becomes increasingly important to employers after U.S. President Joe Biden promised to be the most pro-union

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[1] Wiener-Bronner Danielle, Starbucks closes location that was the first to unionize in Seattle, *CNN Business*, November 22, 2022.

[2] UAW strike cost GM up to $4 billion for 2019, substantially higher than estimated, *CNBC*, October 29, 2019.

American president (*CNBC*, December 2, 2020).[3] *Does labor unionization at a firm cause the firm's managers to manipulate earnings?* The current research answers this timely question.

Real earnings management (REM) adjusts earnings toward the target by changing the timing and structure of real activities such as sales, inventory, R&D expenses, advertising, and SG&A (e.g., Gunny 2010, Roychowdhury 2006). Relative to REM, accrual-based management of earnings is limited in scope and more easily detectable by outsiders (Ewert and Wagenhofer 2005, Roychowdhury 2006). Consequently, REM has become more pervasive for managers especially in the aftermath of the Sarbanes-Oxley Act of 2002 and the Enron scandal in 2001 (e.g., Chen and Huang 2013, Cohen, Dey, and Lys 2008, Graham, Harvey, and Rajgopal 2005, Zang 2012). Because a powerful labor union likely places more demands on a firm's management, an increase in union power—on average—threatens the firm's earnings and raises its operational risks (e.g., Campello et al. 2018, Chen, Kacperczyk, and Ortiz-Molina 2011). Therefore, our main hypothesis is that labor unionization at a firm causes the firm to manage its real earnings *downwards*.

Unlike extant research on labor unionization that uses firm and industry variables to measure labor unionization (e.g., Chen, Kacperczyk, and Ortiz-Molina 2011, Hamm, Jung, and Lee 2018), we sample close-call labor elections recorded in the National Labor Relations Board (NLRB). Because NLRB labor elections use a passing rule of simple majority where elections with over 50% votes are declared as wins and unions constituted (e.g., Bradley, Kim, and Tian 2017, Campello et al. 2018, He et al. 2020, Lee and Mas 2012), we implement a *sharp* (as opposed to fuzzy) regression discontinuity (RD) design to measure the (causal) effect of labor

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[3] Biden promises to be 'the most pro-union president'—and union members in Congress are optimistic, *CNBC*, December 2, 2020.

unionization.[4]

Following Cohen and Zarowin (2010), we measure the level of a firm's REM by the

negative sum of abnormal operating cash flow and abnormal discretionary expenses.[5] Using a

local RD analysis to exploit locally exogenous variation of labor unionization in close-call labor

union elections, we find a significant drop in REM for firms that narrowly passed the 50% voting

threshold (vs. firms that narrowly "failed" to pass the threshold). This finding supports our main

hypothesis that labor unionization at a firm causes its managers to manipulate real earnings

downwards. Such manipulation aims to save operating costs and thus lower the odds that the

union would place costly demands on the firm.

We report robustness to different kernels, orders of polynomials, bandwidths, and

measures of REM (e.g., Chen, Harford, and Lin 2015, Irani and Oesch 2016). Results of placebo

tests support that the baseline result is neither an artifact of data nor occurs by chance. To

corroborate our main hypothesis, we conduct a series of tests, exploiting conditions that suggest

heterogeneity in the labor union's and managers' incentives. Specifically, while testing

heterogeneity in labor union incentives, we find that the effect exists for firms that were

headquartered in states that had adopted the right-to-work (RTW) laws when the election took

place. Conversely, we find no significant decrease in REM for narrowly winning (vs. narrowly

losing) firms headquartered in states that had not adopted RTW laws. Because RTW-states have

weaker workplace protections due to shrinking unions (e.g., Ellwood and Fine 1987, Holmes

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[4] Empirically, identifying the effect of labor unionization is severely hampered by endogeneity problems. Extant research uses an indicator of whether a firm has a labor union (Hamm, Jung, and Lee 2018) or industry-level measures (Chen, Kacperczyk, and Ortiz-Molina 2011). These measures cannot eliminate biases caused by omitted variables and reverse causality. First, omitted variables, such as performance and investment efficiency, may affect both REM and labor unionization. Second, reverse causality may arise when REM impacts labor unionization. For example, firms' REM may hurt employees' interests and force them to unionize. Therefore, a superior identification strategy is needed to alleviate such problems.

[5] We report robustness to two measures that extant REM literature has used (Cohen et al. 2020, Gunny 2010).

1998), this finding suggests that the effect of winning the labor election comes from increased labor power. For heterogeneity in managerial incentives, we observe that firms decrease REM more when they (1) beat analysts' expectations, (2) have more financial resources, and (3) experience lower corporate risks. These findings suggest the important role of managerial pressure in the effect of labor unionization on REM.

Next, we investigate the channels through which labor unionization impacts REM. We find that each of the changes in (1) abnormal discretionary expenses and (2) abnormal operating cash flow is significantly affected under greater labor unionization. The insight is that labor unionization affects a firm's REM on both dimensions. To provide a comprehensive view of how labor unionization impacts a firm's earnings management decisions, we also examine whether labor unionization affects accrual-based earnings management. We find a negative effect on discretionary accruals, suggesting that managers manipulate accrual-based earnings management downwards under greater labor unionization. Next, we also implement two tests to demonstrate the external validity of the local RD analysis. From global parametric RD analysis, we find that the negative effect of labor unionization on REM remains. Using industry-level proxies of labor unionization (e.g., Chen, Kacperczyk, and Ortiz-Molina 2011, Hamm, Jung, and Lee 2018), we implement a multivariate OLS analysis and find a negative association between labor unionization and REM in a more comprehensive sample of U.S. listed firms. These findings support the external validity of results in the local RD analysis.

Our primary finding—that labor unionization causes managers to manage earnings downwards—contributes to the literature in two ways. First, it adds to the literature on the economic consequences of labor unionization. This literature has documented the impact of labor unionization on a firm's financing, investment, payout policy, and operations (e.g., Bronars and

Deere 1991, Connolly, Hirsch, and Hirschey 1986, DeAngelo and DeAngelo 1991, Hanka 1998, He et al. 2020). Using evidence from labor negotiation and labor policy changes, academics have documented how employees affect earnings management (e.g., Dou, Khan, and Zou 2016, Gao, Zhang, and Zhang 2018, Liberty and Zimmerman 1986). In an RD design based on the 50% cutoff, prior studies identify the effect of labor unionization on innovation (Bradley, Kim, and Tian 2017), asymmetric cost behavior (He et al. 2020), bankruptcy risk (Campello et al. 2018), and long-run value of shareholders (Lee and Mas 2012). Using the same RD framework, this paper shows a significant decrease in a firm's REM under labor unionization and sheds light on the economic implications of labor unions on corporate earnings management.

Second, the finding contributes to the literature on earnings management by documenting labor unionization as a determinant of REM. According to prior research, a firm's REM can be affected by factors such as financial analysts (Chen, Harford, and Lin 2015, Irani and Oesch 2016), creditor monitoring (Roychowdhury 2006), litigation risk (Huang, Roychowdhury, and Sletten 2019), SEO valuation (Cohen and Zarowin 2010, Kothari, Mizik, and Roychowdhury 2015), and internal governance (Cheng, Lee, and Shevlin 2015).[6] We add to this strand of literature by documenting labor unionization as a determinant of REM. Because we observe a negative impact of labor unionization on firms' accrual-based earnings management and suggest the simultaneous adjustments of accrual-based and REM under labor unionization, we provide a comprehensive view of how labor unionization affects a firm's earnings management decisions.

The remainder of the paper proceeds as follows. Section II reviews related literature and develops our hypotheses. Section III describes the sample and methodology. Section IV presents

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[6] In broader literature on earnings management, firms' earnings management decisions can be determined by firm characteristics, financial reporting practices, governance and controls, auditors, equity market incentives, and external factors (Dechow, Ge, and Schrand 2010).

our main empirical results. Section V shows the results of heterogeneity tests. Section VI provides addition tests. Section VII concludes.

RELATED LITERATURE AND HYPOTHESES

A firm is essentially a nexus of contractual relations among stakeholders (e.g., Alchian and Demsetz 1972, Jensen and Meckling 1976). As one of the most important stakeholders, employees—especially unionized employees—should impact a firm's decision-making processes. Extant literature has documented that labor unionization impacts a firm's capital structure, investment, bankruptcy risk, cost of capital, production, CEO compensation, dividend payout, and asymmetric cost behavior, thus affecting the firm's value to shareholders and debtholders (e.g., Bronars and Deere 1991, Chen, Kacperczyk, and Ortiz-Molina 2011, Connolly, Hirsch, and Hirschey 1986, DeAngelo and DeAngelo 1991, Dowrick and Spencer 1994, Faleye, Mehrotra, and Morck 2006, Graham, Harvey, and Rajgopal 2005, Hanka 1998, He et al. 2020, Hirsch 1991, Huang, Roychowdhury, and Sletten 2019, Lee and Mas 2012, Matsa 2010).

Managers may face greater potential loss in earnings and higher operational risk under labor unionization (e.g., Campello et al. 2018, Chen, Kacperczyk, and Ortiz-Molina 2011). Extant literature implies that managers may *inflate* earnings to avoid potential negative market reactions related to union pressure because hitting earnings benchmark is important for the firm and its managers (e.g., Burgstahler and Dichev 1997, Skinner and Sloan 2002, Graham, Harvey, and Rajgopal 2005, Cohen, Dey, and Lys 2008).

However, recent research has emphasized the direct impacts of union power. Specifically, a powerful union can request higher wages, shorter hours, and more extensive fringe benefits. Further, because of its legal right to strike and enter into collective-bargaining agreements, the union can also increase costs for employers, impeding corporate operations, and discouraging

discretionary investments (Bradley, Kim, and Tian 2017, Kini et al. 2022). In line with this negative view of labor-union power, we presume that managers will deflate earnings through earnings management and thus attempt to lower the operating costs resulting from labor unionization (e.g., Dechow and Skinner 2000, Dichev et al. 2013, Graham, Harvey, and Rajgopal 2005, Healy and Wahlen 1999).

H₁. *All else being equal, labor unionization at a firm decreases its real earnings management.*

Next, we examine how the employees' and managers' incentives moderate the impact of labor unionization on REM. Although labor unionization increases labor power, the magnitude of increased power is determined by local regulations. Because right-to-work (RTW) laws are designed to allow non-union members (who do not pay membership fees) to have the same benefits as union members, more employees choose not to join labor unions. As such, shrinking labor unions in states that have adopted these laws (hereafter, RTW-states) may have fewer resources, limited power, and insufficient incentives to bargain for employees (e.g., Bradley, Kim, and Tian 2017, Campello et al. 2018). That is, RTW-states have weaker workplace protections. For example, RTW-states are more likely to have lower minimum wages and weaker laws protecting workers from discrimination and harassment, which arise largely from the weakening of union power (Ellwood and Fine 1987, Holmes 1998). Taken together, labor unionization will have a stronger effect in RTW-states by providing stronger workplace protections. If unionized labor impacts REM, firms headquartered in states that have adopted RTW laws—where workplace protections are constrained—are expected to have stronger needs to deflate earnings through REM. Taking advantage of the RTW adoption, we propose our second hypothesis as follows.

H₂. *All else being equal, the effect of labor unionization at a firm on its real earnings management is stronger for firms headquartered in states with more unionization incentives.*

To trade-off between the potential costs and investors' demands for the risk compensation under greater labor unionization (e.g., Campello et al. 2018, Chen, Kacperczyk, and Ortiz-Molina 2011), managers are more likely to deflate earnings when they face lower pressure on earnings, especially when they beat analysts' expectations, have adequate financial resources, and face lower corporate risks (e.g., Bartov, Givoly, and Hayn 2002, Linck, Netter, and Shu 2013, Roychowdhury 2006). Because a healthy profit profile provides managers with more power to manipulate earnings (e.g., Ewert and Wagenhofer 2005, Roychowdhury 2006), labor unionization should have a stronger impact on REM for firms that experience lower external pressure. Accordingly, we hypothesize:

H3. *All else being equal, the effect of labor unionization at a firm on its real earnings management is stronger for firms with less external pressure on earnings.*

Because the extent to which labor elections impact REM depends on employees' and managers' incentives, testing H_2 and H_3 helps corroborate H_1.

SAMPLE SELECTION AND METHODOLOGY

The Sample

We source the labor election data from the NLRB database and the accounting and financial data from Standard & Poor's Compustat – Capital IQ North America Fundamentals Annual (hereafter, Compustat). Our unit of observation is a firm-year-labor election case and our initial sample includes 7,229 such observations. Following extant research that uses NLRB data (Bradley, Kim, and Tian 2017, Lee and Mas 2012), we include in our sample observations that meet the following six criteria. (1) The election must have more than 150 eligible voters. This step decreased our sample from 7,229 to 3,493 observations. (2) We should be able to match the employer's name recorded in the NLRB database to Compustat (sample reduced to 1,494

observations). (3) Real earnings management (REM) measures are available in the year of the election and the year following the election (1,327 observations). (4) The firm must not have experienced another key development (e.g., merger and acquisition, CEO turnover, or shareholder activism activities) in the year of the NLRB election (1,059 observations). (5) The firm must not be in the financial (SIC code 6000-6999) and utility (SIC code 4900-4999) industries (881 observations). (6) Data must be available for all control variables (654 observations).

Thus, our sample contains 654 firm-year observations covering elections from 1989 to 2021. For a firm-year with more than one election, we keep the election with the highest percentage of votes. We winsorize all the continuous variables at the 1st and 99th percentiles. Figure 1 plots the NLRB elections used in the RD analysis. Specifically, the bar chart shows the number of NLRB elections while the line graph depicts the average percentage of votes.

[Insert FIGURE 1 about here.]

As Figure 1 shows, the number of election cases has dropped gradually since 2010. This trend is consistent with the argument that comprehensive labor protection laws and the adoption of RTW laws have reduced employees' incentives to form labor unions (Bradley, Kim, and Tian 2017, Lee and Mas 2012; *The Washington Post*, January 23, 2020).[7]

Measures of REM

We first follow Cohen and Zarowin (2010) and measure REM by the negative sum of abnormal operating cash flow and abnormal discretionary expenses:

$$REM1 = - (REM\_OANCF + REM\_DISX)$$

REM_OANCF and *REM_DISX* denote abnormal operating cash flow and abnormal discretionary

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[7] Workers are fired up. But union participation is still on the decline, new statistics show., *The Washington Post*, January 23, 2020.

expenses, respectively. Based on Roychowdhury (2006), abnormal operating cash flow is the residual of the following equation:

$$\frac{OANCF_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$

OANCF denotes the operating cash flow.

Abnormal discretionary expenses (*REM_DISX*) is the residual of the following equation:

$$\frac{DISX_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$

DISX is the sum of advertising, R&D, and SG&A expenses.

Considering the role of abnormal production costs in REM (Dechow and Skinner 2000, Roychowdhury 2006), we follow Zang (2012) and construct an alternate measure of REM (*REM2*) by calculating the difference between abnormal production costs and abnormal discretionary expenses (e.g., Chen, Harford, and Lin 2015, Irani and Oesch 2016)[8]:

$$REM2 = REM\_PROD - REM\_DISX$$

Abnormal production costs (*REM_PROD*) is the residual of the following equation:

$$\frac{PROD_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \alpha_4 \frac{\Delta SALE_{i,t-1}}{AT_{i,t-1}} + \varepsilon_{it}$$

PROD is the sum of the cost of goods sold and changes in inventory during the year.

Besides, we test robustness using an alternate measure of abnormal operating cash flow (*OANCF_R*) defined by He et al. (2022):

$$\frac{OANCF_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_2 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{PROD_{it}}{AT_{i,t-1}} + \alpha_4 \frac{DISX_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$

PROD is the sum of the cost of goods sold and changes in inventory during the year, and *DISX* is

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[8] We do not use the aggregate of *REM_PROD* and *REM_OANCF* because this method can result in double counting (Cohen and Zarowin 2010, Huang, Roychowdhury, and Sletten 2019, Roychowdhury 2006).

the sum of advertising, R&D, and SG&A expenses. Based on this measure, we construct

REM1_R by substituting *REM_OANCF* from *REM_OANCFR*.

We estimate each of the above "abnormal" regressions for each industry-year that has more than 15 observations. We identify an industry by two-digit Standard Industrial Classification (SIC) code.

RD Method

The RD analysis uses labor election cases to identify the effect of labor unionization at a firm on its REM. Specifically, we implement a *sharp* RD design by exploiting the NLRB labor elections' passing rule of a simple majority. That is, elections with over 50% votes are declared a win for the labor, and a union is constituted (e.g., Bradley, Kim, and Tian 2017, Campello et al. 2018, He et al. 2020, Lee and Mas 2012). NLRB records the results of labor union elections under the procedures specified by the National Labor Relations Act (NLRA). Firms that narrowly pass or fail the labor elections provide a locally exogenous variation to measure the effect of labor unionization under the RD design (e.g., Bradley, Kim, and Tian 2017, Campello et al. 2018, Lee and Mas 2012). Different from firm-level measures from SEC filings or Thomson Reuters Asset4 (e.g., Hamm, Jung, and Lee 2018, Chang et al. 2022[9]) or industry-level measures from the Unionstats database (e.g., Chen, Kacperczyk, and Ortiz-Molina 2011, Chino 2016), the RD design provides an ideal identification strategy that rules out the potential endogeneity problem to the most extent.

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[9] Although Chang et al. (2022) deal with the same research question as ours, we use completely different methods and reach different conclusions. Specifically, Chang et al. (2022) use firm-level labor union membership data (2002-2016) to measure the union power, while we use the labor election data (1989-2021). Unlike their firm-level measure, our RD design can provide an ideal identification strategy to capture the causal effect of union power. Moreover, contrary to their conclusion that labor unions increase REM, we find a negative impact of labor unions on REM, supporting the managerial pressure effect of increased labor power rather than the managerial incentive effect.

MAIN RESULT

Empirical Strategy

To test H_1, the following dynamic RD specification estimates the local average treatment

effects (LATEs) of labor unionization on REM:[10]

$$\Delta REM_{i,t+1} = \alpha + \beta Unionization_{it} + F_r(X_{it}, \gamma_r) + F_l(X_{it}, \gamma_l) + \varepsilon_{i,t+1} \qquad (1)$$

REM denotes the measure of real earnings management (*REM1*) defined by Cohen and Zarowin

(2010). *Unionization* is an indicator that equals 1 if the labor election received greater than 50%

votes (i.e., passed). X denotes the vote margin, which is the difference between the vote rate and

the passing threshold (0.5 in this article). $F_r(X_{it}, \gamma_r)$ and $F_l(X_{it}, \gamma_l)$ are polynomials on either side

of the zero vote-margin. We select the bandwidth based on Imbens and Kalyanaraman's (2012)

method of mean squared error. Per our H_1, we expect the coefficient of *Unionization* to be

negative.

RD Validation Tests

The validity of RD relies on two assumptions (Cuñat, Gine, and Guadalupe 2012, Lee

and Lemieux 2010). First, the vote share should be smooth around the passing threshold. Such

smoothness ensures that the voting is not manipulated. Second, treated firms and their control

counterparts around the passing threshold must be similar in firm-specific fundamental

characteristics. We test each assumption next.

One can argue that managers of the focal firm may manipulate labor elections. Therefore,

we test the continuity of the vote distribution before the analysis. Figure 2 plots the density

distribution of union vote shares in labor elections of U.S.-listed firms using the method

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[10] We use a dynamic form of regression to analyze the difference-in-differences of dependent variables (DVs) in the RD design. Because there is no pre-existing difference in REM measures, using REM measures at $t + 1$ or their changes from t to $t + 1$ as DVs should not change our results. We report robustness to these measures.

proposed by McCrary (2008). Figure 2 reports no significant discontinuity around the 50%

cutoff, meaning that the elections are not systematically manipulated.

[Insert FIGURE 2 about here.]

To test whether firms that narrowly pass the threshold have similar fundamentals as firms

that narrowly fail the threshold, we follow extant RD research (Lin, Wei, and Xie 2020) to select

seven firm fundamentals: firm size, leverage, Tobin's Q, return of assets, collateral, sales growth

rate, and firm risks. Panel B of Table 1 shows the summary statistics of firm fundamentals.

These statistics are similar to those reported in prior research. Panel C of Table 1 reports the

results of tests on firm fundamentals listed in Panel B. We note that values of none of the seven

variables change significantly around the 50% cutoff.

[Insert TABLE 1 about here.]

Overall, these tests suggest that (1) the votes are not systematically manipulated in the

proximity of the 50% threshold; (2) firms on either side of the threshold are not significantly

different in fundamentals. These results together confirm that RD is a valid design for our data.

Graphical Analyses

We graph the change in a firm's REM after labor elections. Figure 3 shows regression

discontinuity plots using a fitted quadratic polynomial estimate with a 95% confidence interval

around the fitted value. It reports a significant drop around the 50% cutoff for the REM measure

and thus provides model-free evidence of the *negative* effect of labor unionization at a firm on its

REM.

[Insert FIGURE 3 about here.]

Main Effect Using Local RD Analysis

Next, we conduct a local RD analysis to formally measure the effect of labor unionization

at a firm on its REM.

[Insert TABLE 2 about here.]

As Table 2 reports, the LATEs of labor unionization are negative and significant at 1%

level across different measures of DVs, kernels, and polynomial orders. The interpretation is that

relative to a firm that narrowly loses the labor election, a firm that narrowly passes the election

decreases its REM. For economic magnitude, firms that narrowly pass the elections, on average,

decrease *ΔREM1* by 0.1. Because the standard deviation of *ΔREM1* in our sample is 0.09, the

main effect is not only statistically significant but also economically meaningful. Overall, this

evidence supports H_1, which predicts a negative effect of labor unionization at a firm on its

REM.

Robustness Tests

We conduct two sets of tests to examine the robustness of the main effect reported by the

local RD analysis.

First, we examine whether the main effect is driven by the selection of bandwidth. Panel

A of Table 3 reports the LATEs for different lengths of optimal bandwidth based on the

asymptotic mean squared error and across different kernel functions with second-order

polynomials (Imbens and Kalyanaraman 2012). The main effect holds in each combination.

[Insert TABLE 3 about here.]

Figure 4 reports further evidence on RD estimates with alternative bandwidths using local

linear regressions with the choice of optimal bandwidth based on Imbens and Kalyanaraman's

method (2012). The x-axis represents the percentage of IK optimal bandwidth. The y-axis shows

the estimation results. All tests estimate the model with polynomial order 2 and the triangular

kernel. As Figure 4 depicts, the RD estimates for REM are relatively stable across different

lengths of optimal bandwidth.[11]

[Insert FIGURE 4 about here.]

Second, we test whether our results are robust to three alternate methods of bandwidth selection: (1) asymmetric mean square error (*AsyMSE*) by Imbens and Kalyanaraman (2012), (2) symmetric coverage error rate (*CER*), and (3) asymmetric coverage error rate (*AsymCSR*) by Calonico, Cattaneo, and Titiunik (2014). Panel B of Table 3 reports the LATEs when using alternate bandwidth selection methods across different orders of polynomials with the triangular kernel. As Panel B of Table 3 shows, the results for both measures of REM are similar to those of baseline regressions.

Panels C-D of Table 3 report the results for alternate REM measures. Columns (1)-(3) of Panel C show results for He's (2022) REM measure ($\Delta REM1\_R$), while columns (4)-(6) report the results when the REM measure in the following year is used as DVs ($REM1_{t+1}$). Panel D reports the results when Gunny's (2010) REM measure and its value in the following year ($\Delta REM1$ and $REM1_{t+1}$) are used as DVs. The main effect is robust in these tests.

Placebo Tests

Following extant research (e.g., Bradley, Kim, and Tian 2017, Lin, Wei, and Xie 2020), we conduct two placebo tests to verify whether our main effect is driven by mechanical reasons. First, we replicate our baseline local RD analysis 1,000 times under artificial cutoffs between 0 and 1, excluding 0.5. All tests use polynomial order 2 and the triangular kernel. Panel A of Figure 5 reports the histogram of the RD estimates and includes a dashed vertical line that represents the RD estimate at the true threshold. As shown, the pseudo estimates are all around 0, meaning that the treatment effect of unionization on REM is absent at artificially chosen vote thresholds.

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[11] The results are similar when we use other polynomial orders and kernel functions.

[Insert FIGURE 5 about here.]

Second, we estimate a placebo RD regression in which we replace the DV with the

following seven firm-specific control variables (one at a time): firm size, leverage, Tobin's Q,

return of assets, collateral, sales growth rate, and firm risks. Panel B of Figure 5 and Table 4

reports the RD estimates with these alternate DVs. As shown, the pseudo estimates are all

centered at 0 in the figure and there is no statistically significant relation between labor

unionization and these alternate DVs. These results suggest the absence of a treatment effect of

unionization on these seven firm fundamentals. In sum, these placebo tests suggest that the main

effect reported by the local RD analysis comes from the discontinuity in the labor election voting

around the 50% passing threshold rather than mechanical reasons.

HETEROGENEITY TESTS

Right-to-Work (RTW) Laws

Per extant research, right-to-work legislation increases unionized employees' need to

bargain with employers due to the potential free-rider problem (Bradley, Kim, and Tian 2017,

Campello et al. 2018).[12] Therefore, if H_2 is correct and the decrease in REM after the passage of

the labor election comes from increased labor power instead of unobservable reasons, firms

headquartered in states that have adopted RTW are more likely to lower REM in the aftermath of

labor unionization. Specifically, we define a dummy variable, *RTW*, which equals 1 for a firm

that was headquartered in an RTW-state when the labor election took place, and 0 otherwise.

Next, we estimate the RD regression for observations in the RTW-states and those in the non-

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[12] The right-to-work states include Alabama, Arkansas, Arizona, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Virginia, Utah, Wyoming, Wisconsin, and West Virginia. For a timeline of when state Right to Work laws were adopted, please see the website of the National Right To Work Legal Defense Foundation (NRTW) at https://www.nrtw.org/right-to-work-states/.

RTW-states.

Table 5 reports that firms headquartered in RTW states experienced a significant decrease in REM, whereas those headquartered in non-RTW states show no significant change in REM. The difference in the coefficients of *Unionization* between RTW and non-RTW subsamples is statistically significant. This finding is consistent with H_2 and corroborates H_1.

[Insert TABLE 5 about here.]

Benchmark Beating

Next, we examine whether the managers' perceived pressure from financial analysts explains the impact of labor unionization on REM. Because a firm's failure to beat analysts' expectations decreases its reputation in the financial market (e.g., Bartov, Givoly, and Hayn 2002, Dichev et al. 2013, Graham, Harvey, and Rajgopal 2005), managers may trade off costs incurred from labor unionization for the drop in reputation. That is, managers are more likely to deflate earnings when analysts exert less pressure on a firm. To test this prediction, we separate our sample into two groups based on whether the firm beat analysts' earnings forecasts in the year the election was conducted. Specifically, we construct an index *Benchmark*, which is the analysts' earnings forecasts obtained from the Institutional Brokers' Estimate System (I/B/E/S) database to proxy for a firm's pressure from financial analysts. Firms that beat analysts' earnings forecasts (with actual earnings higher than the average analysts' forecasts) are more likely to meet investors' expectations and thus have more incentive to manipulate their earnings downwards.

As Table 6 reports, firms that beat analysts' expectations show a significant decrease in REM. The small *p*-values at the bottom of Table 6 indicate that there is a significant statistical difference in the effect of labor unions between firms with earnings higher than or lower than

analysts' expectations. Because firms face greater pressure from the market when they fail to meet analyst expectations (e.g., Bartov, Givoly, and Hayn 2002, Dichev et al. 2013, Graham, Harvey, and Rajgopal 2005), this evidence provides direct support for H$_3$ and corroborates the pressure hypothesis.

[Insert TABLE 6 about here.]

Financial Resources

The literature on the financial constraint (e.g. Denis and Sibilkov 2010, Almeida and Campello 2007) has documented that firms with higher leverage or lower levels of cash flow are more likely financially constrained, lowering managerial discretion to combat labor union demands by deflating real earnings. If this argument holds, the effect of unionization on REM should be more pronounced for firms with higher leverage or lower levels of cash flow. We test this argument. Specifically, we define (1) the leverage ratio (*LEV*) as the long-term debt and debt in current liabilities scaled by the book value of total assets and (2) the cash flow ratio (*Cashflow*) as operating cash flow scaled by the book value of total assets. We re-estimate our RD regression by splitting the sample by low versus high values of leverage and cash-flow level.

As Table 7 reports, following unionization, firms with lower leverage and higher cash flow levels decrease their earnings through REM. On the other hand, there is no significant decrease in REM for firms with fewer financial resources. Small *p*-values at the bottom of Panel A and Panel B in Table 7 indicate that there are statistical differences in the coefficients of the subsamples. This evidence supports H$_3$ by showing that the effect of labor unionization is stronger for firms that face lower pressure resulting from adequate financial resources.

[Insert TABLE 7 about here.]

Corporate Financial Risks

Next, we investigate the effect of pressure emanating from two measures of corporate financial risks. If H_3 is correct, firms with higher risks are less motivated to decrease their earnings because higher risks increase the cost of capital (Baxter 1967). Therefore, only firms with lower risks would decrease earnings without worrying about decreasing their cost of capital. Specifically, we investigate the market risk measured by the stock return volatility (*VOL*) calculated as the standard deviation of monthly returns during the year (Engle 2004), and the bankruptcy risk measured by Altman's (1968) Z score (*Altman*). We split the sample into subsamples according to the risk levels and re-estimate our RD regression for each subsample.

Table 8 reports that in the aftermath of labor unionization, firms with low risks significantly decrease their earnings through REM, whereas firms with high risks generally show little decrease in REM. The *p*-values of coefficient difference tests (0.05, on average) are generally smaller than the significance level, suggesting that there are significant statistical differences in the coefficients of *Unionization* in different groups.

Overall, evidence from a series of heterogeneity tests supports H_2 and H_3 and lends further credence to H_1 from the perspective of labor and managerial incentives.

[Insert TABLE 8 about here.]

ADDITIONAL TESTS

Channels

Next, we investigate the channels through which labor unionization impacts REM. Based on the definition of *REM1*, we examine the change in abnormal discretionary expenses (*REM_DISX*) and abnormal operating cash flow (*REM_OANCF*) after the passage of labor elections.[13]

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[13] We also examine the change in abnormal production costs (*REM_PROD*) in untabulated results, which show no

Table 9 reports that these two REM components show a significantly higher change for firms that narrowly pass the election than those that narrowly fail, meaning that labor unionization decreases a firm's abnormal discretionary expenses *and* abnormal operating cash flow.

[Insert TABLE 9 about here.]

Labor Unionization and Accrual-based Earnings Management

We provide a more comprehensive view of how labor unionization impacts firms' earnings management decisions by showing additional tests on accrual-based earnings management (AEM). Following extant research, we measure a firm's AEM as discretionary accruals based on the Kothari's model that adjusts for the firm's past performance (Kothari, Leone, and Wasley 2005, Cohen et al. 2020), modified Jones model (Dechow, Sloan, and Sweeney 1995), and Jones model (Jones 1991).[14]

Table 10 reports that firms with labor unionization lower AEM. Together with the results of REM, this result thus demonstrates that in the aftermath of labor unionization, managers simultaneously manipulate accrual-based and real earnings downwards.

[Insert TABLE 10 about here.]

External Validity: Global RD Analysis

Because local RD analysis investigates only the change in DVs around the threshold, we next test whether the effect of labor elections holds outside of the IK bandwidth. Therefore, we implement a parametric global RD to test the external validity of local RD. Following Cuñat,

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significant effect of unionization on *REM_PROD*. Taken together, the negative effects of unionization on REM are more pronounced for abnormal cash flows and abnormal discretionary expenses, suggesting that cash flows and discretionary expenses may be more easily to manipulated downwards than production costs.

[14] Appendix Table A2 shows the summary statistics of these measures.

Gine, and Guadalupe's (2012), we estimate the ATE by estimating Equation (2):

$$\Delta REM_{i,t+1} = \alpha + \beta Unionization_{it} + F_r(X_{it}, \gamma_r) + F_l(X_{it}, \gamma_l)$$

$$+\mu Controls_{it} + Industry\ FE + Year\ FE + \varepsilon_{i,t+1} \qquad (2)$$

The variables in Equation (2) are the same as those in Equation (1) and we use as covariates the same seven firm-year-specific fundamentals as we use for local RD analysis. We include year- and industry-fixed effects to control for firm-invariant but time and industry-invariant determinants of (change in) REM. We estimate SEs that are adjusted for heteroskedasticity and clustered by firm.

Table 11 reports that the coefficients of *Unionization* are negative and significant in models with alternate control variables and different orders of polynomials, meaning that the effect of labor unionization on REM exists in the parametric global RD design as well. On average, the passage of labor election leads to a 0.03 decrease for *REM1*. Considering the sample standard deviation of the DVs, this result is economically significant.

[Insert TABLE 11 about here.]

External Validity: Multivariate Ordinary Least Squares (OLS)

We also conduct a multivariate OLS analysis based on a more comprehensive sample to examine whether the negative impact of labor unionization on REM is generalizable to a more representative sample. The multivariate OLS analysis uses two measures of labor unionization obtained from the Union Membership and Coverage dataset in Unionstats. Following extant research (e.g., Chen, Kacperczyk, and Ortiz-Molina 2011, Chino 2016), we use union membership and coverage density as industry-year-specific (and not firm-year-specific) measures of labor unionization. Union membership density (*UNION_IND*) is the total number of union members in the focal industry in the focal year divided by the total number of employees

in the focal industry in the focal year. Union coverage density (*UNION_COV_IND*) is the total number of employees covered by labor unions in the focal industry in the focal year divided by the total number of employees in the industry.

The following model estimates the impact of labor unionization:

$$REM_{i,t+1} = \alpha + \beta Union_{it} + \gamma Controls_{it} + Year\ FE + Firm\ FE + \varepsilon_{it+1} \qquad (3)$$

REM denotes measures of REM (*ΔREM1* and *ΔREM2*), and *Union* denotes measures of labor unionization (*UNION_IND* and *UNION_COV_IND*). Following extant research (Bushee 1998, Chen, Harford, and Lin 2015, Zang 2012), we control for firm size (*SIZE*), leverage (*LEV*), Tobin's Q (*TOBINQ*), profitability (*ROA*), collateral (*PPENT*), sales growth (*SGR*), and return volatility (*VOL*). Year and firm fixed effects are included to capture time and corporate invariant factors. Industries are classified by two-digit SIC codes. Standard errors are adjusted for heteroskedasticity and clustered by firm.[15]

[Insert TABLE 12 about here.]

As Table 12 shows, the coefficients of interest are negative and significant for both *REM1* and *REM2* for each of the two measures of labor unionization. In economic magnitude, a one-standard-deviation increase in *UNION_IND* causes *ΔREM1* to decrease by 2.0% of its standard deviation, and causes *ΔREM2* to decrease by 2.2% of its standard deviation. Hence, the coefficients of interest for REM are not only statistically significant but also economically consequential. Similarly, the estimates of *UNION_COV_IND* are all negative and significant with economically meaningful magnitudes. These results further confirm H₁ by showing a negative relation between labor unionization and REM in a more representative sample. Overall,

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[15] We source data for our OLS sample from multiple sources. The accounting data come from Compustat. The industry-level labor unionization data are from Union Membership and Coverage database in Unionstats. Observations included in this analysis should satisfy: (1) Book equity is positive; (2) All the variables used are available. Firms in financial (SIC code 6000-6999) and utility (SIC code 4900-4999) industries are excluded. All the continuous variables are winsorized at the 1% and 99% levels. Finally, the sample contains 92,147 observations during 1989-2021. Appendix Table A3 reports the summary statistics of this sample.

the results in this subsection support the external validity of the local RD analysis.

CONCLUSION

Using close-call labor elections to identify the impact of labor unionization, we observe a significant decrease in REM for firms that narrowly pass the 50% passing threshold. The finding supports our main hypothesis that labor unionization pushes managers to deflate earnings through REM. This effect is robust to alternate measures of REM and different RD settings. Heterogeneity tests further support our prediction by showing that firms are less likely to decrease REM under lower labor union incentives and more likely to decrease REM under less external pressure on earnings. Taken together, these results support our prediction that managers intend to deteriorate earnings to avoid potential costs and uncertainties from labor unionization. Evidence from accrual-based earnings management provides a comprehensive view of how labor unionization affects a firm's earnings management decisions. Tests based on the global parametric RD and the multivariate OLS analysis provide further evidence of the external validity of the main finding from the local RD regression.

Overall, our research contributes to the literature on the economic consequences of labor unionization and determinants of a firm's REM decisions. Because a firm's REM distorts its optimal future cash flow and thus damages the firm's long-term value (Gunny 2010, Roychowdhury 2006), our finding sheds light on the real effect of increased labor power on a firm's long-run value. This finding is consistent with the literature on the bright versus dark side of labor unionization (e.g., Bradley, Kim, and Tian 2017, Campello et al. 2018, He et al. 2020, Lee and Mas 2012). Meanwhile, because labor union activities significantly (1) increase a firm's labor cost in the United States (Bureau of Labor Statistics 2020)[16], (2) cause offshoring of

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[16] Bureau of Labor Statistics, 2020, *The Economics Daily*, Union membership rate 8.6 percent in manufacturing, 23.4 percent in utilities in 2019

manufacturing (*The Economist*, April 25, 2011)[17], and (3) hinder foreign investment (*Bloomberg News*, September 2, 2019)[18], the society needs an optimal balance between employees and employers. We leave an examination of this balance for future research.

In addition, we acknowledge that our Equation 3 controls for seven firm-year-specific covariates and fixed effects at the levels of year and firm. We considered including corporate governance variables (from BoardEx, for example), but such inclusion decreased our sample from 654 to 145 observations. Because our specification includes several regressors, a sample of 145 lacks statistical power to allow valid inference. We thus acknowledge this limitation and suggest future research to consider including corporate governance variables to further validate our results.

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[17] Moving factories to flee unions: An example of "anti-union animus"? *The Economist*, April 25, 2011
[18] Why China Is Buzzing About Netflix's Obama-Backed Factory Film, *Bloomberg News*, September 2, 2019

REFERENCES

Alchian, Armen A., and Harold Demsetz, 1972, Production, information costs, and economic organization, *American Economic Review* 62, 777–795.

Almeida, Heitor, and Murillo Campello, 2007, Financial Constraints, Asset Tangibility, and Corporate Investment, *Review of Financial Studies* 20, 1429–1460.

Altman, Edward I., 1968, Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy, *The Journal of Finance* 23, 589–609.

Bartov, Eli, Dan Givoly, and Carla Hayn, 2002, The rewards to meeting or beating earnings expectations, *Journal of Accounting and Economics* 33, 173–204.

Baxter, Nevins D., 1967, Leverage, Risk of Ruin and the Cost of Capital, *The Journal of Finance* 22, 395–403.

Bradley, Daniel, Incheol Kim, and Xuan Tian, 2017, Do Unions Affect Innovation?, *Management Science* 63, 2251–2271.

Bronars, Stephen G., and Deere Donald R., 1991, The Threat of Unionization, the Use of Debt, and the Preservation of Shareholder Wealth, *The Quarterly Journal of Economics* 106, 231–254.

Burgstahler, David, and Ilia Dichev, 1997, Earnings management to avoid earnings decreases and losses, *Journal of Accounting and Economics* 24, 99–126.

Bushee, Brian J., 1998, The influence of institutional investors on myopic R&D investment behavior, *The Accounting Review*, 305–333.

Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik, 2014, Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs, *Econometrica* 82, 2295–2326.

Campello, Murillo, Janet Gao, Jiaping Qiu, and Yue Zhang, 2018, Bankruptcy and the Cost of Organized Labor: Evidence from Union Elections, *The Review of Financial Studies* 31, 980–1013.

Chang, Kiyoung, Young S. Kim, Ying Li, and Jong C. Park, 2022. Labor unions and real earnings management. Journal of Corporate Finance, 75, 102242.

Chen, Huafeng J., Marcin Kacperczyk, and Hernán Ortiz-Molina, 2011, Labor Unions, Operating Flexibility, and the Cost of Equity, *Journal of Financial and Quantitative Analysis* 46, 25–58.

Chen, Sheng-Syan, and Chia-Wei Huang, 2013, The Sarbanes-Oxley Act, Earnings Management, and Post-Buyback Performance of Open-Market Repurchasing Firms, *Journal of Financial and Quantitative Analysis* 48, 1847–1876.

Chen, Tao, Jarrad Harford, and Chen Lin, 2015, Do analysts matter for governance?: Evidence from natural experiments, *Journal of Financial Economics* 115, 383–410.

Cheng, Qiang, Jimmy Lee, and Terry Shevlin, 2015, Internal Governance and Real Earnings Management, *The Accounting Review* 91, 1051–1085.

Chino, Atsushi, 2016, Do labor unions affect firm payout policy?: Operating leverage and rent extraction effects, *Journal of Corporate Finance* 41, 156–178.

Cohen, Daniel, Shailendra Pandit, Charles E. Wasley, and Tzachi Zach, 2020, Measuring Real Activity Management, *Contemporary Accounting Research* 37, 1172–1198.

Cohen, Daniel A., Aiyesha Dey, and Thomas Z. Lys, 2008, Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods, *The Accounting Review* 83, 757–787.

Cohen, Daniel A., and Paul Zarowin, 2010, Accrual-based and real earnings management activities around seasoned equity offerings, *Journal of Accounting and Economics* 50, 2–19.

Connolly, Robert A., Barry T. Hirsch, and Mark Hirschey, 1986, Union Rent Seeking, Intangible Capital, and Market Value of the Firm, *The Review of Economics and Statistics* 68, 567.

Cuñat, Vicente, Mireia Gine, and Maria Guadalupe, 2012, The Vote Is Cast: The Effect of Corporate Governance on Shareholder Value, *The Journal of Finance* 67, 1943–1977.

DeAngelo, Harry, and Linda DeAngelo, 1991, Union negotiations and corporate policy, *Journal of Financial Economics* 30, 3–43.

Dechow, Patricia, Weili Ge, and Catherine Schrand, 2010, Understanding earnings quality: A review of the proxies, their determinants and their consequences, *Journal of Accounting and Economics* 50, 344–401.

Dechow, Patricia M., and Douglas J. Skinner, 2000, Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators, *Accounting Horizons* 14, 235–250.

Dechow, Patricia M., Richard G. Sloan, and Amy P. Sweeney, 1995, Detecting earnings management, *The Accounting Review*, 193–225.

Denis, David J., and Valeriy Sibilkov, 2010, Financial Constraints, Investment, and the Value of Cash Holdings, *The Review of Financial Studies*, 23, 247–269.

Dichev, Ilia D., John R. Graham, Campbell R. Harvey, and Shiva Rajgopal, 2013, Earnings quality: Evidence from the field, *Journal of Accounting and Economics* 56, 1–33.

Dou, Yiwei, Mozaffar Khan, and Youli Zou, 2016, Labor unemployment insurance and earnings management, *Journal of Accounting and Economics* 61, 166–184.

Dowrick, Steve, and Barbara J. Spencer, 1994, Union Attitudes to Labor-Saving Innovation: When are Unions Luddites, *Journal of Labor Economics* 12, 316–344.

Ellwood, David T., and Glenn Fine, 1987, The Impact of Right-to-Work Laws on Union Organizing, *Journal of Political Economy* 95, 250–273.

Engle, Robert, 2004, Risk and Volatility: Econometric Models and Financial Practice, *American Economic Review* 94, 405–420.

Ewert, Ralf, and Alfred Wagenhofer, 2005, Economic Effects of Tightening Accounting Standards to Restrict Earnings Management, *The Accounting Review* 80, 1101–1124.

Faleye, Olubunmi, Vikas Mehrotra, and Randall Morck, 2006, When Labor Has a Voice in Corporate Governance, *Journal of Financial and Quantitative Analysis* 41, 489–510.

Gao, Huasheng, Huai Zhang, and Jin Zhang, 2018, Employee turnover likelihood and earnings management: Evidence from the inevitable disclosure doctrine, *Review of Accounting Studies* 23, 1424–1470.

Graham, John R., Campbell R. Harvey, and Shiva Rajgopal, 2005, The economic implications of corporate financial reporting, *Journal of Accounting and Economics* 40, 3–73.

Gunny, Katherine A., 2010, The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks, *Contemporary Accounting Research* 27, 855–888.

Hamm, Sophia J. W., Boochun Jung, and Woo-Jong Lee, 2018, Labor Unions and Income Smoothing, *Contemporary Accounting Research* 35, 1201–1228.

Hanka, Gordon, 1998, Debt and the terms of employment, *Journal of Financial Economics* 48, 245–282.

He, Jie, Xuan Tian, Huan Yang, and Luo Zuo, 2020, Asymmetric Cost Behavior and Dividend Policy, *Journal of Accounting Research* 58, 989–1021.

Healy, Paul M., and James M. Wahlen, 1999, A Review of the Earnings Management Literature and Its Implications for Standard Setting, *Accounting Horizons* 13, 365–383.

Hirsch, Barry T., 1991, Union coverage and profitability among US firms, *The Review of*

Economics and Statistics, 69–77.

Holmes, Thomas J., 1998, The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders, *Journal of Political Economy* 106, 667–705.

Huang, Sterling, Sugata Roychowdhury, and Ewa Sletten, 2019, Does Litigation Deter or Encourage Real Earnings Management?, *The Accounting Review* 95, 251–278.

Imbens, Guido, and Karthik Kalyanaraman, 2012, Optimal Bandwidth Choice for the Regression Discontinuity Estimator, *The Review of Economic Studies* 79, 933–959.

Irani, Rustom M., and David Oesch, 2016, Analyst Coverage and Real Earnings Management: Quasi-Experimental Evidence, *Journal of Financial and Quantitative Analysis* 51, 589–627.

Jensen, Michael C., and William H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.

Jones, Jennifer J., 1991, Earnings Management During Import Relief Investigations, *Journal of Accounting Research* 29, 193.

Kini Omesh, Mo Shen, Jaideep Shenoy, and Venkat Subramaniam, 2022, Labor Unions and Product Quality Failures, *Management Science* 68, 5403–5440.

Kothari, Sagar P., Andrew J. Leone, and Charles E. Wasley, 2005, Performance matched discretionary accrual measures, *Journal of Accounting and Economics* 39, 163–197.

Kothari, S. P., Natalie Mizik, and Sugata Roychowdhury, 2015, Managing for the Moment: The Role of Earnings Management via Real Activities versus Accruals in SEO Valuation, *The Accounting Review* 91, 559–586.

Lee, David S., and Thomas Lemieux, 2010, Regression Discontinuity Designs in Economics, *Journal of Economic Literature* 48, 281–355.

Lee, David S., and Alexandre Mas, 2012, Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961–1999, *The Quarterly Journal of Economics* 127, 333–378.

Liberty, Susan E., and Jerold L. Zimmerman, 1986, Labor union contract negotiations and accounting choices, *The Accounting Review*, 692–712.

Lin, Chen, Lai Wei, and Wensi Xie, 2020, Managerial Entrenchment and Information Production, *Journal of Financial and Quantitative Analysis* 55, 2500–2529.

Linck, James S., Jeffry Netter, and Tao Shu, 2013, Can Managers Use Discretionary Accruals to Ease Financial Constraints?: Evidence from Discretionary Accruals Prior to Investment, *The Accounting Review* 88, 2117–2143.

Matsa, David A., 2010, Capital Structure as a Strategic Variable: Evidence from Collective Bargaining, *The Journal of Finance* 65, 1197–1232.

McCrary, Justin, 2008, Manipulation of the running variable in the regression discontinuity design: A density test, *Journal of Econometrics* 142, 698–714.

Roychowdhury, Sugata, 2006, Earnings management through real activities manipulation, *Journal of Accounting and Economics* 42, 335–370.

Skinner, Douglas J., and Richard G. Sloan, 2002, Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio, *Review of Accounting Studies* 7, 289–312.

Zang, Amy Y., 2012, Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management, *The Accounting Review* 87, 675–703.

FIGURE 1: NLRB Cases and Percentage of Vote in the RD Analysis
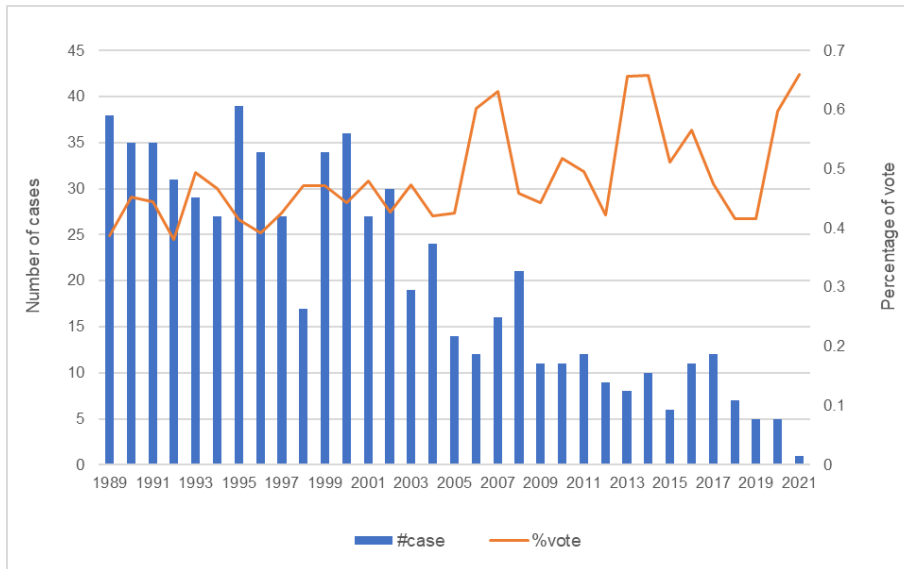
Note: This figure plots the NLRB cases used in the RD analysis.

FIGURE 2**: Density Distribution of Union Vote Shares**
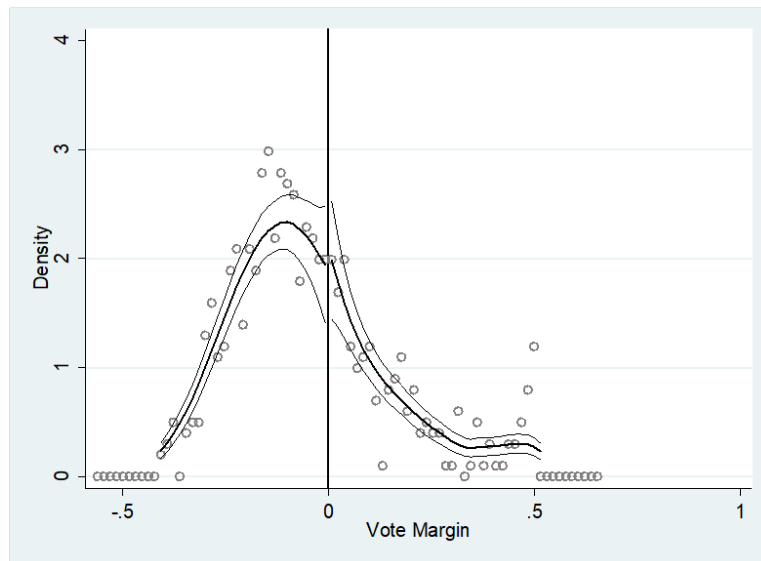
Note: This figure plots the density distribution of union vote shares in labor elections of U.S. listed firms using the method proposed by McCrary (2008). The x-axis shows the vote margin. The y-axis and dots show the density estimates. The solid lines show the fitted density function of the percentage of votes with a 95% confidence interval. The vote margin is the difference between the vote rate and the passing threshold (0.5 in this paper).

FIGURE 3: **RD Plot on REM**
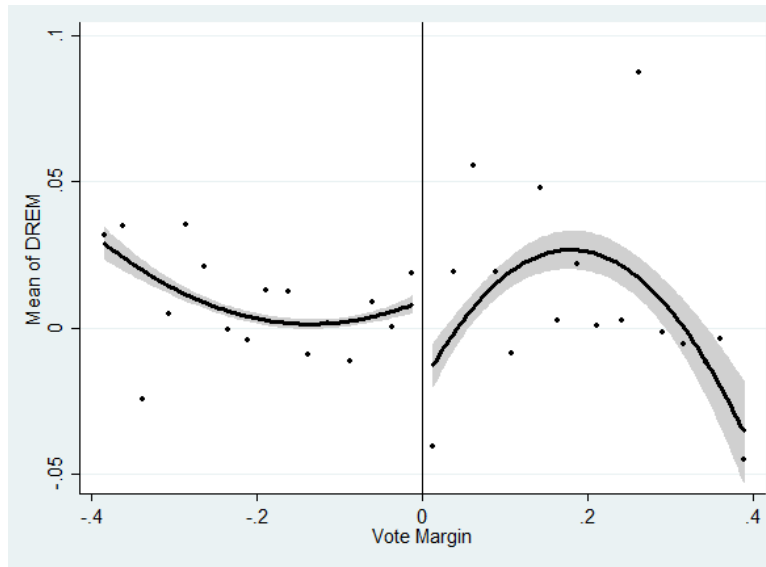
Note: This figure reports regression discontinuity plots using a fitted quadratic polynomial estimate with a 95% confidence interval around the fitted value. The x-axis shows the vote margin. The y-axis shows the change in REM after labor elections. The vote margin is the difference between the vote rate and the passing threshold of 0.5. The model is estimated with polynomial order 2 and the triangular kernel.

FIGURE 4**: RD Bandwidths**
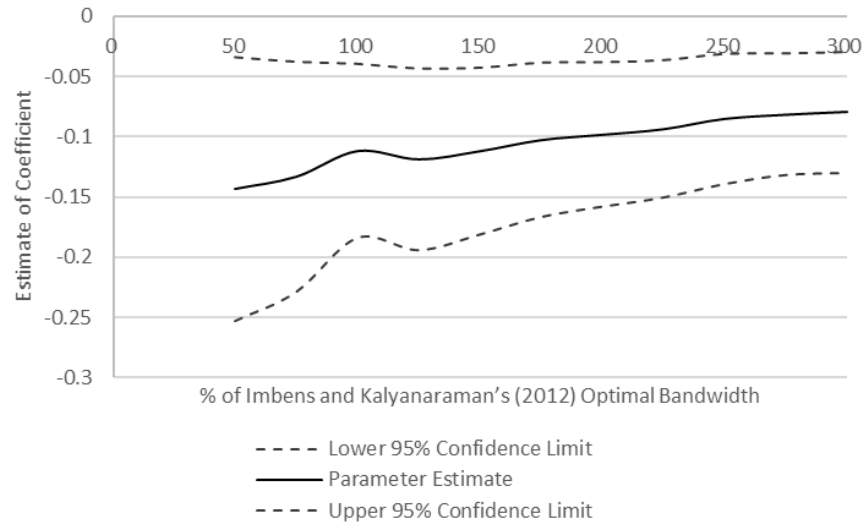
Note: This figure reports RD estimates with alternative bandwidths using local linear regressions with the choice of optimal bandwidth based on Imbens and Kalyanaraman (2012). The x-axis represents the percentage of IK optimal bandwidth. The y-axis shows the coefficient estimates. The model is estimated with polynomial order 2 and the triangular kernel.

FIGURE 5: **Placebo Tests**

Panel A: Alternate Cutoff Points
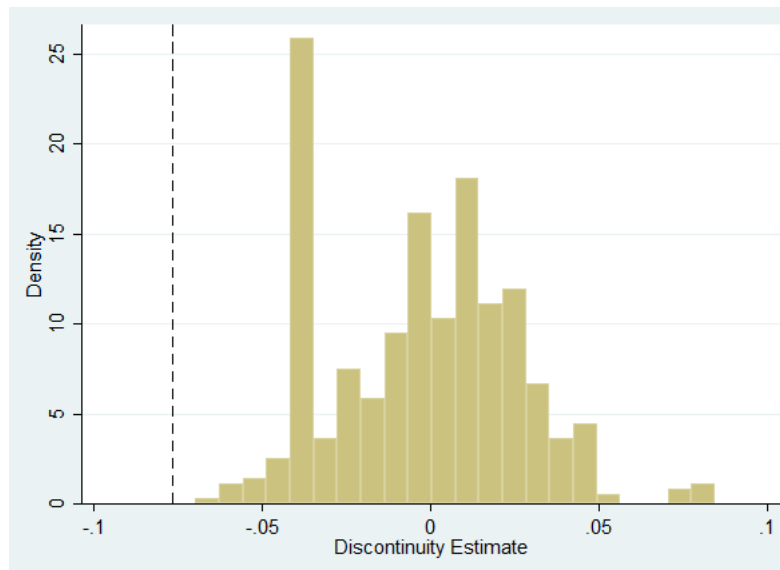
Panel B: Alternate DVs
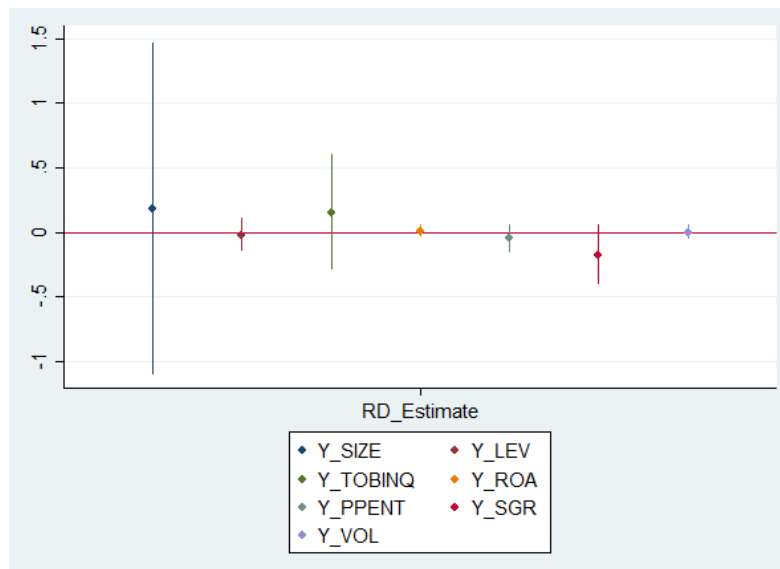
Note: This figure reports RD estimates from placebo tests with alternate cutoffs and DVs. The x-axis represents the RD estimates from a placebo test under artificial cutoffs between 0 and 1 other than 0.5. The y-axis shows the fraction of the estimates. All tests estimate the model with polynomial order 2 and the triangular kernel. Panel A reports the histogram of the RD estimates with alternate cutoffs, and the vertical line shows the actual value in the baseline regressions. Panel B reports the RD estimates using control variables as DVs. The vote margin is the difference between the vote rate and the passing threshold of 0.5.

TABLE 1: **Summary Statistics**

Panel A: REM measures

	N	Mean	St.Dev	p25	Median	p75
ΔREM1	654	0.005	0.093	-0.040	0.002	0.048
ΔREM2	654	0.008	0.111	-0.046	0.005	0.061
ΔREM1_R	654	0.006	0.091	-0.040	0.007	0.051
ΔREM_OANCF	654	0.024	0.070	-0.016	0.024	0.063
ΔREM_DISX	654	-0.052	0.199	-0.139	-0.039	0.044
ΔREM_PROD	654	0.028	0.196	-0.075	0.011	0.102

Panel B: Basic firm characteristics

	N	Mean	St.Dev	p25	Median	p75
REM1	654	0.027	0.226	-0.086	0.016	0.119
REM2	654	0.079	0.380	-0.114	0.052	0.224
REM1_R	654	0.044	0.208	-0.062	0.040	0.145
SIZE	654	7.812	2.053	6.348	7.954	9.288
LEV	654	0.518	0.210	0.395	0.504	0.607
TOBINQ	654	1.539	0.727	1.079	1.338	1.755
ROA	654	0.036	0.079	0.017	0.045	0.071
PPENT	654	0.360	0.179	0.220	0.339	0.484
SGR	654	0.067	0.170	-0.008	0.054	0.126
VOL	654	0.098	0.058	0.062	0.087	0.122

Panel C: Smoothness test: Vote margin within [-0.02, 0.02]

	Pass=0	Pass=1	Difference around cutoff	T-statistics
SIZE	7.894	7.562	0.332	0.513
LEV	0.472	0.52	-0.048	-0.681
TOBINQ	1.618	1.472	0.145	0.789
ROA	0.037	0.035	0.001	0.068
PPENT	0.347	0.383	-0.037	-0.687
SGR	0.045	0.113	-0.068	-1.026
VOL	0.114	0.112	0.002	0.104

Note: This table shows the summary statistics of the sample used in the RD analysis. Panel A reports summary statistics of REM measures. *REM_PROD* measures REM in production. *REM_DISX* measures REM in discretionary expenses. *REM_OANCF* measures REM in operating cash flow. *REM1* is as defined by Cohen and Zarowin (2010). *REM2* is as defined by Zang (2012). *REM1_R* is also defined by Cohen and Zarowin (2010) with the abnormal operating cash flow measure calculated as per He (2022). Panel B shows the summary statistics of firm fundamentals. Panel C reports the results of smoothness tests on firm fundamentals shown in Panel B. The bandwidth is selected according to Imbens and Kalyanaraman's (2012) mean squared error optimal bandwidth selection method.

TABLE 2: **Local RD Analysis**

Panel A: Kernel = Triangular

	DV = *ΔREM1*					
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.079***	-0.115***	-0.120***	-0.075***	-0.088***	-0.094***
	(-2.935)	(-3.028)	(-3.006)	(-2.813)	(-2.778)	(-2.829)
Polynomial	1	2	3	1	2	3
Vote Range	[-0.109, 0.109]	[-0.124, 0.124]	[-0.191, 0.191]	[-0.091, 0.091]	[-0.134, 0.134]	[-0.199, 0.199]
Effective Observations: Right	158	185	292	127	200	304
Effective Observations: Left	103	109	140	88	110	144
Control Variables	NO	NO	NO	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Panel B: Kernel = Epanechnikov

	DV = *ΔREM1*					
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.077***	-0.112***	-0.118***	-0.070***	-0.083***	-0.094***
	(-2.875)	(-2.971)	(-3.014)	(-2.685)	(-2.700)	(-2.791)
Polynomial	1	2	3	1	2	3
Vote Range	[-0.101, 0.101]	[-0.118, 0.118]	[-0.188, -0.188]	[-0.090, 0.090]	[-0.133, 0.133]	[-0.189, 0.189]
Effective Observations: Right	144	171	286	125	199	288
Effective Observations: Left	99	108	139	88	110	139
Control Variables	NO	NO	NO	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Panel C: Kernel = Uniform

	DV = *ΔREM1*					
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.081***	-0.103***	-0.107***	-0.056**	-0.083***	-0.096***
	(-2.761)	(-2.851)	(-2.899)	(-2.417)	(-2.690)	(-2.883)
Polynomial	1	2	3	1	2	3
Vote Range	[-0.079, 0.079]	[-0.113, 0.113]	[-0.197, 0.197]	[-0.100, 0.100]	[-0.119, 0.119]	[-0.188, 0.188]
Effective Observations: Right	108	161	301	141	175	286
Effective Observations: Left	82	108	142	97	108	139
Control Variables	NO	NO	NO	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Note: This table presents the local average treatment effects (LATEs) of the local RD analysis. The DV is the REM measure defined by Cohen and Zarowin (2010). The LATE of labor unionization on REM is estimated by the following model:

$$\Delta REM_{i,t+1} = \alpha + \beta Unionization_{it} + F_r(X_{it}, \gamma_r) + F_l(X_{it}, \gamma_l) + \varepsilon_{i,t+1}$$

where *REM* denotes the measure of REM; X denotes the voting margin, which is the difference between the voting rate and passing threshold (0.5 in this paper). Columns (1)-(3) show the results for *REM* without control variables. Columns (4)-(6) show the results for REM with control variables. The bandwidth is selected according to Imbens and Kalyanaraman's (2012) mean squared error optimal bandwidth selection method. Panels A-C show the results when the Triangular kernel, Epanechnikov kernel, and Uniform kernel are used, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 3: **Robustness Tests**

Panel A: Different lengths of optimal bandwidth (P = 2)

Kernel	(1) 50%BW	(2) 75%BW	(3) 80%BW	(4) 120%BW	(5) 125%BW	(6) 150%BW
	DV = $\Delta REM1$					
Triangular	-0.137***	-0.118***	-0.115***	-0.095***	-0.093***	-0.090***
	(-3.106)	(-3.009)	(-2.973)	(-2.840)	(-2.831)	(-2.937)
Epanechnikov	-0.131***	-0.114***	-0.110***	-0.092***	-0.090***	-0.088***
	(-2.936)	(-2.897)	(-2.867)	(-2.775)	(-2.765)	(-2.913)
Uniform	-0.120***	-0.099**	-0.113***	-0.096***	-0.096***	-0.089***
	(-2.597)	(-2.505)	(-2.913)	(-2.794)	(-2.902)	(-2.879)

Panel B: Bandwidths from alternative selection methods (Kernel = Triangular)

Poly. Order	(1) P=1	(2) P=2	(3) P=3
	DV = $\Delta REM1$		
AsymMSE	-0.076***	-0.089***	-0.100***
	(-2.797)	(-2.728)	(-2.760)
CER	-0.085***	-0.100***	-0.104***
	(-2.878)	(-2.917)	(-2.860)
AsymCER	-0.085***	-0.103***	-0.115***
	(-2.872)	(-2.882)	(-2.984)

Panel C: Alternate DV: $\Delta REM1\_R$ & $REM1_{t+1}$

	(1)	(2)	(3)	(4)	(5)	(6)
	DV =					
	$\Delta REM1\_R$			$REM1_{t+1}$		
Unionization	-0.113***	-0.119***	-0.124***	-0.130**	-0.153**	-0.170**
	(-4.019)	(-3.791)	(-3.615)	(-2.245)	(-2.406)	(-2.331)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.078, 0.078]	[-0.135, 0.135]	[-0.186, 0.186]	[-0.072, 0.072]	[-0.127, 0.127]	[-0.153, 0.153]
Effective Observations: Right	104	199	282	95	189	235
Effective Observations: Left	80	110	139	76	110	118
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Panel D: Alternate DV: $\Delta REM2$ & $REM2_{t+1}$

	(1)	(2)	(3)	(4)	(5)	(6)
	DV =					
	$\Delta REM2$			$REM2_{t+1}$		
Unionization	-0.015	-0.001	-0.028	-0.156*	-0.187*	-0.205*
	(-0.414)	(-0.031)	(-0.558)	(-1.759)	(-1.864)	(-1.770)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.100, 0.100]	[-0.172, 0.172]	[-0.160, 0.160]	[-0.073, 0.073]	[-0.120, 0.120]	[-0.148, 0.148]
Effective Observations: Right	144	269	248	95	176	224
Effective Observations: Left	99	128	123	76	108	115
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Note: This table shows the results of robustness tests of local RD analysis. Panel A reports the local average treatment effects when adopting different lengths of optimal bandwidth based on the asymptotic mean squared error optimal bandwidth selection method across

different kernel functions with polynomials order 2. Panel B reports the local average treatment effects when using alternative bandwidth selection methods across different orders of polynomials with the Triangular kernel. The selection methods include asymmetric mean square error (*AsyMSE*) by Imbens and Kalyanaraman (2012), symmetric coverage error rate (*CER*), and asymmetric coverage error rate (*AsymCSR*) by Calonico, Cattaneo, and Titanic (2014). Panel C shows the results for ΔREM_R and $REM1_{t+1}$, respectively. Panel D shows the results for $\Delta REM2$ and $REM2_{t+1}$, respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 4: Placebo Test: Alternate DVs

	DV =						
	SIZE	*LEV*	*TOBINQ*	*ROA*	*PPENT*	*SGR*	*VOL*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unionization	0.085	-0.022	0.183	0.011	-0.045	-0.131	-0.004
	(0.113)	(-0.303)	(0.706)	(0.444)	(-0.722)	(-1.528)	(-0.182)
Polynomial	2	2	2	2	2	2	2
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.165, 0.165]	[-0.163, 0.163]	[-0.154, 0.154]	[-0.154, 0.154]	[-0.156, 0.156]	[-0.125, 0.125]	[-0.211, 0.211]
Effective Observations: Right	259	255	237	236	241	187	315
Effective Observations: Left	126	125	118	118	120	109	150
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654

Note: This table presents the results of the placebo test where the DVs are replaced with control variables. Columns (1)-(7) report results for the DVs *SIZE*, *LEV*, *TOBINQ*, *ROA*, *PPENT*, *SGR*, and *VOL*, respectively. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 5: Local RD: RTW Legislation

	Right-to-work states			Non-Right-to-work states		
	ΔREM1			*ΔREM1*		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Unionization	-0.106**	-0.140***	-0.138**	-0.033	-0.046	-0.051
	(-2.401)	(-2.956)	(-2.336)	(-1.132)	(-1.192)	(-1.116)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.102, 0.102]	[-0.181, 0.181]	[-0.169, 0.169]	[-0.111, 0.111]	[-0.146, 0.146]	[-0.179, 0.179]
Effective Observations: Right	50	99	95	102	140	181
Effective Observations: Left	35	47	45	68	73	88
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	227	227	227	437	437	437
	$b_{(1)}-b_{(4)}$		$b_{(2)}-b_{(5)}$		$b_{(3)}-b_{(6)}$	
Bdiff	-0.062***		-0.082***		-0.091***	
P-value (Bdiff)	0.000		0.000		0.000	

Note: This table presents the results of subsample tests on whether the focal firm is headquartered in states with the right-to-work legislation: Alabama, Arkansas, Arizona, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Virginia, Utah, Wyoming, Wisconsin, and West Virginia. Cases are grouped into right-to-work groups if the firms were headquartered in right-to-work states at the time when right-to-work law was enacted in those states. The DV is the change in REM measure defined by Cohen and Zarowin (2010). Columns (1)-(3) report results if the employers are headquartered in states *with* right-to-work laws. Columns (4)-(6) report results if the employers are headquartered in states *without* the right-to-work law. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 6: Heterogeneity Tests in Local RD: Benchmark Beating

	DV =					
	Beat the benchmark			**Fail to beat the benchmark**		
	ΔREM1			*ΔREM1*		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Unionization	-0.142***	-0.164***	-0.191**	-0.032	-0.040	-0.046
	(-2.939)	(-2.850)	(-2.636)	(-0.970)	(-1.143)	(-1.225)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.095, 0.095]	[-0.156, 0.156]	[-0.174, 0.174]	[-0.098, 0.098]	[-0.158, 0.158]	[-0.209, 0.209]
Effective Observations: Right	56	93	111	81	151	189
Effective Observations: Left	34	46	49	61	74	93
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	256	256	256	398	398	398
	$b_{(1)}-b_{(4)}$		$b_{(2)}-b_{(5)}$		$b_{(3)}-b_{(6)}$	
Bdiff	-0.098***		-0.114***		-0.139***	
P-value (Bdiff)	0.000		0.000		0.000	

Note: This table presents the results of subsample tests according to whether the focal firm beat analysts' expectations in the year the election was conducted. *Benchmark* is the analysts' earnings forecasts obtained from the I/B/E/S database. Cases are grouped into the *"Beat the benchmark"* group if corporate actual earnings are higher than *benchmark*, while others are grouped into the " *Fail to beat the benchmark*" group. The DV is the change in REM measure defined by Cohen and Zarowin (2010). Columns (1)-(3) show the results when firms beat analysts' expectations. Columns (4)-(6) show the results when firms fail to beat analysts' expectations. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 7: Heterogeneity Tests in Local RD: Financial resources

Panel A: *LEV:* high versus low

	DV =					
	high *LEV*			Low *LEV*		
	ΔREM1			*ΔREM1*		
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.071*	-0.065	-0.046	-0.050	-0.100**	-0.105**
	(-1.724)	(-1.212)	(-0.706)	(-1.502)	(-2.040)	(-2.018)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.123, 0.123]	[-0.160, 0.160]	[-0.195, 0.195]	[-0.136, 0.136]	[-0.116, 0.116]	[-0.185, 0.185]
Effective Observations: Right	81	115	140	111	95	150
Effective Observations: Left	64	73	86	46	44	55
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	327	327	327	327	327	327
	$b_{(1)}-b_{(4)}$		$b_{(2)}-b_{(5)}$		$b_{(3)}-b_{(6)}$	
Bdiff	0. 019		0.022		0.042*	
P-value (Bdiff)	0.390		0.130		0.060	

Panel B: Cash flow: high versus low

	high *Cashflow*			low *Cashflow*		
	ΔREM1			*ΔREM1*		
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.097***	-0.109***	-0.113***	-0.035	-0.049	-0.045
	(-2.932)	(-2.485)	(-2.492)	(-0.921)	(-0.860)	(-0.657)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.116, 0.116]	[-0.156, 0.156]	[-0.241, 0.241]	[-0.099, 0.099]	[-0.116, 0.116]	[-0.156, 0.156]
Effective Observations: Right	94	126	179	61	72	115
Effective Observations: Left	51	57	77	50	57	63
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	328	328	328	326	326	326
	$b_{(1)}-b_{(4)}$		$b_{(2)}-b_{(5)}$		$b_{(3)}-b_{(6)}$	
Bdiff	-0.059*		-0.059*		-0.064**	
P-value (Bdiff)	0.060		0.070		0.050	

Note: This table presents the results of subsample tests according to firms' financial resources. The DV is the change in REM measure defined by Cohen and Zarowin (2010). Panel A reports results if the employers have a high or low leverage, where the leverage ratio (*LEV*) is defined as the long-term debt and debt in current liabilities scaled by the book value of total assets. Panel B reports results if the employers have high or low cash flow, where the cash flow ratio (*Cashflow*) is defined as the operating cash flow scaled by the book value of total assets. Election cases are assigned to the Low (High) *Lev/Cashflow* group for firms with leverage/cash flow levels lower (higher) than its sample median. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 8: Heterogeneity Tests in Local RD: Different Firm Risks

Panel A: Return volatility: high versus low

	DV =					
	High *VOL*			Low *VOL*		
	ΔREM1			*ΔREM1*		
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.025	-0.038	-0.060	-0.114***	-0.118***	-0.125***
	(-0.659)	(-0.893)	(-1.133)	(-3.207)	(-2.990)	(-2.773)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.149, 0.149]	[-0.220, 0.220]	[-0.225, 0.225]	[-0.082, 0.082]	[-0.144, 0.144]	[-0.170, 0.170]
Effective Observations: Right	105	161	164	62	115	138
Effective Observations: Left	57	76	76	39	56	65
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	327	327	327	327	327	327
	$b_{(1)}$-$b_{(4)}$			$b_{(2)}$-$b_{(5)}$		$b_{(3)}$-$b_{(6)}$
Bdiff	0.084***			0.079**		0.068*
P-value (Bdiff)	0.000			0.040		0.060

Panel B: Altman Z-score: high versus low

	High *Altman*			Low *Altman*		
	ΔREM1			*ΔREM1*		
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.100***	-0.115***	-0.114**	-0.059	-0.057	-0.043
	(-2.770)	(-2.761)	(-2.379)	(-1.603)	(-1.442)	(-0.854)
Polynomial	1	2	3	1	2	3
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Vote Range	[-0.110, 0.110]	[-0.175, 0.175]	[-0.200, 0.200]	[-0.095, 0.095]	[-0.166, 0.166]	[-0.147, 0.147]
Effective Observations: Right	90	144	161	60	122	104
Effective Observations: Left	55	67	72	43	62	55
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	332	332	332	322	322	322
	$b_{(1)}$-$b_{(4)}$			$b_{(2)}$-$b_{(5)}$		$b_{(3)}$-$b_{(6)}$
Bdiff	-0.040			-0.055*		-0.063*
P-value (Bdiff)	0.120			0.080		0.000

Note: This table reports the effects of labor unionization on REM across different firm risks. The DVs are the change in the REM measure defined by Cohen and Zarowin (2010). Panel A presents the results of subsample tests according to firms' market risk. Market risk is measured by annual stock return volatility (*VOL*). Panel B presents the results of subsample tests by firms' bankruptcy risk. Bankruptcy risk is measured by the Altman Z-score (*Altman*). Election cases are assigned to the Low (High) group for firms with risk levels lower (higher) than its sample median. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 9: Channels of REM

Panel A: Abnormal discretionary expenses: REM_OANCF

	DV = ΔREM_OANCF								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unionization	0.038**	0.047*	0.050	0.037*	0.045**	0.048	0.035*	0.043*	0.046*
	(1.969)	(1.895)	(1.635)	(1.894)	(1.993)	(1.607)	(1.839)	(1.790)	(1.679)
Polynomial	1	2	3	1	2	3	1	2	3
Kernel		Triangular			Epanechnikov			Uniform	
Vote Range	[-0.125, 0.125]	[-0.173, 0.173]	[-0.181, 0.181]	[-0.113, 0.113]	[-0.192, 0.192]	[-0.192, 0.192]	[-0.101, 0.101]	[-0.151, 0.151]	[-0.203, 0.203]
Effective Observations: Right	185	274	281	161	293	293	144	229	309
Effective Observations: Left	109	128	135	108	141	141	100	116	146
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654	654	654

Panel B: Abnormal discretionary expenses: REM_DISX

	DV = ΔREM_DISX								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unionization	0.042**	0.051**	0.067**	0.037*	0.044**	0.065**	0.030*	0.055**	0.049*
	(2.037)	(2.188)	(2.387)	(1.842)	(2.049)	(2.363)	(1.716)	(2.162)	(1.905)
Polynomial	1	2	3	1	2	3	1	2	3
Kernel		Triangular			Epanechnikov			Uniform	
Vote Range	[-0.100, 0.100]	[-0.158, 0.158]	[-0.167, 0.167]	[-0.098, 0.098]	[-0.173, 0.173]	[-0.172, 0.172]	[-0.109, 0.109]	[-0.117, 0.117]	[-0.191, 0.191]
Effective Observations: Right	141	247	263	138	272	269	158	171	292
Effective Observations: Left	97	120	127	96	128	128	102	108	141
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654	654	654

Note: This table reports the results of channels of REM. Panel A shows the results of abnormal operating cash flow (*REM_OANCF*). Panel B shows the results of abnormal discretionary expenses (*REM_DISX*). The bandwidth is selected according to Imbens and Kalyanaraman's (2012) symptomatic mean squared error optimal bandwidth selection method. The Triangular kernel is used in the estimation. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 10: Labor Unionization and Accrual-based Earnings Management

Panel A: Discretionary accruals with performance (Kothari, Leone, and Wasley 2005)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	DV = $\Delta DA\_KOTHARI$								
Unionization	-0.062**	-0.059**	-0.066**	-0.059**	-0.055*	-0.063*	-0.052**	-0.049	-0.070**
	(-2.388)	(-2.010)	(-1.978)	(-2.277)	(-1.849)	(-1.838)	(-2.192)	(-1.579)	(-1.968)
Polynomial	1	2	3	1	2	3	1	2	3
Kernel		Triangular			Epanechnikov			Uniform	
Vote Range	[-0.076, 0.076]	[-0.139, 0.139]	[-0.167, 0.167]	[-0.072, 0.072]	[-0.130, 0.130]	[-0.157, 0.157]	[-0.071, 0.071]	[-0.109, 0.109]	[-0.137, 0.137]
Effective Observations: Right	100	204	261	93	193	240	93	156	200
Effective Observations: Left	78	110	127	76	110	120	76	103	110
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654	654	654

Panel B: Discretionary accruals based on the modified Jones model (Dechow, Sloan, and Sweeney 1995)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	DV = ΔDA_MJONES								
Unionization	-0.064**	-0.061**	-0.065**	-0.061**	-0.057**	-0.064**	-0.056**	-0.051*	-0.058*
	(-2.575)	(-2.204)	(-2.053)	(-2.489)	(-2.002)	(-1.964)	(-2.491)	(-1.767)	(-1.658)
Polynomial	1	2	3	1	2	3	1	2	3
Kernel		Triangular			Epanechnikov			Uniform	
Vote Range	[-0.078, 0.078]	[-0.140, 0.140]	[-0.158, 0.158]	[-0.076, 0.076]	[-0.130, 0.130]	[-0.150, 0.150]	[-0.069, 0.069]	[-0.113, 0.113]	[-0.123, 0.123]
Effective Observations: Right	103	205	245	100	192	225	92	159	182
Effective Observations: Left	80	110	120	78	110	115	74	108	109
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654	654	654

Panel C: Discretionary accruals based on the Jones model (Jones 1991)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	DV = ΔDA_JONES								
Unionization	-0.066***	-0.067***	-0.068**	-0.064***	-0.061**	-0.066**	-0.054*	-0.054**	-0.061*
	(-2.694)	(-2.593)	(-2.186)	(-2.637)	(-2.244)	(-2.056)	(-2.537)	(-1.867)	(-1.816)
Polynomial	1	2	3	1	2	3	1	2	3
Kernel		Triangular			Epanechnikov			Uniform	
Vote Range	[-0.078, 0.078]	[-0.155, 0.155]	[-0.152, 0.152]	[-0.076, 0.076]	[-0.139, 0.139]	[-0.148, 0.148]	[-0.080, 0.080]	[-0.111, 0.111]	[-0.122, 0.122]
Effective Observations: Right	103	238	233	100	204	222	106	157	179
Effective Observations: Left	80	120	117	78	110	115	82	105	109
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654	654	654	654

Note: This table presents the local average treatment effects (LATEs) of the local RD analysis on accrual-based earnings management. The sample is the same as that used in the baseline local RD analysis. The bandwidth is selected according to Imbens and Kalyanaraman's (2012) asymptotic mean squared error optimal bandwidth selection method. Panels A-C report the results for discretionary accruals based on discretionary accruals adjusted by firms' past performance (Kothari, Leone, and Wasley 2005), modified Jones model (Dechow, Sloan, and Sweeney 1995), and discretionary accruals based on the Jones model (Jones 1991), respectively. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. z-statistic values are shown in parentheses.

TABLE 11: External Validity: Global RD Analysis

Panel A: REM

	DV = ΔREM1					
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	-0.005*	-0.004*	-0.033**	-0.030***	-0.061***	-0.056***
	(-1.782)	(-1.783)	(-2.528)	(-2.597)	(-2.800)	(-2.746)
Polynomial	1	1	2	2	3	3
Controls	No	Yes	No	Yes	No	Yes
Year & Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Panel B: Channels of REM

	DV =					
	ΔREM_OANCF			ΔREM_DISX		
	(1)	(2)	(3)	(4)	(5)	(6)
Unionization	0.004	0.021**	0.036**	0.004	0.015*	0.031**
	(1.533)	(1.995)	(1.987)	(1.212)	(1.890)	(2.033)
Polynomial	1	2	3	1	2	3
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	654	654	654	654	654	654

Note: This table presents the results of the global regression discontinuity design. Following Cunat et al. (2012), we estimate the average treatment effect using Equation (2):

$$\Delta REM_{i,t+1} = \alpha + \beta Unionization_{it} + F_r(X_{it}, \gamma_r) + F_l(X_{it}, \gamma_l) + \mu Controls_{it} + Industry\ FE + Year\ FE + \varepsilon_{i,t+1} \qquad (2)$$

where *i* indicates a union election, *X* is the percentage of the vote in the labor election, and the DV is the change in REM measures. Panel A shows the results of unionization on real earnings management measured by Cohen and Zarowin (2010). Control variables are shown in Table 2. Year- and industry-fixed effects are included in the regression models. Standard errors are adjusted for heteroskedasticity and clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are shown in parentheses.

TABLE 12: **Labor Unionization and REM: Multivariate OLS Analysis**

	(1)	(2)	(3)	(4)
	ΔREM1		*ΔREM2*	
UNION_IND	-0.047**		-0.062**	
	(-2.39)		(-2.49)	
UNION_COV_IND		-0.050***		-0.069***
		(-2.63)		(-2.94)
SIZE	0.030***	0.030***	0.023***	0.023***
	(21.84)	(21.85)	(13.06)	(13.08)
LEV	0.033***	0.033***	-0.023***	-0.023***
	(5.45)	(5.45)	(-3.10)	(-3.09)
TOBINQ	-0.001	-0.001	-0.002**	-0.002**
	(-1.43)	(-1.43)	(-2.41)	(-2.41)
ROA	0.108***	0.108***	0.124***	0.124***
	(13.53)	(13.53)	(12.19)	(12.19)
PPENT	0.045***	0.045***	0.032***	0.032***
	(11.12)	(11.12)	(5.88)	(5.88)
SGR	0.083***	0.083***	0.081***	0.081***
	(31.54)	(31.54)	(26.27)	(26.27)
VOL	0.058***	0.058***	0.069***	0.069***
	(4.81)	(4.81)	(4.66)	(4.66)
Year, Firm FE	Included	Included	Included	Included
Observations	92,147	92,147	92,147	92,147
R-squared	0.083	0.083	0.058	0.058

Note: This table reports the results of multivariate ordinary least squares testing the effect of labor unionization on REM measured by Cohen and Zarowin (2010) and Zang (2012). The industry-level labor unionization data come from the Union Membership and Coverage database in Unionstats. *UNION_IND* is the total number of union members over the total employees in the industry, and *UNION_COV_IND* is the ratio of the total number of employees covered by labor unions to the total number of employees in the industry. Control variables are defined in Appendix Table A1. Industry and firm fixed effects are included to capture time and corporate invariant factors. Industries are classified by 2-digit SIC Classification. Standard errors are adjusted for heteroskedasticity and clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors are shown in parentheses.

APPENDIX TABLE A1: Definitions and Data Sources of Main Variables

Variable	Definition	Source
REM1	Based on Cohen and Zarowin (2010), the measure of REM is the negative sum of abnormal operating cash flow and abnormal discretionary expenses: $$REM = -REM\_OANCF - REM\_DISX$$ where REM_OANCF denotes abnormal operating cash flow and REM_DISX denotes abnormal discretionary expenses.	COMPUSTAT
REM2	Based on Zang (2012), the measure of REM is the abnormal production costs minus abnormal discretionary expenses: $$REM1 = REM\_PROD - REM\_DISX$$ where REM_PROD denotes abnormal production costs and REM_DISX denotes abnormal discretionary expenses.	COMPUSTAT
REM1_R	REM_OANCFR is used instead of REM_OANCF to calculate REM, where REM_OANCFR is defined by He et al. (2022): $$\frac{OANCF_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_2 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{PROD_{it}}{AT_{i,t-1}} + \alpha_4 \frac{DISX_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$	
REM_DISX	Based on Roychowdhury's (2006), abnormal production costs are the residual of the following equation: $$\frac{DISX_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$ where DISX is the sum of advertising, R&D, and SG&A expenses. The regression runs for each industry and year with more than 15 observations. The industry is classified according to SIC two-digit codes.	COMPUSTAT
REM_OANCF	Based on Roychowdhury's (2006), abnormal operating cash flow is the residual of the following equation: $$\frac{OANCF_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \varepsilon_{it}$$ where OANCF denotes the operating cash flow. The regression runs for each industry and year with more than 15 observations.	COMPUSTAT
REM_PROD	Based on Roychowdhury (2006), abnormal discretionary expenses are defined as the residual of the following equation: $$\frac{PROD_{it}}{AT_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALE_{it}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALE_{it}}{AT_{i,t-1}} + \alpha_4 \frac{\Delta SALE_{i,t-1}}{AT_{i,t-1}} + \varepsilon_{it}$$ where PROD is the sum of the cost of goods sold and changes in inventory during the year. The regression runs for each industry and year with more than 15 observations.	COMPUSTAT
SIZE	The logarithm of 1 plus the book value of total assets (AT)	COMPUSTAT
TOBINQ	The ratio of market value to book value (AT), where market value is defined as total assets (AT) minus common equity (CEQ) and deferred taxes (TXDB) plus the market equity (PRCC_F × CSHO)	COMPUSTAT

LEV	Long-term debt (*DLTT*) and debt in current liabilities (*DLC*) scaled by the book value of total assets (*AT*)	COMPUSTAT
ROA	The ratio of income before extraordinary items (*IBC*) to book value of total assets (*AT*)	COMPUSTAT
PPENT	Property, plant, and equipment (*PPENT*) scaled by the book value of total assets (*AT*)	COMPUSTAT
SGR	Sales growth rate, defined as the ratio of the change in sales (*SALE*) in the current year to sales in the previous year	COMPUSTAT
VOL	Stock return volatility: the standard deviation of monthly returns during the year	COMPUSTAT
RTW	A dummy variable indicating whether a firm was headquartered in a right-to-work state at the time when right-to-work law was enacted in the state	NRTW
Benchmark	Analysts' earnings forecasts obtained from I/B/E/S	I/B/E/S
Cashflow	Operating cash flow (*OANCF*) scaled by the book value of total assets (*AT*)	COMPUSTAT
Altman	Altman Z-score=$1.2 \times$ (working capital ÷ total assets) + $1.4 \times$ (retained earnings ÷ total assets) + $3.3 \times$ (earnings before interest and tax ÷ total assets) + $0.6 \times$ (market value of equity ÷ total liabilities) + $1.0 \times$ (sales ÷ total assets)	COMPUSTAT
DA_KOTHARI	Discretionary accruals based on a performance-matched model (Kothari, Leone, and Wasley 2005)	COMPUSTAT
DA_MJONES	Discretionary accruals based on the modified Jones model (Dechow, Sloan, and Sweeney 1995)	COMPUSTAT
DA_JONES	Discretionary accruals based on the Jones model (Jones 1991)	COMPUSTAT
UNION_IND	Total number of union members over the total number of employees in the industry	Unionstats
UNION_COV_IND	Total number of employees covered by labor unions over the total number of employees in the industry	Unionstats

APPENDIX TABLE A2: Summary Statistics of Accrual-based Earnings Management Measures

	N	Mean	St.Dev	p25	Median	p75
ΔDA_KOTHARI	654	0.004	0.081	-0.032	0.000	0.037
ΔDA_MJONES	654	0.004	0.077	-0.034	0.000	0.032
ΔDA_JONES	654	0.004	0.077	-0.034	-0.000	0.033

Note: This table shows the summary statistics of measures on accrual-based earnings management. Accural-based earnings management is measured by discretionary accruals based on discretionary accruals adjusted by firms' past performance (Kothari, Leone, and Wasley2005), modified Jones model (Dechow, Sloan, and Sweeney 1995), and discretionary accruals based on the Jones model (Jones 1991), respectively.

APPENDIX TABLE A3: Multivariate OLS Analysis: Summary Statistics

	N	Mean	St.Dev	p25	Median	p75
REM1	92,147	0.008	0.179	-0.064	0.005	0.076
REM2	92,147	0.009	0.213	-0.070	0.005	0.083
UNION_IND	92,147	0.097	0.076	0.040	0.071	0.136
UNION_COV_IND	92,147	0.106	0.080	0.046	0.079	0.146
SIZE	92,147	5.689	2.216	4.051	5.538	7.205
LEV	92,147	0.397	0.200	0.236	0.390	0.538
TOBINQ	92,147	2.016	1.588	1.082	1.484	2.294
ROA	92,147	-0.021	0.200	-0.033	0.034	0.076
SGR	92,147	0.184	0.535	-0.024	0.084	0.241
PPENT	92,147	0.565	0.445	0.225	0.446	0.795
VOL	92,147	0.145	0.089	0.084	0.123	0.180

Note: This table reports the summary statistics of multivariate ordinary least squares. The financial data come from the COMPUSTAT database. The industry-level labor unionization data come from the Union Membership and Coverage database in Unionstats. Observations included in this analysis satisfy: (1) Book equity is positive; (2) All the variables used are available. Firms in financial (SIC code 6000-6999) and utility (SIC code 4900-4999) industries are excluded. All the continuous variables are winsorized at the 1% and 99% levels. Finally, the sample contains 90,755 observations during 1989-2021.