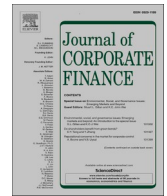




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ABSTRACT

Using firm-level union membership data for the period of 2002–2016, we show that firms with higher union membership are more likely to engage in real earnings management than accrual-based earnings management, with abnormal production as the dominant form of real earnings management. We further show the causal effect of union membership on real earnings management by exploiting two natural experiments—the staggered enactment of state-level right-to-work (RTW) laws and the shock to unemployment insurance benefits (UIB)—as exogenous shocks to union power. Further exploration shows that the positive association between union membership and real earnings management is more pronounced for unionized firms with (1) high managerial incentives to reduce employee hiring and retention costs and (2) operating inflexibility created by labor overinvestment. Our evidence is consistent with managerial incentives for upward earnings management to mitigate employees' perceived job security and the cost of employee management in competitive labor markets.

1. Introduction

As powerful stakeholders representing individual employees, labor unions exert significant influence on corporate investments and financing decisions (Connolly et al., 1986; Faleye et al., 2006; Klasa et al., 2009; Matsa, 2010; Chen et al., 2011). Labor unions have also drawn increasing academic attention for their potential influence on financial reporting decisions. Prior studies examine unionized firms' managerial incentives for downward earnings management to shield resources from rent-seeking labor unions (Liberty and Zimmerman, 1986; Yamaji, 1986; DeAngelo and DeAngelo, 1991; Mautz and Richardson, 1992; Cullinan and Knobbelt, 1994). However, most of the existing literature focuses on labor unions' effect on accrual-based management, whereas labor unions' effect on earnings management through real activities manipulation has not been studied extensively.¹ Moreover, despite the intuitive appeal of the argument, the literature fails to find conclusive evidence that unionized firms engage in downward earnings management to improve firms' bargaining positions. In this article, we fill a gap in the literature by examining labor unions' effect on earnings management through real activities manipulation (real earnings management).

Real earnings management is an operating decision that deviates from normal operational practices, with a primary objective to

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¹ To the best of our knowledge, Hamm et al. (2018) is the only prior research that relates labor union and real activity manipulation. They find that union strength is positively associated with earnings smoothing activities through managing R&D expenditures.

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boost current-period reported earnings (Roychowdhury, 2006).² Examples of real earnings management include abnormal production to decrease cost of goods sold (COGS) expense, cutting of desirable discretionary expenditures like research and development (R&D), sales manipulation through aggressive pricing strategies, more lenient credit terms, and fire sales of assets. Prior studies find that such manipulation is generally costly because it stems from myopic incentives and thus sacrifices long-term firm value (e.g., Bushee, 1998; Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010; Wongsunwai, 2013; Cheng et al., 2015).

We postulate that unionized firms are more likely to engage in real earnings management than accrual-based earnings management for a few reasons. First, a potential conflict of interest between firms and labor unions is less likely in real earnings management than in accruals manipulation—particularly abnormal production—because managers' incentive for real earnings management through abnormal production (i.e., overproduction) aligns with that of unions, as unions pursue higher job security and lower unemployment risk. Second, labor unions have a substantial and direct influence on various operating decisions, such as wage setting (Lewis, 1963), investments in R&D (Connolly et al., 1986; Hirsch and Link, 1987; Bradley et al., 2016), restructuring decisions (Atanassov and Kim, 2009), and decisions to adopt new technology (McKersie and Klein, 1983). Their strong impact on operating activities suggests that unions are highly likely to influence a firm's decision to engage in real earnings management. Third, real earnings management is consistent with recent studies that focus on managerial incentives for *upward* earnings management to ensure employees' perceived job security and/or to reduce the cost of employee hiring and retention in competitive labor markets (Bowen et al., 1995; Burgstahler and Dichev, 1997; Matsumoto, 2002; Cheng and Warfield, 2005; Dou et al., 2016; Hamm et al., 2018).³ Fourth, unions are reluctant to accept accrual-based earnings management, which resembles a risky investment (Cheng and Warfield, 2005; Efendi et al., 2007; Rajgopal and Venkatachalam, 2011; Armstrong et al., 2013). Besides, SEC and auditor scrutiny over accruals manipulations has increased considerably in the post-Sarbanes-Oxley Act (SOX) era, making accruals manipulation a less viable option compared to real earnings management (Cohen et al., 2008). Additionally, labor unions are becoming more sophisticated in monitoring the financial reporting process (Tomczyk, 1975; Kleiner and Bouillon, 1988; Appelbaum and Hunter, 2003), hence more capable of guarding against accruals management.

To investigate whether and how the strength of labor unions is associated with real earnings management, we employ two major real earnings management measures that labor unions are likely to influence: abnormal production and abnormal discretionary expenditures (Gunny, 2010; Roychowdhury, 2006; Zang, 2012).⁴ Using 2651 observations with firm-level union membership percentage data as a proxy for union strength and bargaining power during the post-SOX period of 2002–2016, we find a positive and significant relationship between firm-level labor union membership and earnings management through abnormal production.

We also find similar yet weaker and less robust evidence for abnormal discretionary expenditures. The results reflect that unions have discriminating incentives for different discretionary expenditures (Chang et al., 2022).⁵ For instance, while unions have incentives to reduce risky investments in general, such as R&D expenditures (Faleye et al., 2006), unions also have incentives to increase certain discretionary spending to improve employee satisfaction, such as employee training, employee perks and salaries, and R&D expenses of unionized R&D units. Put together, our results suggest that management incentives for upward earnings management are better aligned with union incentives for abnormal production than for abnormal discretionary expenditures.

To mitigate the concern that our findings are driven by unobservable factors that may simultaneously affect the strength of unions and real earnings management, we perform robustness tests by utilizing two quasi-natural experiments. Specifically, we examine changes in real earnings management after two external shocks that affect the strength of unions: (1) states' adoption of right-to-work (RTW) laws and (2) changes in states' unemployment insurance benefits (UIBs). The passage of RTW laws eliminates some of the granted privileges of unions, thereby reducing unions' bargaining power (Chava et al., 2020). On the contrary, UIBs make layoffs less costly and reduce workers' demand for being compensated for potential layoffs (Topel, 1984). Thus, nontrivial decreases in UIBs encourage workers to join a union to better protect themselves and hence boost the unions' bargaining power. Consistent with our primary results, we find that for firms with a strong union presence, the degree of abnormal production drops significantly after the adoption of RTW laws and rises after a decrease in high-benefit states' UIBs. The effect of abnormal discretionary expenditures is less robust, which is significant in the RTW test only.

We next analyze how firms trade off accruals and real earnings management in the presence of labor unions by using a two-stage Heckman (1979) procedure to control for firms' self-selection to manage reported earnings. Consistent with our prediction, we show that union membership has a significantly positive association with abnormal production but not with accruals management. Our

² Managers engage in real earnings management that changes the firm's underlying operations in an effort to boost current-period earnings for various reasons, including to meet earnings benchmarks (Gunny, 2010), to avoid reporting losses (Roychowdhury, 2006), to influence credit ratings (Liu et al., 2018), to reach dividend thresholds (Atieh and Hussain, 2012), and to avoid violations of debt covenant (Kim et al., 2011).

³ Hamm et al. (2018) argue and find that management of unionized firms weighs two countervailing incentives when making earnings management decisions and consequently engages in earnings smoothing to strike a balance between downward and upward earnings management incentives.

⁴ Abnormal production decreases per-unit cost of goods sold (COGS) by spreading the fixed overhead costs over a larger number of units, thus lowering fixed costs per unit. Because abnormal discretionary expenditures (DISX) leads to improved margins, both are associated with higher reported earnings.

⁵ Chang et al. (2022) find that managers of unionized firms are more likely to curtail non-labor SG&A expenses than labor-related SG&A expenses in response to a demand decrease.

⁶ Discretionary expenditures include employee training costs, advertising and marketing expenses, maintenance expenses, R&D expenses, and information systems and distribution channel investment costs, which are expenses aimed at improving a firm's operating efficiency and competitive edge. Discretionary expenditures also include items such as managerial perk consumption, restructuring expenses, and audit fees, which might have little to do with a body of knowledge and business processes and systems.

results suggest that managers of unionized firms find abnormal production a more effective tool than accruals management to manage earnings.

In the subsequent analysis, we examine how variation in the relative strength of managerial incentives for upward earnings management affects the observed positive relationship between labor unions and real earnings management. We determine that our main finding is salient only for firms where the earnings-boosting incentives between labor unions and management are more aligned. Specifically, we find that the positive relationship between labor unions and real earnings management is more pronounced for firms with high dependence on human capital—and therefore high risk of losing key talent (Eisfeldt and Papanikolaou, 2013; Peters and Taylor, 2017) and high cost of attracting and retaining employees in competitive labor markets (Agrawal and Matsa, 2013). Engaging in real earnings management to mitigate negative earnings news and/or to signal future profitability helps alleviate such risk and cost. Furthermore, we find that the positive relationship between labor unions and real earnings management is more pronounced in firms with higher-than-optimal labor investment (Pinnuck and Lillis, 2007; Jung et al., 2014). Since these firms have higher operating leverage and dismissal costs with labor unions' presence (Chen et al., 2011), management has less flexibility and more pressure on its functions. Managers are more likely to choose earnings management through abnormal production because it mitigates the pressure to have all union members fully employed.

Our paper contributes to several strands of the existing literature. First, to the best of our knowledge, our study is the first to examine labor unions' effect on real earnings management. Prior literature on financial reporting of unionized firms focuses on downward accrual earnings management based on unions' rent-seeking incentives yet provides mixed results. We argue that managers of unionized firms have incentives to use real activities manipulation more than accruals manipulation. We provide robust evidence that real earnings management—specifically, abnormal production—is a more popular earnings management tool for unionized firms to meet or beat the earnings target, suggesting that labor union strength is another cost that managers face when deciding between accruals and real earnings management and when determining the type of real earnings management.

Second, our study extends recent literature on the relationship between unions (employees) and financial reporting decisions. Dou et al. (2016) provide evidence that firms tend to engage in income-increasing accrual earnings management to manage rank-and-file employees' perceptions of employment security. Our study extends Dou et al.'s (2016) study by providing evidence that the same incentives contribute to income-increasing real earnings management as well. Our study is also related to the Hamm et al. (2018) study, which suggests that the relationship between labor unions and earnings management is the outcome of managers' striking a balance between the conflicting incentives of reporting income-increasing and income-decreasing earnings. While Hamm et al. (2018) posit that labor unions lead to income-smoothing behavior through accruals management and R&D expenditures, our study focuses on the abnormal production that labor unions have a more direct influence on. Also, while Hamm et al. (2018) focus on earnings smoothing as a general earnings characteristic, we focus more on how managerial incentives to meet or beat earnings benchmarks interplay with the incentives of unions in determining their choice of earnings management.

Finally, due to the lack of availability of firm-level union data, most studies on labor unions use industry-level union data that limit the scope of studies in examining labor unions' effect on firm-level corporate decisions. We add to the literature by constructing firm-level union membership. Using the firm-level union measure, we show more direct evidence on the relationship between labor unions and real earnings management.

The paper is structured as follows. We review the prior literature and present the background for our hypotheses in Section 2 and describe the data and measurement in Section 3. Section 4 reports empirical results with endogeneity and robustness tests, and Section 5 concludes.

2. Hypotheses development

2.1. Real earnings management versus accrual-based earnings management

Managers of public firms are under constant pressure from stakeholders to deliver financial performance that is used in contracting and firm valuation. Graham et al. (2005) report that 97% of managers in their survey prefer smooth earnings and that one in five companies intentionally misrepresents its earnings using discretion within generally accepted accounting principles (GAAP).⁷ The authors further find that managers prefer real earnings management (e.g., decreasing discretionary spending such as R&D, advertising, maintenance, etc.; delaying new investments; and providing abnormal discounts to boost short-term sales at the expense of long-term performance) over accruals manipulations to manage reported earnings. For example, 80% of survey participants report that they would decrease discretionary spending on R&D, advertising, and maintenance to meet earnings benchmarks.

Compared to accruals management, real earnings management can have direct consequences on current and future cash flows and is believed to be associated with suboptimal business decisions creating "operating inefficiency"; this is because real earnings management deviates from normal operational practices (Bushee, 1998; Cohen and Zarowin, 2010; Gunny, 2010; Wongsunwai, 2013; Cheng et al., 2015). Real earnings management is also more difficult for average investors to understand and less likely to be scrutinized by audit committees, auditors, and regulators (Cohen et al., 2008). Consistent with this argument, managers have shifted from accruals manipulation to real earnings management in the post-SOX period; the shift is due to heightened external governance on

⁷ Graham et al. (2005) provide potential motives for meeting earnings benchmarks. These motives include maintaining or increasing stock price, maintaining the external reputation of the management team, conveying future growth prospects to investors, maintaining or reducing stock price volatility, assuring customers and suppliers that the business is stable, achieving or preserving a desired credit rating, and avoiding violation of debt covenants.

financial reporting (Cohen et al., 2008). Also, there is limited flexibility in accruals management because it is constrained by the business operations and accruals manipulations in prior years (Barton and Simko, 2002).

2.2. Labor unions and real earnings management

The literature on labor unions extensively discusses whether and how firms with labor unions make financial reporting choices. These studies focus exclusively on accrual-based manipulation but provide mixed results. While some studies find evidence that firms with strong unions manage earnings downward in the short run prior to negotiations to limit unions' rent-seeking behavior (DeAngelo and DeAngelo, 1991; Mora and Sabater, 2008),⁸ other works find no empirical evidence of income-decreasing earnings management (Liberty and Zimmerman, 1986; Mautz and Richardson, 1992; Cullinan and Knoblett, 1994). Moreover, recent studies even challenge the incentives for downward earnings management by arguing that firms with labor unions are more likely to use upward long-term earnings management to enhance the firm's financial image, signal future profitability, and mitigate ex-ante labor costs (Bowen et al., 1995; Burgstahler and Dichev, 1997; Matsumoto, 2002; Cheng and Warfield, 2005; Dou et al., 2016).

Furthermore, some studies question firms' ability to manipulate reported earnings by using accounting methods. Specifically, these studies argue that unions can tightly monitor firms' financial reporting processes by requesting financial information and business records from management (Tomczyk, 1975; Kleiner and Bouillon, 1988; Appelbaum and Hunter, 2003). Unions' demands for financial information may limit firms' strategic accounting decision-making to gain an advantage over labor in the bargaining process.

Similar to debtholders, employees face firms' downside risks but not upside potentials. Debtholders have little to gain when a firm performs better than expected but have much to lose when it performs poorly. Similarly, salary-based employees could perceive volatile earnings as increased bankruptcy risk and demand risk compensation via higher wages, more benefits, and improved working conditions (Agrawal and Matsa, 2013). Given the employee incentives and risk preferences, labor unions are concerned with whether firms can generate enough cash flows to cover wages and benefits (Faleye et al., 2006); thus, labor unions focus on reported earnings to judge a firm's financial performance. Therefore, managers have strong incentives to meet or beat earnings targets to satisfy implicit claims between a firm and its employees and build a good reputation (Bowen et al., 1995), mitigate workers' exposure to unemployment risk (Agrawal and Matsa, 2013), and manage employees' perceptions of employment security (Dou et al., 2016).

We posit that the incentives and risk aversion of labor unions induce managers to engage in real earnings management rather than accruals manipulations, even though real earnings management potentially imposes greater long-term costs by reducing long-term operating (production) efficiency.

The extant literature asserts that accruals management is like a risky investment that increases stock price and stock return volatility (Cheng and Warfield, 2005; Efendi et al., 2007; Rajgopal and Venkatachalam, 2011; Armstrong et al., 2013). Given unions' higher degree of risk aversion and a strong preference for less risky investments,⁹ managers are less likely to manage earnings through accruals manipulation. Moreover, tighter external scrutiny over financial reporting in the post-SOX era has substantially increased potential financial misreporting risk and litigation risk of accruals manipulations, inducing management to choose real earnings management over accruals management (Cohen et al., 2008).

Additionally, accruals management may not be an effective tool because labor unions can undo it and strengthen monitoring over the financial reporting process (Tomczyk, 1975; Kleiner and Bouillon, 1988; Appelbaum and Hunter, 2003). Accruals management is also constrained by business operations and past accruals management (Barton and Simko, 2002). Besides, accruals management is a risky strategy when beating the earnings benchmark cannot be attained solely by accruals management because it is hard to implement real earnings management at year-end (Bova, 2013).

Managers' interests are in less conflict with those of labor unions in the case of real earnings management compared to the case of accruals management; this is because real earnings management—specifically, abnormal production (i.e., overproduction)—is expected to reduce unemployment risk by ensuring job security and wage increase. Therefore, managers are more likely to engage in abnormal production to meet or beat earnings benchmarks, which caters to employees' aversion to downside risk. Overall, managers facing strong unions are expected to prefer real earnings management rather than accruals management to meet or beat earnings benchmarks.

2.3. Hypotheses

Managers may engage in real earnings management to meet earnings benchmarks to enhance the firm's credibility and reputation with unions and other stakeholders (Bartov et al., 2002; Burgstahler and Dichev, 1997). A positive association between unions and real earnings management is consistent with managers' use of operational discretion to meet benchmarks in an effort to signal superior future earnings to manage perceptions of unemployment risk and thus reduce potential labor costs. Therefore, we argue that managers of unionized firms have strong incentives to engage in earnings management through real earnings management.

⁸ Labor unions are widely believed to impose a number of costs on employers, including wage raises, strikes, higher cost of capital, and worker benefits (Lewis, 1986; Chen et al., 2011). Because earnings are the base for contractual negotiation with labor unions, managers have downward earnings management incentives to increase negotiation power and thus reduce labor unions' rent extraction from shareholders (Baldwin, 1983; Grout, 1984).

⁹ The extant literature examining labor unions' impact on firm investment finds that firms in more unionized industries tend to undertake less risky investment (Chen et al., 2011) and to limit R&D investment (Connolly et al., 1986).

Hypothesis 1. There is a positive relationship between labor union strength and income-increasing real earnings management.

At firms that are more dependent on human (intangible) capital, managerial incentives for upward earnings management outweigh those against upward earnings management; this is because such firms have higher labor-adjustment costs in hiring and retaining high-quality employees. Therefore, we expect more upward real earnings management at unionized firms with higher intangibility.

Hypothesis 1a. The positive relationship between labor union strength and income-increasing real earnings management is more pronounced in firms with higher intangibility.

The presence of powerful unions substantially reduces firms' operating flexibility in resource acquisitions, allocations, and dispositions; this is because unions often intervene in firms' downsizing and make wages sticky and layoffs costly (Chen et al., 2011). Labor adjustment costs are higher for unionized firms with labor overinvestment because labor costs have higher fixed cost components—such as employee hiring, training, and firing costs—and thus increase firms' operating leverage due to labor. Facing union's pressure to maintain slack labor resources, managers are more likely to engage in real earnings management by increasing abnormal production, which is easier and less costly for unionized firms with labor overinvestment, and curtailing discretionary expenditures not directly related to employees. Therefore, we expect that managers are more likely to choose real earnings management when the firm has inflexibility in downsizing labor resources due to labor overinvestment.

Hypothesis 1b. The positive relationship between labor-union strength and income-increasing real earnings management is more pronounced in firms with labor overinvestment.

3. Data

3.1. Sample

Firm-level union representation data are scarce because firms are not required to disclose labor union representation. Due to the lack of firm-level union data, most of the previous empirical studies on labor unions have used the industry-level union data constructed from Union Membership and Coverage Database by Hirsch and Macpherson (2003). It contains data on union membership and coverage by industry, based on the Bureau of Labor Statistics' (BLS) monthly Current Population Survey (CSP) which collects information on characteristics of U.S. labor force, starting from 1983 (Bureau of Labor Statistics, 2016). Even though this dataset has much wider and longer coverage, it does not provide a direct measure of firm-level union power. Some studies create quasi-firm-level union data by multiplying the industry-level union membership by a firm-level labor intensity ratio defined as the number of employees divided by total assets. However, this approach is vulnerable to potential measurement errors when the actual union power is not proportional to firm-level labor intensity.

To overcome the limitation of industry-level union data, we construct firm-level labor union membership data for all U.S. firms covered by Asset4 or Bloomberg. Specifically, we initially construct firm-level union membership percentage data by from Thomson/Refinitiv Asset4, which is one of the major providers of environmental, social, and governance (ESG) data, with broad coverage of firms from all over the world. Major investment houses like BlackRock rely on ESG information from ASSET4 as analysis tools (Cheng et al., 2014).¹⁰ Asset4's coverage of global firms started in 2002 and has increased from around 2000 to more than 8000 firms in 2017. Its U.S. coverage has increased from S&P 500 and NASDAQ 100 firms in 2002 from initiation to Russell 1000 in 2011 and to Russell 2000 and Russell 3000 in 2017. We then supplement Asset4 data with Bloomberg data, which started providing firm-level labor union membership percentage data in 2007. Even though the time series of Asset4 firms are longer, Bloomberg firms have a wider size variation, with many small firm additions, which complements Asset4 data nicely.

We further require that all observations have Compustat financial variables such as assets, leverage, ROA, dividends, sales, and property, plant, and equipment (PPE) to measure real earnings management. We exclude firms in financial (with 2-digit SIC codes between 60 and 69) and utility (with 2-digit SIC codes of 49) industries because financial and utility firms are regulated and may have different managerial incentives with respect to the relation between labor unions and real earnings management. We winsorize all continuous variables at both 1 and 99 percentiles so that extreme values have less of an impact on our results. Our final sample consists of 2651 firm-year observations over the period of 2002 to 2016. Note that our sample period covers the post-SOX period, where firms are found to manage earnings more by using real earnings management than accruals management.

3.2. Measures of real earnings management

Following Roychowdhury (2006), we estimate two individual metrics of abnormal investment and operational expenses that reflect real earnings management: abnormal production (*RM Prod*), and abnormal discretionary expenses (*RM Disx*). Both metrics are residuals from the corresponding estimation model.

The firm may decide to lower production costs by producing more inventories. Then, the firm can hide fixed costs in inventory and lower the costs of goods sold, resulting in an increase in net income for the period. We estimate the cost of goods sold (*COGS*) and changes in inventory based on the following two regressions for each industry (two-digit SIC code) and for each year:

¹⁰ The union membership data for firms covered by Asset 4 come from multiple sources, including annual reports, press release, websites, etc. They are reported either as a specific percentage or 0, or missing, accurately reflecting the union membership strength at the firm.

$$\text{COGS}_{jt}/\text{Asset}_{j,t-1} = \beta_0 + \beta_1 I/\text{Asset}_{j,t-1} + \beta_2 \text{Sales}_{jt}/\text{Asset}_{j,t-1} + \varepsilon \quad (1)$$

$$\Delta \text{INV}_{jt}/\text{Asset}_{j,t-1} = \beta_0 + \beta_1 I/\text{Asset}_{j,t-1} + \beta_2 \Delta \text{Sales}_{jt}/\text{Asset}_{j,t-1} + \beta_3 \Delta \text{Sales}_{j,t-1}/\text{Asset}_{j,t-1} + \varepsilon \quad (2)$$

where COGS_{jt} is the cost of goods sold in year t , ΔINV is the change in inventory from year $t-1$ to year t , $\Delta \text{Sales}_{t-1}$ is the change in sales from year $t-2$ to $t-1$, and Asset_{t-1} is the total assets of year $t-1$. Production costs (PROD) are the sum of the cost of goods sold (COGS) and changes in inventory (ΔINV). From eqs. (1) and (2), we estimate the expected level of production costs (PROD), as follows:

$$\Delta \text{PROD}_{jt}/\text{Asset}_{j,t-1} = \beta_0 + \beta_1 I/\text{Asset}_{j,t-1} + \beta_2 \text{Sales}_{jt}/\text{Asset}_{j,t-1} + \beta_3 \Delta \text{Sales}_{jt}/\text{Asset}_{j,t-1} + \beta_4 \Delta \text{Sales}_{j,t-1}/\text{Asset}_{j,t-1} + \varepsilon \quad (3)$$

We subtract an estimated value from Eq. (3) from the actual production costs to compute the abnormal production costs (RM Prod).

A firm may decide to cut discretionary expenses or postpone R&D expenditures. Discretionary expenses (DISEXP) include selling, general, and administrative expenses, R&D expenses, and advertising expenses (Roychowdhury, 2006). We estimate the normal level of discretionary expense from Eq. (4) and compute the abnormal discretionary expense (RM Disx) by subtracting an estimated value from Eq. (4) from the actual discretionary expense:

$$\text{DISEXP}_{jt}/\text{Asset}_{j,t-1} = \beta_0 + \beta_1 I/\text{Asset}_{j,t-1} + \beta_2 \text{Sales}_{jt}/\text{Asset}_{j,t-1} + \varepsilon \quad (4)$$

Lastly, we consider an aggregate measure of real earnings management, RM , which is constructed similar to Zang (2012) but without including the abnormal cash flow term. That is, RM in this study is an aggregate metric that combines RM Prod and RM Disx . We multiply the actual residual from the models by -1 for RM Disx so that high RM Prod and RM Disx refer to high abnormal production, which results in lower per-unit cost and low abnormal discretionary expenses like R&D and advertising. Both are indicative of upward real earnings management.

3.3. Measure of labor union strength and descriptive statistics

Table 2 presents descriptive statistics of the study variables. Our main variable, labor union power (Union), is measured annually as the percentage of union membership at the firm level as reported by Asset4 or Bloomberg.¹¹ The mean and median for Union reported in Table 2, Panel A are 18.2% and 8.9%, respectively, suggesting that the union membership percentage has a right-skewed distribution. Furthermore, there is significant variation in Union within firms, with the mean, median, and standard deviation of the range of Union being 18.4%, 9%, and 22.6%.

We report the industry (based on two-digit SIC codes) distribution of labor union memberships in Table 1. The mean union membership varies between 87% for (SIC 40, railroad transportation) and 78% (SIC 54, professional, scientific, and technical services) to almost 0 (SIC 15, 31, 56, 57, 58, 78: construction, leather products, apparel and accessory, home furniture, eating and drinking places, motion pictures) and 25% (SIC 22, textile), showing a large variation between industries.

Table 2, Panel B reports mean differences between firms with unions ($\text{Dum Union} = 1$) and firms without unions ($\text{Dum Union} = 0$). Compared to non-union firms, on average, union firms report lower absolute discretionary accruals (Abs DA), do more real earnings management (RM Prod , RM Disx , RM), have lower cash flow volatility (Opcf vol) and R&D (Xrd/Sale), higher ROA (ROA), are larger (Logta), and are more likely to pay dividends (Dum Div).

4. Empirical results

4.1. Baseline regressions: Channels for real earnings management

To examine the relation between real earnings management and labor union membership, we estimate the following baseline model:

$$\text{RM}_t = \beta_0 + \beta_1 \text{Union}_t + \beta_2 \text{Abs DA}_t + \beta_3 \text{OpcfVol}_{t-1} + \beta_4 \text{Logta}_{t-1} + \beta_5 \text{Leverage}_{t-1} + \beta_6 \text{ROA}_{t-1} + \beta_7 \text{Dum Div}_{t-1} + \beta_8 \text{XRD/Sale}_{t-1} + \beta_9 \text{Ppent/TA}_{t-1} + \beta_{10} \text{Q}_{t-1} + \text{Fixed Effects} + \varepsilon_t \quad (5)$$

where RM stand for three measures of real earnings management (RM PROD , RM DISX , and RM). Union_t is the percentage of firm-level union membership and is our main variable of interest; Abs DA_t is the accrual-based earnings management measure, which controls for the documented substitution effect between accrual-based earnings management and real earnings management (Doukakis, 2014)¹²; OpcfVol_{t-1} is volatility of operating cash flow and it serves as a measure of risk here; Logta_{t-1} is the log of book total assets value in million U.S. dollars, which controls for the size effect; Leverage_{t-1} is the leverage ratio calculated by long-term debt divided by total assets; ROA_{t-1} is profitability measured by return on assets, which is included to address the concern that RM is correlated with operating performance; Dum Div_{t-1} is the dividend dummy that takes value of 1 if the firm pays dividends and 0 otherwise, which

¹¹ We include a comparison of unionization measures from Asset4 and Bloomberg in Appendix 2.

¹² To address the concern that accruals management would correlate with the error terms from the real earnings management regression (Zang, 2012), we include industry-average abnormal accruals management as an instrument and re-estimate Eq. (5). Our results remain largely the same and are available upon request.

Table 1
Sample distribution by industries.

Two-digit SIC	Mean Percentage	No. of Obs.	Two-digit SIC	Mean Percentage	No. of Obs.
1	3.8	4	39	9.6	22
10	54.1	34	40	86.7	38
12	31.7	24	42	39.0	26
13	3.2	209	44	20.0	12
14	24.6	30	45	55.2	37
15	0.1	37	46	26.0	9
16	7.3	9	47	44.1	7
20	28.8	167	48	19.1	136
21	7.0	8	49	18.5	56
22	25.1	6	50	5.4	60
23	2.2	63	51	6.5	52
24	23.2	35	53	4.2	53
25	16.3	50	54	77.6	28
26	43.2	91	55	0.9	51
27	27.7	15	56	0.0	7
28	17.1	229	57	0.0	11
29	25.2	34	58	0.0	43
30	31.3	21	59	4.6	38
31	0.0	4	70	12.9	26
32	33.0	27	72	2.3	10
33	24.1	48	73	7.0	144
34	21.5	38	75	20.5	15
35	15.5	183	78	0.0	6
36	12.0	122	79	17.6	40
37	28.3	109	82	9.9	2
38	6.0	125	Total	0.182	2651

This tables shows that industry (SIC2 digit) distribution of firms with union membership data in ASSET4 or Bloomberg. Sample period is from 2002 to 2016.

controls for the different characteristics of dividend-paying firms; $XRD/Sale_{t-1}$ is R&D intensity measured as R&D expenditure over total sales; $Ppent/TA_{t-1}$ is the tangibility ratio measured by property, plant and equipment (*PPENT*) divided by total assets; and Q_{t-1} is Tobin's Q, which controls for growth opportunity. Standard errors in all the models of base regressions are calculated after clustering at the state and industry levels since labor union membership varies by state and industry.

We report estimation results from Eq. (5) in Panel A of Table 3. The dependent variables in columns (1)–(6) are real earnings management measures that capture different aspects of real activities' deviation from normal business practice: *RM Prod* measures above-normal production, and *RM Disx* refers to less-than-normal discretionary expenditure, while *RM* is the sum of *RM Prod* and *RM Disx*. We include year, industry, and state fixed effects in the regressions for results reported in columns (1)–(3). The state fixed effects control for different state-level regulation that influences union power and behavior. For results in columns (4)–(6), we include year-fixed effects and firm-fixed effects, to alleviate the influence of time-invariant omitted variables that correlate with firm-level real earnings management.

All the results show a positive and significant relation between *RM* and *Union*, with the magnitude of coefficient estimated from controlling for industry fixed effects about double that estimated from controlling for firm fixed effects. The coefficient estimates have high economic significance as well: the regression coefficient on *Union* in Column (3) of Table 3 is 0.172, suggesting that a one standard deviation difference in *Union* (0.224) is associated with a change in real earnings management of $0.224 * 0.172 = 0.0385$, which is a $(0.0385/0.248=)$ 15% of a standard deviation in *RM*. The economic significance of *Union* in the regression of abnormal production is even higher, where a one standard deviation difference in *Union* is associated with 17.5% of a standard deviation in *RM Prod*. As above-normal production and less-than-normal discretionary expenditure both result in higher earnings, our results suggest that strong unions are associated with income-increasing real earnings management, consistent with Hypothesis 1.^{13,14}

In Column (7), we estimate the relation between *Abnormal Sales*, which is above-normal annual sales amount, and *Union* with the

¹³ In results reported in Table 3 Panel A, we treat missing R&D as zero. To ensure robustness of our results and mitigate the concern over such assumption as discussed in Koh and Reeb (2015), we create a dummy variable *Missing R&D* that takes value 1 if R&D is missing. We also re-estimate Eq. (5) after dropping all observations with missing information on R&D. Our findings continue to show positive relation between RM measures, especially *RM Prod*, and *Union*. These additional results are available upon request.

¹⁴ Our results provide additional insight on the union's monitoring role. In an additional (unreported) test, we examine the effect of the union membership percentage on over- and under-investment and find results consistent with unions' monitoring role on firm investments as documented by Cho et al. (2017). Specifically, firm-level union membership percentage is negatively related to investments at overinvesting firms albeit the union does not seem to increase investment at underinvesting firms. This evidence shows the union tends to reduce investments, consistent with Faleye et al. (2006) and its monitoring on capital expenditures, acquisitions and R&Ds is efficient. Although the union's monitoring over the management's investing decisions is efficient, our evidence on real earnings management suggests that labor unions' monitoring efficiency over the management's operating decisions, specifically production decisions, may be compromised due to their shared interest, leading to operating inefficiency. These additional results are available upon request.

Table 2
Descriptive statistics.

Panel A. Overall sample.							
Variable	N	Mean	Median	Std	Min	Max	
<i>Abs DA</i>	2651	0.038	0.025	0.045	0.000	0.364	
<i>RM Prod</i>	2651	-0.001	0.000	0.129	-0.479	0.462	
<i>RM Disx</i>	2550	0.015	0.014	0.137	-0.650	0.401	
<i>RM</i>	2550	0.011	0.019	0.248	-1.037	0.755	
<i>Union</i>	2651	0.182	0.089	0.224	0.000	1.000	
<i>Opof vol</i>	2651	0.034	0.027	0.026	0.000	0.214	
<i>Logta</i>	2651	8.504	8.526	1.379	2.344	11.261	
<i>Leverage</i>	2651	0.294	0.274	0.143	0.064	0.777	
<i>ROA</i>	2651	0.041	0.049	0.087	-0.924	0.214	
<i>Dum Div</i>	2651	0.664	1.000	0.473	0.000	1.000	
<i>Xrd/Sale</i>	2651	0.036	0.000	0.160	0.000	2.385	
<i>Ppnt/TA</i>	2651	0.342	0.295	0.247	0.009	0.930	
<i>Q</i>	2651	1.754	1.50	0.888	0.612	7.246	

Panel B. Univariate tests					
Variable	<i>Dum Union = 0</i>		<i>Dum Union = 1</i>		Difference (0-1)
	N	Mean	N	Mean	
<i>Abs DA</i>	841	0.048	1810	0.033	0.015***
<i>RM Prod</i>	841	-0.025	1810	0.011	-0.036***
<i>RM Disx</i>	828	-0.030	1722	0.037	-0.067***
<i>RM</i>	828	-0.059	1722	0.046	-0.106***
<i>Opof vol</i>	841	0.041	1810	0.030	0.011***
<i>Logta</i>	841	7.813	1810	8.808	-0.995***
<i>Leverage</i>	841	0.286	1810	0.298	-0.012**
<i>ROA</i>	841	0.027	1810	0.047	-0.020***
<i>Dum Div</i>	841	0.439	1810	0.766	-0.327***
<i>Xrd/Sale</i>	841	0.087	1810	0.013	0.074***
<i>Ppnt/TA</i>	841	0.354	1810	0.339	0.016
<i>Q</i>	841	2.030	1810	1.625	0.041***

This table shows overall sample descriptive statistics and univariate tests of the variables for firms with union membership data in ASEET4 or Bloomberg database. Sample period is from 2002 to 2016.

same controls, as a placebo test. Labor unions do not appear to directly benefit from abnormal sales as the coefficient estimate is insignificant, further supporting [Hypothesis 1](#).

4.2. Robustness tests: alternative measures of union membership

Compared to many previous studies, our sample size is relatively small as we focus on the actual firm-level union membership to explore managerial incentives for individual firms. To address this concern, we follow the literature and use industry-level unionization rates as an alternative measure of union strength. Specifically, union membership is calculated as the percentage of employed workers in a firm's primary Census Industry Classification (CIC) industry covered by unions in collective bargaining with employees ([Hilary, 2006](#); [Chen et al., 2011](#)). Since CIC industries correspond roughly to three-digit SIC industries, our larger sample is constructed based on three-digit SIC codes. Doing so expands our sample from firms covered in Asset4 and Bloomberg to all firms listed in Compustat with necessary financial information. In this sample with 14,437 observations over 2002–2016 after controlling for year, industry, and state fixed effects, we again find a strong positive relation between *RM* and *Industry Union*, which is a proxy for firm-level union strength estimated from the industry-level unionization rate (Panel B of [Table 3](#)). This suggests that the positive relation between labor union strength and real earnings management is common to a broad sample of firms, including those that are not covered by Asset4 and Bloomberg.

Even though public firms are not required to report labor union membership in their annual reports, most include information on the presence of labor unions, usually in the "Employee" section of SEC 10 K filings. We construct a dummy, *Union SEC*, using textual analysis of SEC 10 K filings as another alternative measure for labor unions, following [Hamm et al. \(2018\)](#). Due to the high data collection cost and in order to remain consistent with Asset4 coverage, we limit the sample firms to S&P 500 firms during 2000–2005. After excluding firms in financial and utility industries, we obtain 737 firm-year observations from the pooled S&P500 firms in 2000 and 2005 for *RM Prod* and fewer observations for categories of *RM Disx* (besides aggregated discretionary expenses, R&D, advertising, and SG&A expenses). We re-estimate Eq. (5) and report results in [Table 3](#) Panel C. This regression controls for industry and state fixed effects instead of firm fixed effects since our data span only two years. The relation between abnormal production (*RM Prod*, Column (1)) and *Union SEC* remains positive and significant, but that for abnormal discretionary expenses (*RM Disx*, Column (2)) is insignificant. The only positive and significant discretionary expenses-related coefficient is in Column (3), R&D expenses (*RM R&D*) (*t*-

Table 3
Baseline regression model: union and real earnings management.

Panel A. Real earnings management and Firm-level Union Membership.							
Variables	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>Abnormal Sales</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Union_{t-1}</i>	0.101*** (3.38)	0.066* (1.94)	0.172*** (2.92)	0.064** (2.51)	0.031** (2.02)	0.086*** (2.89)	0.193 (0.225)
<i>Abs DA_t</i>	0.235*** (3.96)	-0.059 (-1.43)	0.157* (1.72)	0.188*** (3.42)	-0.013 (-0.38)	0.160*** (2.71)	-0.090 (-0.067)
<i>Opf Vol_t</i>	0.189 (0.90)	-0.016 (-0.17)	0.127 (0.41)	-0.197 (-1.06)	-0.102 (-1.34)	-0.281 (-1.47)	-3.054 (-0.708)
<i>Logta_{t-1}</i>	-0.009 (-1.09)	0.002 (0.24)	-0.006 (-0.46)	0.012 (1.14)	0.025** (2.69)	0.043*** (3.06)	-0.041 (-0.136)
<i>Leverage_{t-1}</i>	0.016 (0.50)	0.060 (1.45)	0.081 (1.09)	-0.057 (-1.49)	0.023 (1.12)	-0.036 (-0.72)	1.149 (1.159)
<i>ROA_{t-1}</i>	-0.116** (-2.24)	0.129** (2.47)	0.017 (0.17)	-0.080** (-2.25)	0.015 (0.82)	-0.054 (-1.28)	-0.371 (-0.337)
<i>Dum Div_{t-1}</i>	-0.013 (-1.57)	0.009 (0.96)	-0.004 (-0.24)	-0.005 (-0.64)	0.000 (0.06)	-0.005 (-0.41)	0.027 (0.185)
<i>Xrd/Sale_{t-1}</i>	0.022 (0.82)	-0.157*** (-3.61)	-0.158*** (-3.41)	0.008 (0.27)	-0.068*** (-3.86)	-0.072*** (-2.80)	-0.178 (-0.344)
<i>Ppent/TA_{t-1}</i>	-0.007 (-0.30)	0.053* (1.79)	0.037 (0.74)	0.006 (0.09)	-0.063* (-1.70)	-0.055 (-0.68)	-4.979* (-1.850)
<i>Q_{t-1}</i>	-0.034*** (-4.24)	-0.029*** (-3.01)	-0.062*** (-3.90)	-0.021*** (-4.01)	-0.001 (-0.13)	-0.022*** (-3.23)	0.308* (1.839)
Year FE	No	No	No	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	No	No	No	No
State FE	Yes	Yes	Yes	No	No	No	No
Observations	2651	2576	2549	2584	2507	2482	2618
Adj R-squared	0.596	0.683	0.657	0.800	0.897	0.879	0.048

Panel B: Real earnings management and Industry-level Union Membership

Variables	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>
	(1)	(2)	(3)
<i>Industry Union_{t-1}</i>	0.002*** (3.63)	0.001** (2.55)	0.003*** (3.21)
Other Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Observations	14,437	14,218	14,049
Adj R-squared	0.147	0.216	0.162

Panel C. Real earnings management and Union Data from SEC Textual Analysis

Variables	(1)	(2)	(3)	(4)	(5)
	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM R&D_t</i>	<i>RM Adv_t</i>	<i>RM SG&A_t</i>
<i>Union SEC_{t-1}</i>	0.041*** (2.657)	0.174 (1.501)	0.030* (1.760)	-0.014 (-1.497)	0.148 (1.544)
Other Controls	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	732	611	397	294	611
R-squared	0.483	0.559	0.701	0.354	0.540

The dependent variables real earnings management measures in columns (1) to (6). RM is the aggregate measure of real earnings management, defined as the sum of *RM Prod* and *RM Disx*. *RM Prod* is the residual from production costs (PROD) model (Eq. 3) and *RM Disx* is the product of -1 and the residual from the discretionary expenses (*DISX*) model (Eq. 4). *Abnormal sales* is above-normal annual sales amount from previous sales which is measured as a residual from a regression of current sales on the previous sale. Sample period is from 2002 to 2016. Sample in Panel A includes firms with actual firm-level union membership covered by Asset4 and Bloomberg. Sample in Panel B includes all firms covered by Compustat with necessary financial information where union membership is industry-level (SIC3) union membership. Industry fixed effects use SIC4 digit in Panel A and SIC2 digit in Panel B. Standard errors are clustered at the industry and state levels in Panel A and clustered at the state level in Panel B. In Panel B, other controls include *Opf Vol_t*, *Logta_{t-1}*, *Leverage_{t-1}*, *ROA_{t-1}*, *Dum Div_{t-1}*, *Xrd/Sale_{t-1}*, *Ppent/TA_{t-1}*, and *Q_{t-1}*. Robust t-statistics are reported in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

stat = 1.76), suggesting labor unions may have some effect on reduced R&D expenses, but the aggregate effect is not so strong or robust as that on *RM Prod*. Overall, our results suggest that our findings are robust to alternative union measures.

Since Hamm et al. (2018) also show that labor unions play an important role in earnings smoothing decisions, we include earnings smoothing measures in our main regression model as additional control variables and re-estimate Eq. (5). Untabulated results continue to show a positive and significant relation between *Union* and *RM Prod*.

4.3. Robustness tests: establishing causality

We next attempt to establish the causal relationship that strong labor unions lead to upward real earnings management by exploiting two quasi-natural experiments at the state level where external shocks affect union power: (1) staggered adoptions of Right-To-Work laws (RTW), and (2) nontrivial decrease in unemployment benefits. RTW laws are the state-level legislations that remove the requirement that in unionized workplaces, employees have to join the union and pay for union dues or other membership fees so that they are entitled to work. The RTW passage represents an external shock that weakens labor union power, and our Hypothesis 1 predicts less real earnings management in the post-RTW period.

We construct a dummy variable, *RTW*, which takes the value of 1 if a firm-year is in a state after RTW law becomes effective and 0 otherwise. There is significant variation of *Union* for the same firm over time, and part of the variation could be caused by the passages of RTW laws. For example, the mean and median for the range of *Union* is 18.2% and 8.9%, respectively. To mitigate the concern that the interaction term, *Union* × *RTW*, captures the effect of the change in either *Union* or *RTW* or both, we use *Before Union*, which is the union membership percentage one year before RTW implementation in the firm's home state, as the continuous treatment in the test. To mitigate the effect of the state's economic environments on both real earnings management and RTW, we control for state-level unemployment insurance (*UI 10k*) and real GDP growth (*Real GDP Gr_t*) together with other explanatory variables included in Eq. (5). The resulting regression controls for the year and firm fixed effects and resembles a difference-in-difference test with continuous treatment. Because *Before Union* is time-invariant for the same firm, the main effect from *Before Union* is subsumed by firm fixed effects.

The coefficient estimates on *Before Union* × *RTW* are negative and highly significant for RM measures, suggesting weaker union results in less real earnings management, consistent with Hypothesis 1. When we use the time-varying union measure, *Union*, we find the estimate for both main effects are insignificant while the interaction term *Union* × *RTW* remains negative and significant. We report these results in Panel A1 of Table 4.

Next, we perform the dynamic analyses to assess whether the results are driven by the concurrent changes unrelated to RTW for both all firms and for the subsample of firms that has labor union presence in the previous year separately. Due to the short study window, we limit the control years to two years before and after the adoption of RTW laws. We replace the RTW dummy with indicator variables that track the effect of the reforms before and after they become effective. We include the following dummy variables: RTW (0), RTW (−1), RTW (−2), which equals one for the year, a year before, and two years before the reform becomes effective, respectively. Likewise, RTW (+1) and RTW (+2) are dummy variables that equal one for one year after and two years after the reform becomes effective, respectively, and zero otherwise. If RTW laws are passed in response to changes in economic conditions, one could expect an effect prior to the reform.

As reported in Table 4, Panel A2, in all cases, the parallel trend assumption holds, as there is no noticeable pre-trend. Also, we do not find any spurious effect. That is, the results show an insignificant coefficient on the RTW (−2) and RTW (−1) indicator variables and a significantly positive coefficient on the RTW (+1) and RTW (+2) indicator variables. Importantly, all the coefficient estimates of RTW are negative, and those for *RM Prod* and *RM* are statistically significant as well for both samples. This suggests that RTW law passages are associated with less *RM*, especially less *RM Prod*. The significant coefficients on RTW (+1) for *RM Prod* and RTW (+2) for *RM Disx* and *RM* indicator variables suggest that the decrease in real earnings management materializes after RTW laws, which weakens the union power, become effective in the firm's state.

Furthermore, we conduct a falsification test (reported in Table 4, Panel A3) where we assume firms in neighboring states, Illinois, Pennsylvania, and Minnesota, are subject to the negative shock in union power while RTW law passages actually happened in Indiana, Michigan, and Wisconsin. We construct a dummy *RTW False* that takes value 1 in these neighboring states that did not pass RTW laws in the year they were passed in Indiana, Michigan, and Wisconsin. We find no relation between *RTW False* and RM measures. The results from the falsification test further provide support to the causal relation between union power and real earnings management. Put together, due to the quasi-natural experimental nature of RTW passages, this evidence supports a causal relation between union power and real earnings management.

The other external shock to union power that we consider is the nontrivial decrease of unemployment insurance benefits. The U.S. has an unemployment insurance system that provides temporary income to eligible workers who become involuntarily unemployed. Even though the basic framework for insurance provision is common nationwide, each state has its autonomy to set the parameters of the program so that the amount of unemployment benefits varies from state to state (Agrawal and Matsa, 2013). The unemployment benefits mitigate the unemployment risk employees face, and a nontrivial negative shock to unemployment benefits, especially existing high unemployment benefits, leads employees to be more concerned about unemployment risk. Since most workers see improving job security as one of labor unions' major goals (Kochan, 1979), labor unions will be more valued and hence become more powerful when unemployment insurance benefits decrease significantly. We thus predict more upward real earnings management after a nontrivial negative shock to unemployment insurance benefits.

We construct a dummy variable *UI Negshock* which takes the value of 1 if there is a nontrivial (more than 10%) negative shock to a state's unemployment insurance benefits and 0 otherwise. We then interact *UI Negshock* with *Union* and estimate a regression that

Table 4
Robustness tests: RTW and UIBs.

Panel A1: Shock to Union Power: Passage of Right to Work (RTW) Law								
Variables	$RM\ Prod_t$	$RM\ Disx_t$	RM_t	$RM\ Prod_t$	$RM\ Disx_t$	RM_t	$Abs\ DA_t$	$Abs\ DA_t$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RTW	-0.005 (-0.26)	0.005 (0.41)	0.007 (0.35)	-0.016 (-0.92)	-0.012 (-0.48)	-0.004 (-0.29)	0.028 (1.527)	0.024 (1.397)
$Union_t$				-0.010 (-0.19)	0.011 (0.11)	0.018 (0.29)	-0.017 (-0.576)	
$Union_t \times RTW$				-0.037* (-2.05)	-0.105** (-2.56)	-0.070** (-2.21)	-0.024 (-0.617)	
$Before\ Union \times RTW$	-0.034*** (-5.96)	-0.049*** (-3.21)	-0.080*** (-8.13)					-0.004 (-0.169)
$UI\ 10\ k_t$	0.147*** (2.809)	0.059 (1.452)	0.162* (1.773)	0.131** (2.65)	0.141 (1.59)	0.052 (1.29)	0.030 (1.092)	0.032 (1.181)
$Real\ GDP\ Gr_t$	-0.016 (-0.119)	-0.055 (-0.347)	-0.044 (-0.152)	-0.002 (-0.02)	-0.006 (-0.02)	-0.039 (-0.25)	-0.022 (-0.118)	-0.031 (-0.159)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No	No
State FE	No	No	No	No	No	No	No	No
Observations	1021	990	990	1042	1010	1010	1042	1021
Adj R-squared	0.848	0.923	0.906	0.850	0.906	0.924	0.216	0.214

Panel A2: Passage of RTW as a Shock to Union Power: Dynamic Model.												
Variables	All Firms						Union Firms Only					
	$RM\ Prod_t$	$RM\ Prod_t$	$RM\ Disx_t$	$RM\ Disx_t$	RM_t	RM_t	$RM\ Prod_t$	$RM\ Prod_t$	$RM\ Disx_t$	$RM\ Disx_t$	RM_t	RM_t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RTW	-0.020** (-2.20)		-0.011 (-1.37)		-0.030** (-2.47)		-0.025** (-2.43)		-0.011 (-1.031)		-0.031** (-2.14)	
$RTW(-2)$		0.011 (1.05)		0.005 (0.54)		0.011 (0.63)		0.009 (0.99)		0.002 (0.42)		0.006 (0.47)
$RTW(-1)$		0.002 (0.09)		-0.011 (-0.88)		-0.001 (-0.05)		0.001 (0.04)		-0.012 (-0.86)		-0.007 (-0.29)
$RTW(0)$		0.005 (0.24)		0.003 (0.28)		0.012 (0.43)		-0.000 (-0.00)		-0.001 (-0.07)		0.003 (0.12)
$RTW(+1)$		-0.037*** (-3.82)		-0.027*** (-3.36)		-0.061*** (-3.56)		-0.040*** (-4.03)		-0.028*** (-3.41)		-0.062*** (-3.94)
$RTW(+2)$		-0.015 (-0.82)		-0.026* (-1.73)		-0.036 (-1.18)		-0.027 (-1.66)		-0.031** (-2.55)		-0.054* (-2.01)
$UI\ 10\ k_t$	0.097* (1.90)	0.097* (1.98)	0.087* (1.99)	0.078** (2.07)	0.157* (1.86)	0.154* (1.91)	0.043 (0.78)	0.041 (0.78)	0.113** (2.47)	0.100** (2.61)	0.153 (1.53)	0.142 (1.52)
$RealGDP\ Gr$	0.224 (1.35)	0.253 (1.58)	0.027 (0.21)	0.030 (0.24)	0.275 (1.08)	0.325 (1.32)	0.026 (0.15)	0.061 (0.36)	0.051 (0.31)	0.049 (0.33)	0.138 (0.44)	0.181 (0.61)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(continued on next page)

Table 4 (continued)

Panel A2: Passage of RTW as a Shock to Union Power: Dynamic Model.												
Variables	All Firms						Union Firms Only					
	<i>RM Prod_t</i>	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>RM_t</i>	<i>RM Prod_t</i>	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>RM_t</i>
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No	No	No	No	No	No
State FE	No	No	No	No	No	No	No	No	No	No	No	No
Observations	1195	1195	1159	1159	1159	1159	797	797	770	770	770	770
Adj. R-sq	0.847	0.847	0.918	0.918	0.903	0.903	0.863	0.863	0.917	0.917	0.913	0.913

Panel A3: Passage of RTW as a Shock to Union Power: Falsification Test						
Variables	All Firms			Union Firms Only		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>
<i>RTW false</i>	-0.004 (-0.61)	0.004 (0.42)	0.002 (0.13)	-0.009 (-1.62)	0.001 (0.09)	-0.007 (-0.53)
<i>UI 10 k_t</i>	0.117** (2.08)	0.097** (2.35)	0.186** (2.13)	0.070 (1.13)	0.126*** (3.01)	0.189* (1.89)
<i>RealGDP Gr</i>	0.268 (1.48)	0.062 (0.49)	0.350 (1.34)	0.087 (0.48)	0.080 (0.50)	0.215 (0.68)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No
State FE	No	No	No	No	No	No
Observations	1195	1159	1159	797	770	770
Adj R-squared	0.847	0.918	0.903	0.862	0.916	0.912

Panel B: Shock to Union Power: Nontrivial Unemployment Insurance Benefit Decrease						
Variables	All			High UI States		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>
<i>Union_{t-1}</i>	0.064** (2.258)	0.030 (1.369)	0.085* (1.957)	0.047 (1.41)	0.037 (1.37)	0.084** (2.11)
<i>UI Negshock_{t-1}</i>	-0.005 (-0.747)	-0.002 (-0.278)	-0.004 (-0.367)	-1.198*** (-2.82)	-0.007 (-0.04)	-1.139** (-2.16)
<i>Union × UI Negshock_{t-1}</i>	0.009 (0.457)	0.005 (0.464)	0.002 (0.071)	3.167*** (2.89)	0.055 (0.11)	3.040** (2.24)
<i>UI 10 k_t</i>	0.032 (1.077)	0.027** (2.019)	0.053 (1.547)	-0.552*** (-2.57)	-0.156 (-1.53)	-0.573*** (-3.23)
<i>Real GDP Gr_t</i>	0.004 (0.068)	0.027 (0.615)	0.007 (0.111)	0.003 (0.19)	0.024*** (3.09)	0.035* (2.04)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

(continued on next page)

Table 4 (continued)

Panel B: Shock to Union Power: Nontrivial Unemployment Insurance Benefit Decrease						
Variables	$RM\ Prod_t$	$RM\ Disx_t$	RM_t	$RM\ Prod_t$	$RM\ Disx_t$	RM_t
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2573	2496	2471	1400	1387	1379
Adj R-squared	0.800	0.897	0.879	0.809	0.901	0.881

The dependent variables are real earnings management measures. RM is the aggregate measure of real earnings management, defined as the sum of $RM\ Prod$ and $RM\ Disx$. $RM\ Prod$ is the residual from production costs ($PROD$) model (Eq. 3) and $RM\ Disx$ is the product of -1 and the residual from the discretionary expenses ($DISX$) model (Eq. 4). Sample period is from 2002 to 2016. $Before\ Union$ is firm-level union membership rate before RTW Law passed in a firm's home state and it is absorbed due to inclusion of firm fixed effects in Panel A. RTW is a dummy variable for the year in which RTW law was passed in a firm's home state. $RTW(-2)$, $RTW(-1)$, $RTW(0)$, $RTW(1)$, and $RTW(2)$ are dummy variables for two years before, one year before, the same year, one year after, and two years after RTW passage year in a firm's home state. In the falsification test, we assume firms in Illinois, Pennsylvania, and Minnesota are subject to the shock while RTW law passages actually happened in Indiana, Michigan, and Wisconsin. $UI\ 10k$ is the maximum state employment benefits in 10,000 of U.S. dollars. High UI state is a state that unemployment insurance benefit in the state is above median unemployment insurance benefit. Other controls in both panels include $Opcf\ Vol_t$, $Logta_{t-1}$, $Leverage_{t-1}$, ROA_{t-1} , $Dum\ Div_{t-1}$, $Xrd/Sale_{t-1}$, $Ppent/Ta_{t-1}$, and Q_{t-1} . All models include firm and year fixed effects (FE). Standard errors are clustered at the state level and robust t-statistics are reported in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

controls for firm fixed and year fixed effects and again resembles a difference-in-difference test with continuous treatment. We control for the same explanatory variables in the regression and find the coefficient estimate on the interaction term $Union \times UI\ Negshock$ to be positive and highly significant for firms in states with above-median unemployment insurance (UI) benefits. Note that $Union$ is a time-varying variable so that we can still estimate its main effect in a regression model with an interaction term and firm fixed effects.

For states with high UI benefits, the level of real earnings management is actually lower (negative coefficient on $UI\ 10\ K$, which is the dollar amount of UI) and gets lower when nontrivial negative shock to UI benefits hit ($UI\ Negshock$) if the firm is non-unionized. But real earnings management is significantly higher at unionized firms when nontrivial negative UI shock hits. For states with low UI benefits, we do not observe a stronger union effect on real earnings management during negative UI benefits shocks, likely due to the insignificant role UI benefits play in these states. For all firm years, there is a positive and significant relation only between $Union$ and $RM\ Prod/RM$. The relation between $RM\ Disc$ and $Union$ is positive yet insignificant, but higher $RM\ Disc$ is associated with higher $UI\ 10\ K$. These results suggest that the union effect on real earnings management is more likely driven by abnormal production ($RM\ Prod$). In the case of all firm-year samples, the interaction term $Union \times UI\ Negshock$ is positive yet insignificant for all RM measures. In summary, our findings under quasi-natural experiment settings provide strong support to [Hypothesis 1](#).

4.4. Channel(s) for real earnings management

While labor union has incentives to encourage and/or allow abnormal production because it ensures or increases labor demand, unions' incentives for abnormal discretionary expenditures is more ambiguous because discretionary expenditures have components associated with labor costs. For example, selling, general, and administrative (SG&A) expenses often include expenditures such as "employee training and support costs" ([Roychowdhury, 2006](#)) to improve employee satisfaction. Facing earnings pressure, managers of union firms are less likely to reduce labor related SG&A expenses due to high labor adjustment costs ([Chang et al., 2022](#)), implying that it is better for managers of unionized firms to use abnormal production than abnormal discretionary expenditures.

To gain a better understanding of real earnings management through abnormal discretionary expenditures, we break down $RM\ Disc$ into individual accounts (abnormal SG&A, abnormal advertising, abnormal R&D) and estimate Eq. (5) with these individual accounts of $RM\ Disc$ measures. Untabulated results show that the relation between $Union$ and these individual real activities abnormalities is all positive yet not statistically significant.¹⁵ Further exploration reported in Appendix 2 shows that the positive relation between $Union$ and $RM\ Disc$ vanishes for firms in the Asset4 database, which are usually larger than firms in the Bloomberg database and thus presumably have a higher portion of labor-related discretionary expenditures. Lastly, we examine whether the effect of union on $RM\ Disc$ is different between firms with high labor costs and firms with low labor costs in the discretionary expenditures. To proxy for labor costs in the discretionary expenditures, we create dummy variables: $High\ Train\ Cost1$ and $High\ Train\ Cost2$ where $High\ Train\ Cost1$ ($High\ Train\ Cost2$) takes the value of 1 if workforce training & development score is above the annual sample median (0.5), else 0. Workforce training & development score is from Asset4 database. Results reported in [Table 5](#) show positive and significant coefficients for $Union$. The F -tests for firms with high labor costs, however, produce insignificant statistics (i.e., $Union_{t-1} + Union_{t-1} \times High\ Train\ Cost_{t-1} = 0$) for both measures, indicating that the effect of union strength on abnormal discretionary expenditures is significant only for unionized firms with low discretionary labor costs.

Overall, our evidence is consistent with conflicting incentives between labor and non-labor discretionary expenditures, which may weaken the effect of labor unions on real earnings management through abnormal discretionary expenditures. We thus conclude that abnormal production is the most salient channel for the union to exert power over real earnings management.

4.5. Choice between real earnings management versus accruals management

While ample evidence suggests that labor union power is positively associated with real earnings management that accomplishes upward earnings manipulation, we ask whether this relation persists in settings where there is more incentive to manage earnings upwards and whether and how managers trade-off between real earnings management and accruals management, as both could accomplish such a goal. In order to answer these questions, we employ a two-stage Heckman procedure to focus on firm years when firms have more incentive and ability to engage in earnings management to meet or beat the benchmark. Specifically, in the first stage, we follow [Zang \(2012\)](#) to estimate a Probit model that includes both *Suspect* and *Non-suspect* firm years that engage in earnings management to identify characteristics of suspect firm years.¹⁶ In the second stage, we include the inverse Mills ratio from the first stage and examine how real activities management and accruals management are determined with respect to the costs of doing so, with the presence of labor union being one factor that could motivate managers to choose real activities management over accruals management.

[Table 6](#) presents the estimation results. Column (1) reports the first stage results, which are estimated from a Probit model that explains the earnings management suspect firms, following [Zang \(2012\)](#). Consistent with [Zang \(2012\)](#), we show that suspect firms have

¹⁵ The additional tests are available upon request.

¹⁶ Following [Roychowdhury \(2006\)](#), suspects just beating/meeting the zero benchmark are defined as (1) firm-years with earnings before extraordinary items over lagged assets between 0 and 0.01 and (2) firm-years with the change in basic EPS excluding extraordinary items from last year between 0 and 2 cents. Other cutoff points yield similar results. Different from [Zang \(2012\)](#) we did not consider firm-years just meeting or beating analyst forecast consensus and management guidance to mitigate the data loss for the test and due to non-subscription of management guidance data, respectively.

Table 5
Training and development costs and abnormal discretionary expenditures.

Variables	<i>RM DISX_t</i> (1)	<i>RM DISX_t</i> (2)
<i>Union_{t-1}</i>	0.049** (2.061)	0.046* (1.909)
<i>Abs DA_t</i>	0.002 (0.074)	0.004 (0.126)
<i>High Train1_{t-1}</i>	0.006 (1.268)	
<i>Union_{t-1} × High Train Cost1_{t-1}</i>	-0.014 (-0.798)	
<i>High Train2_{t-1}</i>		0.001 (0.152)
<i>Union_{t-1} × High Train Cost2_{t-1}</i>		-0.016 (-0.955)
<i>Opcf Vol_t</i>	-0.036 (-0.369)	-0.035 (-0.365)
<i>Logta_{t-1}</i>	0.030*** (3.964)	0.031*** (4.083)
<i>Leverage_{t-1}</i>	0.021 (0.765)	0.021 (0.765)
<i>ROA_{t-1}</i>	0.034 (1.147)	0.033 (1.120)
<i>Dum Div_{t-1}</i>	-0.008 (-0.875)	-0.008 (-0.905)
<i>Xrd/Sale_{t-1}</i>	-0.059*** (-3.009)	-0.060*** (-3.106)
<i>Missing Xrd_{t-1}</i>	-0.013 (-0.746)	-0.013 (-0.759)
<i>Ppent/TA_{t-1}</i>	-0.046 (-0.957)	-0.045 (-0.954)
<i>Q_{t-1}</i>	-0.001 (-0.255)	-0.001 (-0.247)
F-Test:		
<i>Union_{t-1} + Union_{t-1} × High Train1_{t-1} = 0</i>	F = 2.56 (p = 0.119)	
<i>Union_{t-1} + Union_{t-1} × High Train2_{t-1} = 0</i>		F = 1.93 (p = 0.173)
Year FE	Yes	Yes
Firm FE	Yes	Yes
Observations	1855	1855
Adj R-squared	0.914	0.914

The dependent variable is *RM DISX*, a measure of real earnings management through abnormal discretionary expenditures. *RM Disx* is the product of -1 and the residual from the discretionary expenses (*DISX*) model (Eq. 4) and *RM Prod* is the residual from production costs (*PROD*) model (Eq. (3)). *High Train Cost1* (*High Train Cost2*) takes the value of 1 if workforce training & development score is above the annual sample median (0.5), and 0 otherwise. Workforce training & development score is from Asset4 database. Sample period is from 2002 to 2016. Standard errors are clustered at the industry and state levels. Both models include firm and year fixed effects (FE). Robust *t*-statistics are reported in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

significantly higher analysts following, higher growth opportunities, a higher number of shares outstanding, and higher return on assets (ROA) than non-suspect firms. Moreover, the suspect firms in our sample are also more likely to be habitual beaters of analyst consensus forecasts and are more likely to have new stock issuance in the following year than non-suspect firms, even though the positive relation is not statistically significant. The lack of significance for the latter variables may be due to the lack of test power driven by the smaller sample size than Zang (2012). We obtain the inverse Mills ratio (*IMR*) and estimate the second stage regressions.

Columns (2) and (3) report the second stage results of the trade-off between real earnings management and accruals management for suspect firms only. Again, following Zang (2012), we consider the following costs associated with real earnings management and accruals management that influence the trade-off between the two at the suspect firm. First, we include costs that are associated with real earnings management, including the market share of sales in its industry (*Market Share*), financial health (*Z-score*), institutional ownership (*INST*), and marginal tax rate (*MTR*). Second, we include costs associated with accruals management captured by a number of indicator variables: whether the suspect firm's auditor is one of the Big 4 (*Big 4*), whether the auditor has an above-median tenure with the firm (*Audit Tenure*), whether the net operating asset intensity in an industry-year is above-median (*NOA*), and a variable that describes the suspect firm's cash conversion cycle (*Cycle*). Finally, the control variables include *ROA*, *LogTA* (logarithm of the firm's

Table 6
The Trade-Off between Real Earnings Management and Accrual-Based Earnings Management: Heckman Selection Model.

Variables	<i>Suspect_t</i> (1)	<i>RM Prod_t</i> (2)	<i>AEM_t</i> (3)
<i>Unexpected RM_t</i>			0.009 (0.98)
<i>Union_t</i>		0.242*** (4.98)	-0.174 (-1.43)
<i>Market Share_{t-1}</i>		0.146*** (2.84)	-0.125* (-1.69)
<i>ZScore_{t-1}</i>		0.007 (0.88)	-0.006 (-1.57)
<i>INST_{t-1}</i>		0.050 (0.84)	-0.028 (-1.11)
<i>MTR_t</i>		0.017 (0.09)	-0.054** (-2.17)
<i>Big4_t</i>		0.070** (1.99)	-0.065* (-1.86)
<i>Auditor Tenure_t</i>		-0.000 (-0.46)	0.000 (1.37)
<i>NOA_{t-1}</i>		-0.017 (-0.99)	0.016* (1.73)
<i>Cycle_{t-1}</i>		-0.000 (-1.49)	0.000 (1.50)
<i>ROA_t</i>	0.934** (2.12)	-1.285*** (-4.69)	0.909 (1.42)
<i>Logta_t</i>		0.027* (1.78)	-0.025* (-1.76)
<i>MB_t</i>	-0.014* (-1.75)	-0.006*** (-3.69)	0.006* (1.72)
<i>Earn_t</i>		0.000 (0.27)	
<i>Habitual Beater_t</i>	0.120 (0.98)		
<i>Stock Issuance_t</i>	0.009 (0.12)		
<i>Analyst Following_t</i>	0.109** (2.02)		
<i>Shares_t</i>	0.181*** (6.71)		
<i>Pred RM_t</i>			0.804 (1.59)
<i>IMR_t</i>		0.041 (0.57)	-0.017 (-1.63)
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry FE	No	No	No
State FE	No	No	No
Adj. (Pseudo) R-squared	0.009	0.205	0.108
Observations	11,627	2067	2067

We present results from a two-stage Heckman procedure following Zang (2012) below, with those from the first stage in Column (1) and the second stage in Columns (2) and (3). The dependent variable for Column (1) is a dummy *Suspect*, which takes value 1 for firm-years just beating/meeting zero earnings benchmark, and 0 otherwise. The dependent variables for Columns (2) and (3) are real earnings management through abnormal production (*RM Prod*) and accruals earnings management (*AEM*). For the first stage probit regression, *M.B.* is market to book value ratio; *Habitual Beater* is the number of times of beating/meeting analysts' forecast consensus in the past four quarters; *Stock Issuance* is a dummy that takes value 1 if the firm issues equity in the next fiscal year and 0 otherwise; *Analyst Following* is the log of 1 plus the number of analysts following the firm; *Shares* is the log number of shares outstanding. For the second stage regression with *RM Prod* as the dependent variable, *Market Share* is the percentage of a firm's sales to the total sales of its industry, which is defined by three-digit SIC codes; *ZScore* is calculated as $0.3 \frac{NI}{Asset} + 1.0 \frac{Sales}{Assets} + 1.4 \frac{Retained Earnings}{Assets} + 1.2 \frac{Working Capital}{Assets} + 0.6 \frac{Stock Price * Shares Outstanding}{Total Liabilities}$; *INST* is the percentage of institutional ownership; *MTR* is the marginal tax rate; *Big4* is a dummy that takes value 1 if the firm's auditor is one of the Big 4, and 0 otherwise; *Audit Tenure* is a dummy that takes value 1 if the number of years the auditor has audited the client is above sample median, and 0 otherwise; *NOA* is a dummy that takes value 1 if the net operating assets divided by lagged sales is above the median of the corresponding industry-year, and 0 otherwise; *Cycle* is the days receivables plus the days inventory less the days payable; *LogTA* is the log value of total assets; *Earn* is the earnings before extraordinary items minus discretionary accruals and production costs, plus discretionary expenditures; *Pred RM* is the

predicted value of real earnings management; and *IMR* is the inverse Mills ratio, estimated from the first stage of the Heckman procedure. All models include firm and year fixed effects (FE). ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Motives for real activities manipulation: reducing expected labor costs.

Variables	<i>RM Prod_t</i>	<i>RM Dissx_t</i>	<i>RM_t</i>
	(1)	(2)	(3)
<i>Union_{t-1}</i>	0.036 (1.14)	0.002 (0.11)	0.027 (0.67)
<i>Union_{t-1} × Highind Intang_{t-1}</i>	0.072** (2.06)	0.071** (2.04)	0.144** (2.41)
<i>Highind Intang_{t-1}</i>	-0.022** (-2.32)	-0.012 (-1.42)	-0.033** (-2.54)
<i>Abs DA_t</i>	0.189*** (3.44)	-0.013 (-0.39)	0.160*** (2.71)
<i>Opcf Vol_t</i>	-0.203 (-1.09)	-0.108 (-1.38)	-0.292 (-1.54)
<i>Logta_{t-1}</i>	0.012 (1.14)	0.025*** (2.77)	0.043*** (3.04)
<i>Leverage_{t-1}</i>	-0.057 (-1.47)	0.023 (1.13)	-0.036 (-0.71)
<i>ROA_{t-1}</i>	-0.080** (-2.24)	0.016 (0.86)	-0.053 (-1.24)
<i>Dum Div_{t-1}</i>	-0.005 (-0.63)	0.001 (0.16)	-0.005 (-0.36)
<i>Xrd/Sale_{t-1}</i>	0.008 (0.27)	-0.068*** (-3.82)	-0.072*** (-2.71)
<i>Ppent/TA_{t-1}</i>	0.006 (0.09)	-0.061* (-1.69)	-0.053 (-0.66)
<i>Q_{t-1}</i>	-0.021*** (-3.93)	-0.001 (-0.12)	-0.022*** (-3.06)
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Observations	2584	2507	2482
Adj R-squared	0.800	0.897	0.879

The dependent variables are real earnings management measures. *RM* is the aggregate measure of real activities management, defined as the sum of *RM Prod* and *RM Dissx*. *RM Prod* is the residual from production costs (*PROD*) model (Eq. 3) and *RM Dissx* is the product of -1 and the residual from the discretionary expenses (*DISX*) model (Eq. 4). Sample period is from 2002 to 2016. High intangible industries have above-median organization capital intensity with the median of organization capital intensity of 0.5. Low intangible industries have below-median organization capital intensity. All models include firm and year fixed effects (FE). Standard errors are clustered at the industry and state levels, and robust *t*-statistics are reported in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

assets), and *MB*, and the estimated *IMR* from the first stage of the Heckman regression. The estimation for real earnings management includes *Earn* (pre-managed earnings), while that for accruals management includes *Pred-RM* (predicted real activities management) and *unexpected RM* (difference between actual and predicted real earnings management) for accruals management because real activities manipulation is expected to precede accruals management (Zang, 2012).

The coefficient on *Market Share* is positive and highly significant for the *RM* (real earnings management) Equation and negative and significant for the *AM* (accruals management) equation. This suggests that firms with a leader status in the industry are more likely to have real earnings management and use accrual-based earnings management less. The coefficient on *LogTA* is positive for real earnings management, suggesting that relatively larger firms in the industry are more likely to have *RM* while those with relatively smaller sizes in the industry are more likely to have *AM*, both as expected and consistent with results in Zang (2012).

4.6. Causes for real earnings management

In the presence of labor unions, managers have incentives for both upward and downward earnings manipulation (Bowen et al., 1995; Dou et al., 2016; Liberty and Zimmerman, 1986; DeAngelo and DeAngelo, 1991). The net effect of labor unions on real earnings management, therefore, could be driven by firms with certain characteristics that lead to relatively stronger incentives for upward earnings management.

We explore two possible cases where motives for upward real earnings management dominate those against upward real earnings management: (1) firms with high intangibility that face high cost of hiring and retaining employees and (2) firms with labor over-investment that are difficult to adjust labor costs in the presence of labor unions.

4.6.1. Firms with high organizational capital

At firms that are more dependent on organizational capital, managerial incentives for upward earnings management outweigh those against upward earnings management, as these firms have higher costs in hiring and retaining high-quality employees. We, therefore, expect more upward real activities manipulation at unionized firms with higher intangibility.

Organizational capital refers to durable input in production that is distinct from physical capital (Eisfeldt and Papanikolaou, 2013, 2014), which includes both knowledge capital (R&D) and human capital (Peters and Taylor, 2017). Since firms with high intensity of organizational capital usually have a high dependence on human capital and hence high hiring and retention cost, we can use organization capital intensity to capture the relative strength of incentive for upward real earnings management. Specifically, we construct a dummy variable, *Highind Intang*, which takes the value of 1 if the proportion of organization capital for the industry that a firm belongs to its three-digit SIC code is above 50% and 0 otherwise.

Table 7 presents the estimation results. When we include *Highind Intang* and the interaction term *Highind Intang* × *Union* in Eq. (5), we find the coefficient estimates for *Highind Intang* × *Union* are positive and significant for *RM Prod*, *RM Disx*, and *RM*. These results suggest that the union effect on upward real earnings management is much stronger in firms that have a higher dependence on human capital. Furthermore, real earnings management is significantly less at firms with high dependence on human capital but no labor union membership. Our findings are consistent with the hypothesis that real earnings management that results in upward earnings should be observed at firms with stronger needs to lower hiring and retention cost, for example, firms with higher intangibility, supporting Hypothesis 1a.

4.6.2. Firms with labor overinvestment

Labor unions emphasize the importance of labor and fight for job security and stable employment (Bradley et al., 2016). The inflexibility in employment adjustment in a unionized firm combined with labor overinvestment is likely to drive real earnings management that keep the excess labor employed. We measure labor overinvestment as the difference between actual net hiring and the expected level of net hiring, where net hiring is estimated using the model (Eq. 6) developed by Pinnuck and Lillis (2007), which is further refined in Jung et al. (2014).

Table 8
Motives for real activities manipulation: effect of labor overinvestment.

Variables	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>
	(1)	(2)	(3)
<i>Union_{t-1}</i>	0.018 (0.75)	0.008 (0.36)	0.014 (0.43)
<i>Union_{t-1} × AbNetHire_{t-1}</i>	0.027** (2.06)	0.023** (2.19)	0.047** (2.29)
<i>AbNetHire_{t-1}</i>	-0.004 (-0.83)	-0.008** (-2.02)	-0.013 (-1.33)
<i>Abs DA_t</i>	-0.040 (-1.35)	-0.021 (-1.21)	-0.063* (-1.69)
<i>Opcf Vol_t</i>	-0.204 (-1.40)	-0.248** (-2.35)	-0.459** (-2.29)
<i>Logta_{t-1}</i>	0.018 (1.55)	0.020** (2.42)	0.039*** (2.96)
<i>Leverage_{t-1}</i>	-0.076** (-2.42)	0.015 (0.58)	-0.058 (-1.09)
<i>ROA_{t-1}</i>	-0.073** (-2.32)	0.006 (0.28)	-0.054 (-1.08)
<i>Dum Div_{t-1}</i>	-0.002 (-0.21)	0.005 (0.64)	0.001 (0.06)
<i>Xrd/Sale_{t-1}</i>	-0.018 (-0.84)	-0.041** (-2.56)	-0.055 (-1.64)
<i>Ppent/TA_{t-1}</i>	0.007 (0.10)	-0.052 (-1.13)	-0.039 (-0.39)
<i>Q_{t-1}</i>	-0.021*** (-2.77)	0.001 (0.23)	-0.022** (-2.37)
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Observations	2018	1951	1930
Adj R-squared	0.792	0.898	0.875

The dependent variables are real earnings management measures. *RM* is the aggregate measure of real activities management, defined as the sum of *RM Prod* and *RM Disx*. *RM Prod* is the residual from production costs (PROD) model (Eq. 3) and *RM Disx* is the product of -1 and the residual from the discretionary expenses (DISX) model (Eq. 4). *AbNetHire_{t-1}* takes 1 if abnormal labor investment is positive, else 0. The calculation of *AbNetHire_{t-1}* follows Pinnuck and Lillis (2007) and Jung, Lee, and Peter (2014). Sample period is from 2002 to 2016. All models include firm and year fixed effects (FE). Standard errors are clustered at the industry and state levels, and robust *t*-statistics are reported in parentheses. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

$$\begin{aligned}
\text{NetHire} = & \beta_0 + \beta_1 \text{SalesGrowth}_{i-1} + \beta_2 \text{SalesGrowth}_{it} + \beta_3 \Delta \text{ROA}_{it} + \beta_4 \\
& \Delta \text{ROA}_{i-1} + \beta_5 \text{ROA}_{it} + \beta_6 \text{Return}_{it} + \beta_7 \text{Size}_{i-1} + \beta_8 \text{Quick}_{i-1} + \beta_9 \Delta \text{Quick}_{i-1} + \beta_{10} \\
& \Delta \text{Quick}_{it} + \beta_{11} \text{Lev}_{i-1} + \beta_{12} \text{LossBin1}_{i-1} + \beta_{13} \text{LossBin2}_{i-1} + \beta_{14} \text{LossBin3}_{i-1} + \beta_{15} \text{LossBin4}_{i-1} + \beta_{16} \text{LossBin5}_{i-1} + \varepsilon_{it}
\end{aligned} \tag{6}$$

While Jung et al. (2014) calculate the absolute value of the residuals as the difference between actual net hiring and optimal hiring estimated based on the Pinnuck and Lillis (2007) model, we calculate the raw difference, *AbNetHire*, as our measure of abnormal labor investment. Positive *AbNetHire* means labor overinvestment, and negative *AbNetHire* suggests labor underinvestment. We then include *AbNetHire* and the interaction term, *Union* × *AbNetHire*, together with other independent variables in Eq. (5) as well as the year and firm fixed effects, re-estimate the regression, and report results in Table 8.

Consistent with Hypothesis 1b, the coefficient estimates for *Union* × *AbNetHire* are positive and significant for *RM Prod*, *RM Disx*, and *RM*. This suggests that labor adjustment inflexibility associated with labor overinvestments results in real earnings management for firms with unions.

5. Conclusion

We provide evidence that union membership percentage is positively associated with real earnings management. Specifically, we present robust evidence that unionized firms use real earnings management instead of accruals management when they have incentives to meet or beat earnings targets. Our results hold in causality tests by employing two external shocks that influence the strength of unions: (1) states' adoption of right-to-work (RTW) laws and (2) changes in states' unemployment insurance benefits (UIBs). We also document strong evidence that labor union strength can be an important consideration when managers decide between accruals and methods of real earnings management, especially abnormal production.

Our results are consistent with managerial incentives for upward earnings management to ensure employees' perceived job security and/or to reduce the cost of employee hiring and retention. We also find that firms with certain characteristics are more likely to tilt the decision towards upward real earnings management, for example, those with high intangibility hence more labor stability risk and those with labor overinvestment where operating inflexibility limits options.

Our study has implications on the evidence that labor unions may have a negative consequence on operating efficiency by increasing labor and capital adjustment costs (Lewis, 1963; McKersie and Klein, 1983; Connolly et al., 1986; Hirsch and Link, 1987; Atanassov and Kim, 2009; Chen et al., 2011). Since real earnings management deviates from normal operational practices (Bushee, 1998; Cohen and Zarowin, 2010; Gunny, 2010; Wongsunwai, 2013; Cheng et al., 2015), our evidence suggests that real earnings management may also contribute to operating inefficiency of unionized firms. Future research can examine the direct relation between real earnings management and operating efficiency in unionized firms.

Even though our sample period starts after 2002 and is not subject to the policy effect due to SOX, it is still a short window, which prevents us from conducting tests to assess the impact due to changing policy environment. Future research can employ a longer sample period to investigate the role of changing policy environment. This will be very helpful for an empirical design that relies on residuals from regressions estimated over the full sample period as dependent variables. It would also be interesting to explore whether the incentive to manage earnings change after RTW laws adoption and how managers would choose between accruals and real earnings management if the incentive to manage earnings stays constant.

Appendix 1 Variable Definitions

Variable	Definition
<i>Union</i>	Percentage of union membership at the firm level
<i>Dum Union</i>	Dummy variable that takes the value of 1 if a firm has labor union, and 0 otherwise, based on data availability in Asset4 and Bloomberg
<i>Union SEC</i>	Dummy variable that takes the value of 1 if a firm mentions union in its 10 K filing, and 0 otherwise. The determination of whether a firm has a union is based on a textual analysis of firms' 10 K filing at SEC EDGAR, following Hamm, Jung, and Lee (2016).
<i>RM Prod</i>	The residual from production costs (<i>PROD</i>) model
<i>RM Disx</i>	Negative of the residual from the discretionary expenses (<i>DISX</i>) mode
<i>RM</i>	An aggregate measure of real earnings management, defined as the sum of <i>RM Prod</i> and <i>RM Disx</i> .
<i>Abs DA</i>	A measure of accrual-based earnings management defined as absolute discretionary accruals calculated using the modified Jones (1991) model as in Dechow et al. (1995), deflated by total assets and estimated by year and for each two-digit SIC code.
<i>Opcf vol</i>	Operating cash flow volatility, measured by the most recent five years' standard deviation of operating cash flows/total assets
<i>Logta</i>	Log of total assets
<i>Leverage</i>	(Long-term debt + debt in current liabilities) / total assets
<i>ROA</i>	Income Before Extraordinary Items/total assets
<i>Dum Div</i>	Dummy variable that takes one if a firm pays dividends, else zero
<i>Xrd/Sale</i>	R&D/Sale, if R&D is missing, it is treated as zero
<i>Ppent/T.A.</i>	Net plant & equipment / total assets
<i>Q</i>	Tobin's Q, calculated as (Total Assets - Book Value of common equity + Market value of common equity)/Total Assets.
<i>HighInd Intang</i>	Dummy variable takes the value of 1 if industry (using SIC3 classification) organization capital intensity is above 50%, intangible intensity is from Peter and Tyler (2017)

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Variable	Definition
<i>RTW</i>	Dummy variable that takes the value of 1 if the year is the year Right to Work law passes or after, else 0
<i>Before Union</i>	Firm level union membership rate year before RTW passes
<i>UI 10 k</i>	The maximum state unemployment benefit in 10,000 US
<i>Real GDP Gr</i>	State real GDP growth rate
<i>UI Negshock</i>	Dummy variable that takes the value of 1 if state unemployment benefits drop more than 10%, else 0
<i>Opcfsd3</i> (−1 to +1)	Operating cash flow standard deviation using time t-1 to t + 1
<i>Empcv3</i>	Coefficient of variation of number of employees using time t-1 to t + 1

Appendix 2 Firm-Level Union Data Sources

Our union sample is based on the combination of firm-level union data from Asset4 and Bloomberg. Specifically, we start from Asset4 union data and complement Asset4 data with Bloomberg union data when union membership information is missing in Asset4 data. We use Asset4 as our base database because it has a longer and more stable coverage of firm-level unionization data than Bloomberg. The original number of observations from Bloomberg is 2066, among which 1155 overlaps with Asset4, resulting in 911 non-overlapping union observations in our final sample. We report a comparison of these two data sources below:

Asset4 sample:

Variable	N	Mean	Median	P25	P75	Std
Union	1740	0.212	0.137	0.010	0.340	0.227
Total Asset (millions)	1740	13,037	6502	3418	15,122	16,430

Bloomberg sample:

Variable	N	Mean	Median	P25	P75	Std
Union	2066	0.174	0.080	0.000	0.280	0.222
Total Asset (millions)	2066	10,700	4710	1939	11,496	15,718

The average percentage of union membership at the firm level (Union) is 21.2% for the Asset4 sample and 17.4% for the Bloomberg sample, respectively, consistent with the difference in firm size between the two databases. We also find that the correlations of the union percentage variable for 1155 overlapping observations are over 99%, suggesting that the two sources of firm-level union membership data are highly consistent with each other.

As a robustness check, we investigate whether our main results hold when we exclude the Bloomberg data. The table below shows the estimation results. We find our result continues to hold based on $RM\ Prod_t$ and RM_t while results do not show a significant relation between labor unions and discretionary expenses ($RM\ Discx_t$). The results suggest that earnings management using discretionary expenses such as R&Ds in the presence of unions is more likely to be driven by relatively smaller firms.

Baseline Regression – Union and Real Earnings management (Asset4 data only).

	$RM\ Prod_t$	$RM\ Discx_t$	RM_t
Variables	(1)	(2)	(3)
$Union_{t-1}$	0.222*** (3.51)	0.013 (0.47)	0.225*** (3.08)
$Abs\ DA_t$	0.086** (2.57)	0.037 (1.58)	0.108** (2.16)
$Opcf\ Vol_t$	−0.202 (−1.13)	−0.220** (−2.09)	−0.522** (−2.28)
$Logta_{t-1}$	0.013 (1.19)	0.017* (1.82)	0.036** (2.10)
$Leverage_{t-1}$	−0.005 (−0.09)	0.052 (1.62)	0.062 (0.87)
ROA_{t-1}	−0.030 (−0.67)	0.047 (1.29)	0.023 (0.41)
$Dum\ Div_{t-1}$	−0.010	−0.005	−0.013

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	<i>RM Prod_t</i>	<i>RM Disx_t</i>	<i>RM_t</i>
	(-0.92)	(-0.63)	(-0.78)
<i>Xrd/Sale_{t-1}</i>	0.030	-0.038	-0.005
	(0.82)	(-1.10)	(-0.07)
<i>Ppent/TA_{t-1}</i>	-0.026***	-0.005	-0.029***
	(-3.75)	(-0.62)	(-3.66)
<i>Q_{t-1}</i>	0.222***	0.013	0.225***
	(3.51)	(0.47)	(3.08)
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industry FE	No	No	No
State FE	No	No	No
Observations	1708	1636	1623
Adj R-squared	0.813	0.888	0.883

References

- Agrawal, A.K., Matsa, D.A., 2013. Labor unemployment risk and corporate financing decisions. *J. Financ. Econ.* 108 (2), 449–470.
- Appelbaum, E., Hunter, L.W., 2003. Union participation in strategic decisions of corporations. In: NBER Emerging Labor Market Institutions for the 21st Century.
- Armstrong, C.S., Larcker, D.F., Ormazabal, G., Taylor, D.J., 2013. The relation between equity incentives and misreporting: the role of risk-taking incentives. *J. Financ. Econ.* 109, 327–350.
- Atanassov, J., Kim, E.H., 2009. Labor and corporate governance: international evidence from restructuring decisions. *J. Financ.* 64 (1), 341–374.
- Atieh, A., Hussain, S., 2012. Do U.K. firms manage earnings to meet dividend thresholds? *Account. Bus. Res.* 42 (1), 77–94.
- Baldwin, C., 1983. Productivity and labor unions: an application of the theory of self-enforcing contracts. *J. Bus.* 56 (2), 155–185.
- Barton, J., Simko, P.J., 2002. The balance sheet as an earnings management constraint. *Account. Rev.* 77 (s-1), 1–27.
- Bartov, E., Givoly, D., Hayn, C., 2002. The rewards to meeting or beating earnings expectations. *J. Account. Econ.* 33 (2), 173–204.
- Bova, F., 2013. Labor unions and management's incentive to signal a negative outlook. *Contemp. Account. Res.* 30, 14–41.
- Bowen, R., Ducharme, L., Shores, D., 1995. Stakeholders' implicit claims and accounting method choice. *J. Account. Econ.* 20 (3), 225–294.
- Bradley, D., Kim, I., Tian, X., 2016. Do unions affect innovation? *Manag. Sci.* 63 (7), 2251–2271.
- Bureau of Labor Statistics, 2016. Union membership in the United States. www.bls.gov.
- Burgstahler, D., Dichev, I., 1997. Earnings management to avoid earnings decreases and losses. *J. Account. Econ.* 24, 99–126.
- Bushee, B., 1998. The influence of institutional investors on myopic R&D investment behavior. *Account. Rev.* 73 (3), 305–333.
- Chang, H., Dai, X., Lohwasser, E., Qiu, Y., 2022. Organized labor effects on SG&a Cost Behavior. *Contemp. Account. Res.* 39 (1), 402–427.
- Chava, S., Danis, A., Hsu, A., 2020. The economic impact of right-to-work laws: evidence from collective bargaining agreements and corporate policies. *J. Financ. Econ.* 137 (2), 451–469.
- Chen, H., Kacperczyk, M., Ortiz-Molina, H., 2011. Labor unions, operating flexibility, and the cost of equity. *J. Financ. Quant. Anal.* 46 (1), 25–58.
- Cheng, Q., Warfield, T.D., 2005. Equity incentives and earnings management. *Account. Rev.* 80 (2), 441–476.
- Cheng, B., Ioannou, I., Serafeim, G., 2014. Corporate social responsibility and access to finance. *Strateg. Manag. J.* 35 (1), 1–23.
- Cheng, Q., Lee, J.K.B., Shevlin, T.J., 2015. Internal governance and real earnings management. *Account. Rev.* 91 (4), 1051–1085.
- Cho, H., Lee, B., Lee, W., Sohn, B., 2017. Do labor unions always lead to underinvestment? *J. Manag. Account. Res.* 29, 45–66.
- Cohen, D.A., Zarowin, P., 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *J. Account. Econ.* 50, 2–19.
- Cohen, D., Dey, A., Lys, T., 2008. Real and accrual-based earnings management in the pre and post Sarbanes Oxley periods. *Account. Rev.* 83, 757–787.
- Connolly, R.A., Hirsch, B.T., Hirschey, M., 1986. Union rent seeking, intangible capital and market value of the firm. *Econ. Stat.* 68 (November), 567–577.
- Cullinan, C.P., Knoblett, J.A., 1994. Unionization and accounting policy choices: an empirical examination. *J. Account. Public Policy* 13 (1), 49–78.
- DeAngelo, H., DeAngelo, L., 1991. Union negotiations and corporate policy: a study of labor concessions in the domestic steel industry during the 1980s. *J. Financ. Econ.* 30, 3–43.
- Dechow, P., Sloan, R., Sweeney, A., 1995. Detecting earnings management. *Account. Rev.* 70, 193–225.
- Dou, Y., Khan, M., Zou, Y., 2016. Labor unemployment insurance and earnings management. *J. Account. Econ.* 61, 166–184.
- Doukakis, L.C., 2014. The effect of mandatory IFRS adoption on real and accrual-based earnings management activities. *J. Account. Public Policy* 33 (6), 551–572.
- Efendi, J., Srivastava, A., Swanson, E.P., 2007. Why do corporate managers misstate financial statements? The role of option compensation and other factors. *J. Financ. Econ.* 85 (3), 667–708.
- Eisfeldt, A.L., Papanikolaou, D., 2013. Organization capital and the cross section of expected returns. *J. Financ.* 58, 1365–1406.
- Eisfeldt, A.L., Papanikolaou, D., 2014. The value of ownership of intangible capital. *Am. Econ. Rev. Pap. Proc.* 104, 1–8.
- Faleye, O., Mehrotra, V., Morck, R., 2006. When labor has a voice in corporate governance. *J. Financ. Quant. Anal.* 41 (3), 489–510.
- Graham, J., Harvey, C., Rajgopal, S., 2005. The economic implications of corporate financial reporting. *J. Account. Econ.* 40 (1–3), 3–73.
- Grout, P., 1984. Investment and wages in the absence of binding contracts: a Nash bargaining approach. *Econometrica* 52 (2), 446–460.
- Gunny, K.A., 2010. The relation between earnings management using real activities manipulation and future performance: evidence from meeting earnings benchmarks. *Contemp. Account. Res.* 27 (3), 855–888.
- Hamm, S.J.W., Jung, B., Lee, W., 2018. Labor unions and income smoothing. *Contemp. Account. Res.* 35 (3), 1201–1228.
- Heckman, J.J., 1979. Sample selection bias as a specification error. *Econometrica* 47 (1), 153–161.
- Hilary, G., 2006. Organized labor and information asymmetry in the financial markets. *Rev. Acc. Stud.* 11 (4), 525–548.
- Hirsch, B.T., Link, A.N., 1987. Labor union effects on innovative activity. *J. Lab. Res.* 8 (Fall), 323–332.
- Hirsch, B.T., Macpherson, D.A., 2003. Union membership and coverage database from the current population survey: note. *ILR Rev.* 56 (2), 349–354.
- Jones, J., 1991. Earnings management during import relief investigations. *J. Account. Res.* 29, 193–228.
- Jung, B., Lee, W., Weber, D.P., 2014. Financial reporting quality and labor investment efficiency. *Contemp. Account. Res.* 31 (4), 1047–1076.
- Kim, B.H., Liscic, L.L., Myers, L.A., Pevzner, M., 2011. Debt Contracting and Real Earnings Management.
- Klasa, S., Maxwell, W.F., Ortiz-Molina, H., 2009. The strategic use of corporate cash holdings in collective bargaining with labor unions. *J. Financ. Econ.* 92 (3), 421–442.
- Kleiner, M.M., Bouillon, M.L., 1988. Providing business information to production workers: correlates of compensation and profitability. *Ind. Labor Relat. Rev.* 41, 605–617.
- Kochan, T.A., 1979. How American workers view labor unions. *Monthly Lab. Rev.* 102, 23.
- Koh, P., Reeb, D.M., 2015. Missing R&D. *J. Account. Econ.* 60 (1), 73–94.

- Lewis, H. Gregg, 1963. *Unionism and Relative Wages in the United States: An Empirical Inquiry*. University of Chicago Press, Chicago.
- Lewis, H. Gregg, 1986. Union relative wage effects. In: Ashenfelter, Orley, Layard, Richard (Eds.), *Handbook of Labor Economics, Handbooks in Economics*, vol. 2. Elsevier Science, New York, NY.
- Liberty, S., Zimmerman, J., 1986. Labor union contract negotiations and accounting choice. *Account. Rev.* 61, 692–712.
- Liu, A.Z., Subramanyam, K.R., Zhang, J., Shi, C., 2018. Do firms manage earnings to influence credit ratings? Evidence from negative credit watch resolutions. *Account. Rev.* 93 (3), 267–298.
- Matsa, D.A., 2010. Capital structure as a strategic variable: evidence from collective bargaining. *J. Financ.* 65, 1197–1232.
- Matsumoto, D., 2002. Management of incentives to avoid negative earnings surprises. *Account. Rev.* 61, 692–712.
- Mautz, R.D., Richardson, F.M., 1992. Employer financial information and wage bargaining: issues and evidence. *Labor Stud. J.* 35–53.
- McKersie, R.B., Klein, J.A., 1983. Productivity: the industrial relations connection. *Nat. Product. Rev.* 3 (1), 26–35.
- Mora, A., Sabater, A., 2008. Evidence of income-decreasing earnings management before labour negotiations within firms. *Investig. Econ.* 32 (2), 201–230.
- Peters, R.H., Taylor, L.A., 2017. Intangible capital and the investment-q relation. *J. Financ. Econ.* 123, 251–272.
- Pinnuck, M., Lillis, A.M., 2007. Profits versus losses: does reporting an accounting loss act as a heuristic trigger to exercise the abandonment option and divest employees? *Account. Rev.* 82 (4), 1031–1053.
- Rajgopal, S., Venkatachalam, M., 2011. Financial reporting quality and idiosyncratic stock volatility. *J. Account. Econ.* 51 (1–2), 1–20.
- Roychowdhury, S., 2006. Management of earnings through the manipulation of real activities that affect cash flow from operations. *J. Account. Econ.* 42, 335–370.
- Tomczyk, S.H., 1975. *Financial Ratios and the Ability to Pay Wage Increases*. DBA dissertation. University of Kentucky.
- Topel, R.H., 1984. Equilibrium earnings, turnover, and unemployment: new evidence. *J. Labor Econ.* 2, 500–522.
- Wongsunwai, W., 2013. The effect of external monitoring on accrual-based and real earnings management: evidence from venture-backed initial public offerings. *Contemp. Account. Res.* 30 (1), 296–324.
- Yamaji, H., 1986. Collective bargaining and accounting disclosure: an inquiry into the changes in accounting policy. *Int. J. Account. Educat. Res.* 22, 11–23.
- Zang, A.Y., 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *Account. Rev.* 87, 675–703.