Union Strikes and the Impact of Non-financial Stakeholders on Capital Structure*

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Abstract

Leverage affects the relative bargaining power between firms and labor unions and, consistent with this, we find that unions are more likely to engage in a strike during contract negotiations if firm leverage has decreased in the preceding years. In response to a strike firms increase leverage by actively repurchasing equity and issuing debt. This re-levering is most pronounced when unions win the strike, and is consistent with the idea that firms use leverage to bolster their bargaining power prior to the next contract negotiation. When companies win the strike they do not increase leverage, consistent with the idea that they are satisfied with their bargaining position.

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1. Introduction

Most of the traditional capital structure literature centers around the tradeoff between the tax advantages of debt and the costs of bankruptcy, the use of debt to mitigate agency problems between managers and shareholders, and the impact of debt on information asymmetries. However, there is a growing literature which examines the impact of non-financial stakeholders on capital structure. Categories of non-financial stakeholders include suppliers, customers, competitors, new entrants, employees, governments, and regulators. While the mechanism might change from case to case, the common thread is that leverage changes the negotiation power or competitive dynamic of shareholders relative to non-financial stakeholders.[1]

We focus on the impact of capital structure on the interaction between shareholders and unionized labor, an important input market and non-financial stakeholder. Existing theoretical studies argue that firms, from here on intended as the shareholders, employing a unionized workforce have strategic incentives to use leverage in order to improve their bargaining position relative to the union. During contract negotiations, unions seek to increase their share of the present value of future free cash flows. As debt financing obligates a firm to devote portions of its future revenues to creditors, it reduces future free cash flows available to unions. In this way, debt financing can preserve shareholder wealth by precluding the formation of unions, as in Bronars and Deere (1991), or by improving a firms bargaining position during contract negotiations with existing unions, as in Dasgupta and Sengupta (1993) and Perotti and Spier (1993).

Extant empirical work supports this argument with two basic findings. First, leverage is positively correlated with unionization rates at both the industry and firm level — Bronars and Deere (1991) and Matsa (2009). Second, firms lower their debt ratios when the states in which they operate experience legal shocks that reduce union bargaining power — Matsa (2009).

We extend this literature by examining whether capital structure affects the outcome

[1] See Harris and Raviv (1991) and Parsons and Titman (2008) for surveys.

of contract negotiations between labor unions and firms and how these outcomes affect subsequent capital structure decisions.[2] In particular, we distinguish between negotiations that involve a union strike and those that do not. Having divided the sample, we study how capital structure decisions and financing activities in the years before and after the contract negotiation differ between these two groups. Our objective in studying firm's leverage in the years leading to the contract negotiation is to analyze whether the union's decision to strike is related to the firm's previous capital structure decisions. Our objective in studying firm's leverage in the years following contract negotiations is to analyze whether the firm's capital structure decisions are related to the outcome of the negotiation process, as such outcome gives a direct measure of the firm's bargaining power. We compare the post-negotiation financing activities of firms that "win" the labor dispute, as they make limited concessions to the union in the labor contract signed after the strike, to firms that "lose" the dispute.

As a preliminary analysis, we plot average leverage ratios in the years surrounding contract negotiations. We find that firms anticipate upcoming negotiations by modestly increasing leverage ratios in the years leading to a negotiation. This is consistent with the existing literature and suggests that firms use leverage strategically to gain bargaining power over unions. We repeat the analysis on the subset of negotiations that lead to a strike and find that leverage ratios decrease dramatically in the years preceding a strike, but quickly revert back to original levels in the years following a strike. For example, the average change in market leverage in the five years leading to a strike is -4.9% (from 39.3% to 34.4%) and statistically significant; the average change in market leverage in the five years following the strike is 6.4% (from 34.4% to 40.8%) and statistically significant.

These observations naturally raise three questions: What is causing the drop in leverage in the years leading to the strike? Is the probability of a strike related to the decline in leverage? Is the rise in leverage due to firms actively managing their capital structure in the years following the strike?

[2]In this respect, our analysis is similar to Klasa, Maxwell, and Ortiz-Molina (2009) who document how firms strategically change cash holdings in anticipation of contract renegotiations. Different from Klasa, Maxwell, and Ortiz-Molina (2009), we focus our attention on the strategic use of debt both before and after contract negotiations.

As to the first question, the evidence support the hypothesis that firms that eventually experience a strike do not adjust their leverage in an attempt to gain bargaining power relative to unions because they face high adjustment costs. Their equity prices are high relative to the average firm, suggesting that repurchasing equity would be expensive. Similarly they face higher costs of raising debt, as indicated by the fact that their leverage is above the industry median.

As to the second question, we argue that leverage should affect the probability of a strike for at least three reasons. First, the option to strike is exercised by the union which presumably acts when its bargaining position is strong. To the extent that increased leverage weakens union bargaining power, we argue that debt should discourage strike behavior. Second, greater leverage increases the probability of default and thus increases the expected cost of the strike to unions (bankruptcy is a costly state for labor). This lowers the incentive to strike — Bronars and Deere (1991) and Benmelech, Bergman, and Enriquez (2009). Third, strikes are often viewed as a rational bargaining tactic when there are informational asymmetries between the firm and the union — Hayes (1984), Tracy (1987), and Kennan and Wilson (1993). We argue that leverage decreases informational asymmetries between firms and unions by credibly constraining future free cash flows, thus reducing the attractiveness of a strike as a bargaining tactic. We test the hypothesis that changes in leverage affects the probability of a strike by estimating the parameters of a probit model of union strikes. We find that, after controlling for other determinants of strike activity, the probability of a strike is related to the five year change in leverage. Since in our sample firms renegotiate contracts every 4.5 years we condition the strike probability on the five year change in leverage as a way to capture the change of bargaining power relative to the previous negotiation. In our sample, the unconditional probability of a union initiating a work stoppage incident to a contract negotiation is 11.5%. This is decreased to as low as 7.0% if the contract negotiation is preceded by a one standard deviation increase in leverage. On the other hand, if a firm decreases its leverage by one standard deviation in the five years prior to a contract negotiation, the probability its union will strike increases to 16.0%. The marginal effect of a five year change in leverage, 4.5%, is thus comparable to the marginal effect, 6.6%, of firms

being located in states which have adopted right-to-work laws that reduce union bargaining power.

As to the third question, we posit that contract negotiations and strikes reveal information about the relative bargaining power between a firm and its union and this should impact subsequent capital structure decisions, particularly if the firm views capital structure as having contributed to the union's decision to strike. Since strikes are costly events to shareholders, we argue that firms that experience a strike increase leverage in order to blunt union strength by the next contract negotiation and hence decrease the likelihood of another strike.[3] First we show that, post-strike, firms increase leverage relative to the strike year, relative to changes in industry median leverage and to changes in Byoun (2008) "target" leverage ratios, and relative to firms that do not experience a strike. Post-strike leverage increases are particularly pronounced when the union wins the strike, consistent with a firm seeking to enhance its bargaining position and to deter future strike activity. However, when the firm wins the strike, they do not subsequently increase leverage, which is consistent with the firm being satisfied with its bargaining position. Results are similar for book leverage.

Second we test whether financing activities are consistent with firms intentionally increasing leverage. We test this hypothesis in two ways: first, we examine whether the issuance activity of a firm that experiences a strike differs in the period following the strike from the issuance activity of the same firm in the period before the strike. We find that the increase in post-strike market and book leverage is primarily driven by financing activity: firms issue more debt and repurchase more equity relative to pre-strike levels. This is particularly true when the firm loses the strike. Firms that win a strike, or exit a contract negotiation with no work stoppage, do not change their financing activity from pre-strike/pre-contract negotiation levels. Second, we examine whether the interaction of firms with unions is an important determinant of corporate financing in the cross-section. In particular, we test whether the issuance activity of firms that experience strikes is different from the issuance activity of

[3]For example, Becker and Olson (1986) estimate that a strike involving 1,000 or more workers costs the average firm as much as $87.5 million (in 1980 dollars), reflecting an average 4.1% of shareholder equity. Abowd (1989) finds that a one dollar increase in union rents results in a one dollar decrease in equity value. See also Ruback and Zimmerman (1984), Clark (1984), Salinger (1984), and Voos and Mishel (1986).

the average firm in the cross-section. To do so, we employ an empirical decision model of corporate financing similar to Byoun (2008). In this stylized model, firms increase leverage when they are below a "target" level and visa-versa. Moreover, firms increase leverage by retiring equity (issuing debt) when facing a financial surplus (deficit) and decrease leverage by retiring debt (issuing equity) when facing a financial surplus (deficit). We find that, relative to the average cross-sectional issuance activity, firms that experience a strike repurchase more equity and issue more debt, actions which increase leverage. These post-strike effects are most pronounced when the union wins the strike.

Our study is directly related to the capital structure literature that studies the impact of unions on firm behavior. Bronars and Deere (1991) argue that debt can be used to discourage workers from unionizing, and present empirical evidence that industry unionization rates are positively correlated with leverage. Dasgupta and Sengupta (1993) and Perotti and Spier (1993) derive different theoretical models in which shareholders maximize firm value by issuing debt and therefore reducing the payoff to workers in contract negotiations. Klasa, Maxwell, and Ortiz-Molina (2009) document how firms strategically change cash holdings in anticipation of contract renegotiations. Matsa (2009) shows that firms lower their debt ratios when the states in which they operate adopt right-to-work laws or repeal work stoppage provisions in unemployment insurance, the effect of both being the reduction of union bargaining power. With respect to this set of studies our main contribution is twofold: first, we show that labor unions respond to the strategic incentives supplied by changes in a firm's capital structure; second, we show that firms respond to union behavior by actively adjusting their debt levels.

Our study is also related in general to the capital structure literature that studies the impact of non financial stake holders on firms optimal behavior, including but not limited to Titman (1984) and Titman and Wessels (1988) who argue that firms whose liquidation would impose significant costs on its employees, customers, or suppliers have lower debt ratios, Brander and Lewis (1986) who show that the use of leverage can credibly commit a firm to aggressive behavior in output markets through a limited liability affect, Spiegel and Spulber (1994) who study how leverage affects the prices allowed by regulators, and Bagwell and

Zechner (1993) and Hanka (1998) who show how leverage affects employment and employee behavior within the firm. With respect to this set of studies our main contribution is to provide direct evidence that non-financial stakeholders represent an important influence on capital structure decisions.

Our study is also related to the labour economics literature on work stoppages, including but not limited to Hayes (1984), Tracy (1986), Tracy (1987), Cramton and Tracy (1992), Kennan and Wilson (1993), and Kramer and Hyclak (2002). With respect to this part of the literature we add the observation that one important determinant of union strikes is the change in the firm bargaining power relative to the previous contract negotiation, as proxied by the change in firm leverage.

The remainder of the paper is organized as follows: Section 2 describes the data used in the analyses. Section 3 presents the empirical results of our tests. Section 4 concludes.

2. Data

Several data sources are used in this study. Work stoppage data are obtained from two sources: the Bureau of National Affairs, Inc. (BNA) and the U.S. Bureau of Labor Statistics (BLS). The BNA Labor PLUS database extends from January 1993 through December 2008. The BLS work stoppage database is available from January 1993 through December 2008. The combined dataset includes the following data fields: company name, announcement and end date of the strike, number of workers involved, union identifier.

Contract negotiation data are obtained from the BNA Labor PLUS database and extends from January 1993 through December 2008. The database is constructed from notices filed with the Federal Mediation & Conciliation Service. The contract negotiation dataset includes the following data fields: company name, contract end date, number of workers involved, and union identifier.

Work stoppage and contract negotiation for firms in the the BNA to BLS databases are matched to firm permanent numbers in the intersection of the CRSP and COMPUSTAT

databases based on company name.

In order to be included in this study, we require both strikes and contract negotiations to involve at least 1,000 workers. This is in line with previous work that uses a 1,000 worker threshold for both strikes and contract negotiations — Tracy (1986) Cramton and Tracy (1992), Kramer and Hyclak (2002), and Klasa, Maxwell, and Ortiz-Molina (2009). With this threshold in place, our final sample includes 528 contract negotiations, 163 of which result in a work stoppage: 161 strikes and 1 lockout. 105 strikes in our sample occurred between January 1993 and December 1999, and 57 strikes occurred between the January 2000 and December 2008. Most labor contracts include no-strike clauses that restrict strike activity for the duration of the contract and consequently strikes unrelated to contract negotiations are rare. Exceptions to no-strike clauses include "extremely unsafe" working conditions or "unfair labor practices" but work stoppages motivated by these conditions are uncommon. Summary statistics for strikes and contract negotiations by industry are reported in Tables 1. From Table 1 it can be seen that the majority of strikes occur in manufacturing, consumer durable, and consumer non-durable industries.

Equity return data are from CRSP and annual financial data are from COMPUSTAT. In all the analysis we eliminate regulated firms (SIC 4900 to 4999) and firms that belong to the finance sector (SIC codes 6000 and 6999). We also eliminate all firm/year observations for which the value of total assets and sales are respectively below 10 million USD.

2.1. Data Definitions

Since we adopt different conventions for the variables used in the analysis, in this section, we clarify how variables are constructed.

We define market leverage (MktLev) as the ratio of debt to market value of assets. Debt is defined as the sum of long term debt plus debt in current liabilities, and market value of assets (MVA) is defined as debt plus market value of equity plus preferred stock minus deferred taxes. We define book leverage (BookLev) as the ratio of debt to total assets (TA).

Net debt (equity) issuance is defined as debt (equity) issuance minus debt (equity) re-

purchase. Net issuance is defined as net debt issuance minus net equity issuance. All of the above are scaled by book value of assets (BVA), which is defined as debt plus book value of equity plus preferred stock minus deferred taxes. To be consistent with the existing literature, all other accounting variables are instead scaled by TA.

Summary statistics for all variables used in the analysis are presented in Table 2. In Panel A we tabulate mean, median and standard deviation for the sample of firms with contract negotiations. In Panel B we tabulate mean, median and standard deviation for the universe of firms in the intersection of CRSP and COMPUSTAT.

2.2. Determination of Strike Outcome

In part of our analysis we stratify the sample of strikes based on the winner of the strike. We are able to determine whether the union or the company won a strike by examining contemporary news reports contained in the Factiva database. A determination of a win or loss is only made if the winner is clear based on our reading of the news report. Otherwise, the winner of the strike is classified as undetermined. Of the 162 strikes in our sample, we are able to classify 15 as resulting in a clear union victory, and 41 strikes as resulting in a company victory.

An example of a strike that is counted as a union win is the following. In May of 2004, 100,000 unionized workers at SBC Communications (representing approximately 60 percent of its workforce), located in 13 states, walked off the job after three months of contract negotiations failed to produce a new agreement. At issue was job security, heath benefits, salary, and pension benefits. After a four-day strike, the company agreed to a five-year contract that was more generous than it had previously indicated it could afford. The contract included a 2.3 percent raise each year in addition to cost of living adjustments, no monthly contributions for health insurance plus bonuses to cover any co-payments ($1,000 for active workers, $2,500 for retirees), and pensions to be increased by 13 percent. The contract further guaranteed that unionized employees would not be laid off for the duration of the contract, employees whose existing job would be "surplused" would be given another position within the firm, existing workers would have access to jobs in emerging technologies,

and that several hundred employees that had been laid off earlier in the year were to be rehired. The concessions caused at least one observer to comment: "SBC blinked — this is not a good deal [for SBC]." (Peter Morisi, May 2004, "SBC, Union OK New Contract After Strike", Associated Press.)

An example of a strike that is counted as a company win involves the labor dispute initiated in May of 1998 by the United Auto Workers (UAW) against Peterbilt Motors Co., two days after the previous contract had expired. At issue were pay and benefits (including health insurance), holiday pay, and retirement benefits. In July, Peterbilt hired skilled temporary replacement workers in order to maintain production. By early September, the union made an unconditional offer to return to work, while at the same time declaring "It's not over, we're not conceding defeat by any means. We'll continue to fight." Peterbilt responded by locking out the union and continuing to use replacement workers, saying the unionized work force could only return to work once a contract was ratified. The union eventually ratified a contract in late November, and most workers returned to work in December. While union officials claimed there were "significant gains" to retiree health benefits and pensions, news articles reveal little difference between the contract that was ratified and the original contract that was offered six months earlier.

3. Empirical Results

Firm and union bargaining power matters most during contract negotiations, which are foreseeable to all involved and whose occurrence is known well in advanced. Therefore, as a preliminary analysis, in Figure 1 we plot average leverage ratios in the years surrounding the contract negotiations. In Panel A we plot market leverage for firms for which contract negotiations lead to strikes (solid line) and for firms for which negotiations are concluded without a labor dispute (dotted line). In Panel B we plot book leverage.

We find that firms anticipate the upcoming contract negotiations and modestly increase the leverage ratio in the years leading to a negotiation. This is consistent with the existing literature and suggests that firms use leverage strategically to gain bargaining power over the

unions. It also parallels the result of Klasa, Maxwell, and Ortiz-Molina (2009) who document how firms strategically change cash holdings in anticipation of contract negotiations. When looking at the subset of negotiations that lead to a strike, we find that leverage ratios decrease dramatically leading to the negotiation year and increase as fast, and back to the original levels, in the years following the strike. This observed pattern is robust to both specification of leverage, although the magnitude of the change is more dramatic when we consider market leverage.

These observations raise three questions: What is causing the drop in leverage in the years leading to the strike? Is the probability of a strike related to the decline in leverage? Is the rise in leverage due to firms actively managing their capital structure in the years following the strike?

We address each one of these questions in the remainder of this section.

3.1. Firm Behavior Leading to Contract Negotiations

We confirm that the downward trend in leverage observed in Figure 1 during the years leading to the strike is statistically significant. In Table 3 we tabulate average market leverage ratios in the five years leading to the negotiation along with first differences from year t, $(t = -5, -4, ... - 1)$ to the negotiation year and the relative t-statistics. We tabulate these statistics for market leverage, median market leverage of 3-digit SIC industry group, book leverage, and median book leverage of 3-digit SIC industry code. We also include the average difference in difference: first firm leverage versus industry leverage, second year t versus negotiation year. Panel A presents results for negotiations that lead to strikes and Panel B presents results for negotiations that do not.

We note that the average change in market leverage in the five years leading to a strike is economically important at -4.9% (from 39.3% to 34.4%) and statistically significant; the change in book leverage is also large -2.5% (from 31.7% to 29.4%) and statistically significant. These differences are statistically significant up to the year before the strike for book leverage and up to two years before the strike for market leverage. Moreover, both five year changes, market and book, are large as they indicate that firms change their leverage by -12.7% and

-9.2%, respectively, of their original values in the time span of five years. In contrast, firms that exit negotiations without facing any labor dispute, Panel B, appear to be increasing their leverage ratios leading to the contract negotiation. In fact, the difference between year t and year 0 book leverage is significantly negative for each year prior to the contract negotiation.

Why would some firms decrease their leverage prior to a contract negotiation? This behavior would seem at odds with the general intuition, suggested by many scholar analyses and confirmed by Figure 1 and Panel B of Table 3, that firms strategically use debt to obtain concessions from workers. Leary and Roberts (2009) find that industry leverage is the most important explanatory variable of firm leverage and therefore we compare leverage ratios of our sample of firms to the median leverage of the corresponding 3-digit SIC industry groups.

We find that all firms in our sample are above the industry median in terms of market and book leverage. This result is not surprising, considering the large body of empirical evidence about unionized firms having higher debt ratios than non-unionized firms — Bronars and Deere (1991) and Matsa (2009). However, firms that eventually incur a strike follow the industry trend very closely. The average difference in difference is in fact never statistically significant through the years preceding the strike. On the contrary, firms that do not experience labor disputes increase leverage relative to the industry median leading to the negotiation year.

As a robustness check we repeat the previous analysis substituting the industry median with "target" debt ratios obtained from cross-sectional regressions that control for commonly accepted determinants of capital structure, similar to Byoun (2008). We obtain similar results.

Assuming that firms use leverage as a strategic variable to obtain concessions from workers and assuming that firms and unions have symmetric information, the evidence presented in Table 3 leaves us with two possible explanations that are not mutually exclusive: firms accidentally allow strikes to happen as they miss-calculate the probability of a strike and/or the cost of a strike; firms allow strikes to happen because the cost of actively managing their

leverage is higher than the cost of a strike.

As to the first possibility, one indirect supportive evidence is provided by firms that incur repeated strikes in the sample period in which we observe them. We find that the average five year change in leverage leading to the second strike is positive and equal to 3.31% for market leverage and 1.5% for book leverage. In this sense, after the first strike, and leading to the second strike, firms behave as they are expected.

As for the second possibility, we make three observations about firms in our sample that incur strikes: they have positive excess market returns in each year leading to the strike; they have higher debt ratios than firms that do not incur a strike; they have progressively decreasing ratios of fixed assets to total assets. The first observation suggests that repurchasing equity would be expensive, at least if firms follow the Baker and Wurgler (2002) market timing decision rule to issue and repurchase equity. The second observation suggests that the cost of issuing debt would be high as those firms would have to pay higher credit spreads than firms that do not incur a strike. The third observation suggests that firms in our sample are decreasing physical assets in their mix of production factors making it difficult for them to find a use for the cash they would raise in a debt issuance, especially if repurchasing equity is not an favorable option. Therefore, an equity for debt exchange would appear expensive and a simple debt issuance would seem unlikely, especially in light of the evidence presented by Klasa, Maxwell, and Ortiz-Molina (2009), because it would increase the company's cash holding entering the negotiation process. In summary, the evidence suggests that it is possible that the cost of actively managing leverage was high for the firms experiencing a strike in our sample, and maybe higher than the expected cost of a strike.

3.2. Change in Leverage and Likelihood of a Strike

We posit that leverage should affect the probability of a strike for at least three reasons. First, the option to strike is exercised by the union which presumably acts when its bargaining position is strong. To the extent that increased leverage weakens union bargaining power, we argue that debt should discourage strike behavior. Second, greater leverage increases the probability of default and thus increases the expected cost of the strike to unions

(bankruptcy is a costly state for labor). This lowers the incentive to strike — Bronars and Deere (1991) and Benmelech, Bergman, and Enriquez (2009). Third, strikes are often viewed as a rational bargaining tactic when there are informational asymmetries between the firm and the union — Hayes (1984), Tracy (1987), and Kennan and Wilson (1993). We argue that leverage decreases informational asymmetries between firms and unions by credibly constraining future free cash flows, thus reducing the attractiveness of a strike as a bargaining tactic. We test the hypothesis that changes in leverage affects the probability of a strike by pooling all firm/year observations that correspond to a contract negotiation and hence estimating the coefficients of an empirical model in which the conditional probability of a union strike has a normal distribution and the key conditioning variable is the five year change in the market leverage leading to the negotiation — from year $t-5$ to year $t-1$. Since in our sample firms renegotiate contracts every 4.5 years we condition the strike probability on the five year change in leverage (as well as other control variables) as a way to capture the change of bargaining power relative to the previous negotiation. We standardize all independent variables, so that they have a mean of zero and a standard deviation of one, in order to facilitate the comparison of marginal effects across different variables. We report marginal effects estimated at the mean of the independent variables and t-statistics of the coefficient estimates, in parenthesis. Standard errors are adjusted for clustering at the firm level. All specifications include a constant term and time fixed effects. Estimation results are presented in Table 4.

Specification 1 includes market leverage as the only control variable. The coefficient is significant at the one percent level. The marginal effect indicates that a one-standard deviation decrease in the five year change in leverage results in an increase in the probability of a strike by approximately 3.3%, and vice-versa. In other words a one standard deviation decrease in the five year change in market leverage increases the conditional probability of a strike from 11.5%, the conditional probability evaluated at the mean, to 14.8%.

Numerous other financial variables have been identified as affecting the likelihood of a strike. Tracy (1986) develops an empirical model of strike activity and includes in his specification stock returns as a proxy of the overall profitability of the firm and stock return

volatility as a measure of the instability in the firm's profitability. He also argues that in order to self-insure against the effects of a strike (and thereby decrease the cost of a strike to the firm), company can build up inventory prior to a contract negotiation. In the same vein, firms that are highly capital intensive might be facing lower cost of a strike. Accordingly we include the five year stock return, the five year stock volatility, the change in the ratios of inventory to total assets, fixed assets to total assets, and number of employees to total assets. DeAngelo and DeAngelo (1991) present evidence that increases to firms profitability weakens a firms bargaining position relative to a union. They also argue that dividend cuts improve a firms bargaining position. To account for the possible affects profitability and dividend policy have on capital structure, we include changes to a firms profitability and dividends. Klasa, Maxwell, and Ortiz-Molina (2009) argue that firms manage their cash reserves downwards prior to a contract negotiation, and that increases to cash holdings leads to a greater likelihood of a strike. To control for a possible relationship between cash balances and financing, we include changes in cash holdings. We include the change in the 3-digit SIC median industry leverage to account for other industry dynamics that could affect the relationship between changes in leverage and strike probabilities. Finally, Matsa (2009) shows that right-to-work laws affect union bargaining power. We include an indicator variable set to one for firms headquartered in a state with right-to-work laws to control for any possible affect this might have on the probability of a strike.

Specification 2 in Table 4 includes the aforementioned control variables. With the exception of the right-to-work indicator variable, none of the other controls is statistically significant, while the statistical significance of the change in leverage is only modestly reduced. In this specification, if the firm is located in a right-to-work state, the probability of a strike decreases by 6.6%, while a one standard deviation increase in leverage decreases the probability of a strike by 4.6%.

To account for other possible unobserved determinants of strike activity that might be specific to certain industry and certain geographical areas we include industry and state fixed effects. To avoid identification problems, we remove industry leverage and the right-to-work dummy. As a result, the marginal effect of a one standard deviation increase in leverage

produces a 2.7% decrease in the probability of a strike.

The results presented in Table 4 hold if book leverage is used instead of market leverage. The marginal effect of a one standard deviation change in book leverage is 2.3%, 2.2% and 1.6%, for specification 1, 2 and 3 respectively.

In summary, the results discussed in this section support the idea that unions consider changes in a firm capital structure when weighing the decision to strike. As leverage decreases, the surplus available to the union relative to the previous contract negotiation increases — and unions are more likely to strike.

3.3. Firm Behavior Following Contract Negotiations

We confirm that the upward trend in leverage observed in Figure 1 during the years following to the strike is statistically significant. In Table 5 we tabulate average market leverage ratios in the five years following the negotiation along with first differences of leverage in year t ($t = +1, +2, ..., +5$) minus leverage in the negotiation year and the relative t-statistics. We tabulate these statistics for market leverage, median market leverage of 3-digit SIC industry, book leverage, and median book leverage of 3-digit SIC industry. We also include the average difference in difference: first firm leverage versus industry leverage, second year t versus negotiation year. Panel A presents results for negotiations that lead to strikes and Panel B presents results for negotiations that do not. Panel C presents the average leverage triple-difference: first firm leverage versus industry leverage, second year t versus negotiation year, third firms with strikes versus firms with no strikes.

We note that the average change in market leverage in the five years following a strike is economically important at 6.4% (from 34.3% to 40.8%) and statistically significant; the change in book leverage is also large 3.7% (from 29.4% to 33.0%) and statistically significant. These differences are statistically significant from the first year after the strike for book leverage and from the third year after the strike for market leverage. Moreover, both five year changes, market and book, are large as they indicate that firms change their leverage by 18.6% and 12.6%, respectively, of their original values in the time span of five years.

In contrast, firms that exit negotiations without facing any labor dispute, Panel B, appear to leave unaltered their leverage leading to the next contract negotiation.

In Panel C of Table 5 we compare the two groups: firms with a negotiation and a strike and firms with a negotiation and no strike. The results confirm that, after controlling for median industry leverage, firms that experience a strike increase their leverage in the years following the contract negotiation relative to firms that do not experience a strike. The average triple-difference is statistically significant and economically important starting from the third year after the strike for both market and book leverage. For example by the fourth year after the contract negotiation, firms that experience a strike have increased their market (book) leverage by 4.3% (3.2%) more than firms that did not experience a strike.

We conduct two robustness checks: first, we repeat the previous analysis by substituting the industry median with "target" debt ratios obtained from cross-sectional regressions that include commonly accepted determinants of capital structure, similar to Byoun (2008). In this context the "target" ratios simply represent the leverage that is predicted by the cross-sectional correlation of the following variables with the actual firm leverage: 3-digit SIC median industry leverage ratio, marginal tax rate, market-to-book ratio, log of total assets, Altman's Z-score, and ratios of operating income, depreciation and amortization, fixed assets, research and development, and dividends to total assets. We use it in our study as a way to control for the impact on leverage of variation of the above mentioned variables. We compute the leverage triple-difference as follows: first firm leverage versus "target" leverage, second year t versus negotiation year, third firms with strikes versus firms with no strikes. We tabulate the average triple-difference in Panel D. The results mirror almost exactly those reported in Panel C. For example, by the fourth year after the contract negotiation, firms that experience a strike have increased their market (book) leverage by 4.0% (2.5%) more than firms that did not experience a strike.

Second, to alleviate the concern that the increase in market leverage might be mechanically due to declining equity valuations after a strike, we repeat the previous analysis by substituting the industry median with "implied" market leverage ratio. We estimate "implied" debt ratios for all firms in the sample following a contract negotiation using equity

returns from matched firms.[4] We obtain similar results.

Having confirmed that the increase in leverage following a negotiation is statistically significant and robust to controlling for various benchmarks, we introduce one new dimension in the analysis: we group together the 15 firms that we are able to identify as losers of the strike and compare them to the 41 firms that we are able to identify as winners of the strike. We expect firms that lose the strike to be more active in adjusting their capital structure than firms that win the strike.

In Table 6 we repeat the analysis of Table 5 on the sample of firms that lost the strike, Panel A, and on the sample of firms that won the strike, Panel B. For sake of brevity, we report only the two sets of leverage triple-differences. All the other results are available upon request.

For firms that lost the strike (Panel A: Union wins) the average triple-difference in leverage is statistically significant and economically important almost in any year after the strike for both market and book leverage. For example by the third year after the contract negotiation, firms that experience a strike and lost it to the union have increased their market leverage by 13.0% and their book leverage by 9.2% more than firms that did not experience a strike, relative to the respective median industry leverage. Note that the significance and the economic magnitude of the result for book leverage is fading as we move away from the strike year. In particular, by the end of the fifth year after the strike, the increase in book leverage is 4.9% when median industry leverage is used as the benchmark, and 3.0% when

[4]First, matched firms were selected for each firm with a contract negotiation. Candidates for matched firms were selected within 3-digit SIC industry groups and the final matching firm was selected each month by comparing Fama & French betas estimated from rolling 36-month regressions to the strike firm. Matched returns were then used to create implied debt ratios ($ImpLev_t$) for time t relative to the strike year as follows:

$$ImpLev_t = \frac{TotalDebt_t}{TotalDebt_t + IMktCap_t + PrefStock_t - DefTaxes_t},$$

where $IMktCap_t$ is the market capitalization implied by equity returns from the matched firm and is equal to:

$$IMktCap_t = MktCap_0 \prod_{i=0}^{t} (1 + r_i) + \sum_{i=0}^{t-1} \left\{ Issue_i \prod_{j=i+1}^{t-1} (1 + r_i) \right\} + Issue_t.$$

$MktCap_0$ is the market capitalization at the beginning of the negotiation year. $Issue_t$ is the net equity issuance at time t and is assumed to occur at the end of the year.

the book "target" is used as the benchmark. Both averages are not statistically significant.

For firms that won the strike (Panel B: Company wins) only one average triple-differences is statistically different from zero but has a negative sign. In fact, most of the average differences have a negative sign, indicating that, if anything, firms that won the strike are reducing their leverage more than firms that had a contract negotiation and no strike.

In the remaining part of this section we examine whether the increase in leverage is directly related to the firm's financing activity. We conduct two tests: first, we examine whether the issuance activity of a firm that experiences a strike differs in the period following the strike from the issuance activity of the same firm in the period before the strike. We refer to this as the time-series test. Second, we examine whether the issuance activity of firms that experience strikes is different, in the years that follow the strike, from the issuance activity of the average firm in the cross-section. We refer to this as the cross-sectional test.

3.3.1. Firm Issuance Activity Relative to Strike Year

In the time series test we compare the firm issuance activity during the years before the negotiation to the issuance activity of the same firm during the years following the negotiation conditioning on the outcome of the strike. In particular, we consider separately net debt issuance, net equity issuance, and net issuance, defined as net debt issuance minus net equity issuance. We also separate firms that lost the strike from firms that won the strike. We define the average issuance from year $t-5$ to year $t-1$ as the Before issuance, and the average issuance from $t+1$ to $t+5$ as the After issuance, where t is the year of the strike.

Table 7 reports averages and t-statistics for Before, After, and After–Before issuance. Panel A reports results for all strikes, Panel B for strikes won by unions, Panel C for strikes won by companies.

For the sample that includes all strikes, Panel A, in the five year period prior to the strike, the average net equity issuance is negative (firms are repurchasing equity) statistically significant, and equal to 1% per year of the book value of assets. The average net debt

issuance is insignificant and equal to 0.8% per year. The average net issuance is equal to 1.8% per year and significant. After experiencing a strike, firms issue debt for an average 1.8% per year of book value of assets and repurchase equity for an average 2.7% per year. The average net issuance is equal to 4.5% per year, consistent with firms attempting to increase leverage.

We also test whether firms increase their financing activity in the five years after the strike relative to the five years before the strike. Firms issue more debt and repurchase more equity in the post strike period than they do before the strike. However, only the equity repurchase increase is statistically significant.

Panel B contains results for the sample where the unions win the strike. Firms that lose the strike have negative and significantly different from zero debt equity issuance and positive and insignificant net equity issuance in the five years before the strike. After the strike, net debt issuance increase to 3.7% per year, and net equity issuance decreases to -1.9% per year. The net issuance is positive and equal to 5.6% per year of book value of assets indicating a strong attempt to increase leverage. As a result, the difference between average net issuance before and after the strike has the correct sign, positive, and is highly statistically significant. This is consistent with firms actively re-adjusting their leverage ratio in anticipation of the next contract negotiations.

In contract, Panel C contains results for the sample where the companies win the strike. These results do not support the hypothesis that these firms attempt to actively manage their leverage. Neither equity nor debt issuance activity after the strike is significantly different from the corresponding issuance activity before the strike. Therefore, when the firms win a strike, they do not subsequently increase their debt ratios, which is consistent with the firms being satisfied with their bargaining position vis-à-vis the unions.

3.3.2. Firm Issuance Activity Relative to Cross-sectional Issuance Activity

In this section we examine whether, relative to other determinants that affect issuance decisions, the interaction of firms with unions is an important influence on corporate financing in the cross-section. We test this implication by comparing the issuance activity of firms

that incur a union strike to the issuance activity of the average firm in the cross-section. In doing so, we employ an empirical decision model of corporate financing similar to that proposed by Byoun (2008). In this stylized model, firms increase (decrease) leverage when they are below (above) a "target" level. Moreover, firms increase leverage by retiring equity (issuing debt) when facing a financial surplus (deficit) and decrease leverage by retiring debt (issuing equity) when facing a financial surplus (deficit).

Following Byoun (2008), we estimate the "target" leverage ratio from yearly from cross-sectional regressions in which the independent variables are 3-digit SIC median industry leverage ratio, marginal tax rate, market-to-book ratio, log of total assets, Altman's Z-score, and ratios of operating income, depreciation and amortization, fixed assets, research and development, and dividends to total assets. Also following Byoun (2008), we compute financial surplus (FinSurp) as operating cash flow minus dividends, minus investments, plus change in working capital. We also account for asymmetric effects by separating the effect of deviation from the target (MktLev - Tgt) in the case where the company is above the target (Above) from the effect in the case where the company is below the target (Below). Also we separate the effects of the financial surplus in the case where the surplus is positive (Surplus) from the effect in the case where the surplus is negative (Deficit).

Having adopted this empirical model we pool all firm/year observations in the intersection of COMPUSTAT and CRSP that satisfy the data criteria discussed in Section 2 and estimate the coefficients of an empirical linear model of corporate financing where the key independent variable is an indicator set to one when a firm has experienced a strike within the previous five years (results are similar if the dummy indicates a strike in the previous one to four years). As the dependent variable we consider both net equity issuance and net debt issuance.

Results are reported in Table 8. Specification 1 and 2 include net debt issuance as the dependent variable. In specification 1 the key independent variable is the Strike indicator and it is positive and statistically significant. At 1.2% the estimated coefficient indicates that after experiencing a strike, firms issue more debt than the average firm in the cross-section. In specification 2, the key independent variables are indicator functions that are set to one when the union wins the strike (Union wins), the company wins (Company wins),

or the winner was indeterminate (No winner), respectively. The estimated coefficients of these indicator variables suggest that the debt issuance activity of firms that win the strike is lower than the issuance activity of firms that lose the strike. Moreover, when the company loses the strike, the issuance activity, at 2.2%, is higher than the average debt issuance in the cross-section.

Specification 3 and 4 include the net equity issuance as the dependent variable. In specification 3 the key independent variable is the Strike variable. The estimated coefficient is negative and statistically significant, showing that firms that have experienced a strike repurchase more equity than the average firm in the cross-section. The results in specification 4 show that when the union wins the strike, the firm repurchases more equity than the average firm and more than companies that win the strike.

In summary, the results in Table 8 are consistent with firms being more active than the average firm in the cross-section in the years following a strike.

4. Conclusion

We provide evidence that unions respond to the incentives provided by capital structure in determining whether or not to strike. Unions are more likely to strike if their employer lowers its leverage prior to the contract negotiation, owing to an improved bargaining position. This result is robust to changes in employment rates and other determinants of a firms capital structure, as well as other financial variables that are known to influence the likelihood of strike (including changes in a firms cash balance, dividend policy, inventory, and profitability). After experiencing a strike, firms increase their leverage with respect to their strike-year debt levels in order to improve their bargaining position during the next contract negotiation. Post-strike financing activity is consistent with firms intentionally increasing leverage: firms experiencing a strike repurchase more equity and issue more debt relative to pre-strike levels and other firms in the cross-section. These results are consistent with theory that predicts that non-financial stakeholders represent an important influence on firms' capital structure.

References

Abowd, John M., 1989, The effect of wage bargains on the stock market value of the firm, *American Economic Review* 79, 774–800.

Bagwell, Laurie Simon, and Josef Zechner, 1993, Influence costs and capital structure, *Journal of Finance* 48, 975–1008.

Baker, Malcolm, and Jeffrey Wurgler, 2002, Market timing and capital structure, *Journal of Finance* 57, 1–31.

Becker, Brian E., and Craig A. Olson, 1986, The impact of strikes on shareholder equity, *Industrial and Labor Relations Review* 39, 425–438.

Benmelech, Efraim, Nittai K. Bergman, and Ricardo Enriquez, 2009, Negotiating with labor under financial distress, *Working Paper*.

Brander, James A., and Tracy R. Lewis, 1986, Oligopoly and financial structure: The limited liability effect, *American Economic Review* 76, 956–970.

Bronars, Stephen G., and Donald R. Deere, 1991, The threat of unionization, the use of debt, and the preservation of shareholder wealth, *The Quarterly Journal of Economics* 106, 231–254.

Byoun, Soku, 2008, How and when do firms adjust their capital structures toward targets?, *Journal of Finance* 63, 3069–3096.

Clark, Kim B., 1984, Unionization and firm performance: The impact on profits, growth, and productivity, *American Economic Review* 74, 893–919.

Cramton, Peter C., and Joseph S. Tracy, 1992, Strikes and holdouts in wage bargaining: Theory and data, *American Economic Review* 82, 100–121.

Dasgupta, Sudipto, and Kunal Sengupta, 1993, Sunk investment, bargaining and choice of capital structure, *International Economic Review* 34, 203–220.

DeAngelo, Harry, and Linda DeAngelo, 1991, Union negotiations and corporate policy: A study of labor concessions in the domestic steel industry during the 1980s, *Jounal of Financial Economics* 30, 3–43.

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

Harris, Milton, and Artur Raviv, 1991, The theory of capital structure, *Journal of Finance* 46, 297–355.

Hayes, Beth, 1984, Unions and strikes with asymmetric information, *Journal of Labor Economics* 2, 57–83.

Kennan, John, and Robert Wilson, 1993, Bargaining with private information, *Journal of Economic Literature* 31, 45–104.

Klasa, Sandy, William F. Maxwell, and Hernán Ortiz-Molina, 2009, The strategic use of corporate cash holdings in collective bargaining with labor unions, *Journal of Financial Economics* 92, 421–442.

Kramer, Jonathan K., and Thomas Hyclak, 2002, Why strikes occur: Evidence from the capital markets, *Industrial Relations* 41, 80–93.

Leary, Mark T., and Michael R. Roberts, 2009, Do firms' financing decisions affect one another?, *Working Paper*.

Matsa, David A., 2009, Capital structure as a strategic variable: Evidence from collective bargaining, *Journal of Finance, Forthcoming*.

Parsons, Christopher, and Sheridan Titman, 2008, Empirical capital structure: A review, *Foundations and Trends in Finance* 3, 1–93.

Perotti, Enrico C., and Kathryn E. Spier, 1993, Capital structure as a bargaining tool: The role of leverage in contract renegotiation, *The American Economic Review* 83, 1131–1141.

Ruback, Richard S., and Martin B. Zimmerman, 1984, Unionization and profitability: Evidence from the capital market, *The Journal of Political Economy* 92, 1134–1157.

Salinger, Michael A., 1984, The rand journal of economics, *The Quarterly Journal of Economics* 15, 159–170.

Spiegel, Yossef, and Daniel F. Spulber, 1994, The capital structure of a regulated firm, *RAND Journal of Economics* 25, 424–440.

Titman, Sheridan, 1984, The effect of capital structure on a firm's liquidation decision, *Journal of Financial Economics* 13, 137–151.

——— , and Roberto Wessels, 1988, The determinants of capital structure choice, *Journal of Finance* 43, 1–19.

Tracy, Joseph S., 1986, An investigation into the determinants of u.s. strike activity, *American Economic Review* 76, 423–436.

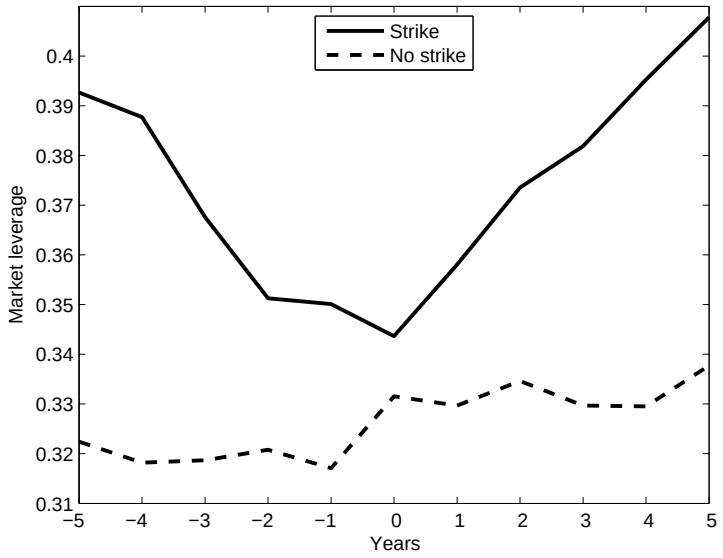
——— , 1987, An empirical test of an asymmetric information model of strikes, *Journal of Labor Economics* 5, 149–173.

Voos, Paula B., and Lawrence R. Mishel, 1986, The union impact on profits: Evidence from industry price-cost margin data, *Journal of Labor Economics* 4, 105–133.

Figure 1: Mean Leverage around a Contract Negotiation

This figure plots average leverage ratios in the years surrounding the contract negotiations. In Panel A we plot market leverage for firms for which contract negotiations leads to strikes (solid line) and for firms for which negotiations are concluded without a labor dispute (dotted line). In Panel B we plot book leverage. Our sample is composed by 528 contract negotiations, of which 162 lead to a union strike involving at least 1,000 workers. Market leverage is computed as the ratio of debt to debt plus market value of equity plus preferred stock minus deferred taxes. Book leverage is calculated as debt divided by total assets. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. The sample extends from January 1993 to December 2008.

Panel A: Market Leverage



Panel B: Book Leverage

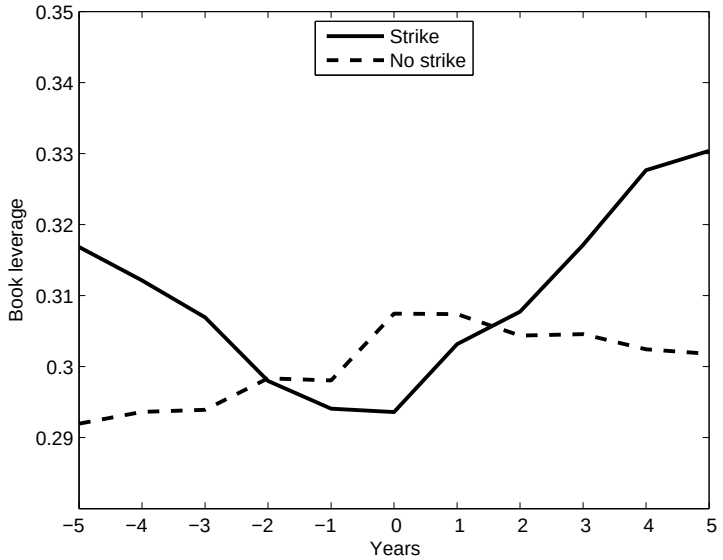


Table 1: Contract Negotiations By Industry

This table reports number of strikes and contract negotiations subdivided by Fama & French industry groupings. Strikes that result in a union or company victory are listed in columns three and four, respectively. We are able to determine whether the union or the company won a strike by examining contemporary news reports contained in the Factiva database. A determination of a win or loss is only made if the winner is clear based on our reading of news reports. Otherwise, the winner of the strike is classified as undetermined. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. The sample extends from January 1993 to December 2008.

Fama & French Industry	Number of Contract Negotiations	Number of Strikes	Union Victory	Company Victory
Consumer Non-durables	79	13	2	2
Consumer Durables	53	29	1	5
Manufacturing	142	54	7	12
Oil, Gas, and Coal Extraction	5	1	0	0
Chemicals and Allied Products	14	3	0	3
Business Equipment	32	8	0	2
Telephone and Television Transmission	45	7	2	1
Utilities	21	6	1	2
Wholesale, Retail, and Some Services	94	14	0	9
Healthcare, Medical Equipment, and Drugs	9	1	0	0
Finance	1	1	0	1
Other (Mines, Construction, etc.)	33	25	2	4
Total	528	162	15	41

Table 2: Summary Statistics

This table contains mean, median and standard deviation of the main variables used in this study. Data definitions are contained in Section 2.1. In Panel A we report summary statistics for firm/year observations corresponding to a contract negotiation. In Panel B we report summary statistics for all firm/year observations for the universe of firms in the COMPUSTAT and CRSP intersection.
We eliminate regulated firms (SIC 4900 to 4999) and firms that belong to the finance sector (SIC codes 6000 and 6999). We also eliminate all firm/year observations for which the value of total assets and sales are respectively below 10 million USD. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. The universe contains 80,991 firm/year observations. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

Panel A: Contract negotiation firm/year

	Level			5-year change		
	Mean	Median	Stdev	Mean	Median	Stdev
MktLev	0.362	0.350	0.227	-0.013	-0.007	0.183
BookLev	0.328	0.322	0.165	-0.009	-0.004	0.125
Inventory/Sales	0.107	0.096	0.064	-0.003	-0.002	0.053
Fixed Assets/TA	0.381	0.370	0.188	-0.024	-0.022	0.081
Employees/TA	0.008	0.005	0.009	-0.002	-0.001	0.004
Ebit/TA	0.134	0.131	0.071	-0.008	-0.006	0.061
Cash/TA	0.051	0.028	0.063	0.003	0.000	0.057
Dividend/TA	0.016	0.012	0.030	-0.003	0.000	0.074
NetDebtIss/BVA	0.036	-0.000	0.190			
NetEquityIss/BVA	-0.023	-0.001	0.091			
Return	0.601	0.351	1.334			
Volatility	0.094	0.085	0.045			

Panel B: Universe

	Level			5-year change		
	Mean	Median	Stdev	Mean	Median	Stdev
MktLev	0.226	0.146	0.240	0.006	0.000	0.203
BookLev	0.229	0.192	0.216	0.004	0.000	0.172
Inventory/Sales	0.116	0.087	0.129	-0.007	0.000	0.073
Fixed Assets/TA	0.288	0.212	0.240	-0.011	-0.011	0.103
Employees/TA	0.008	0.005	0.010	-0.001	-0.001	0.005
Ebit/TA	0.056	0.105	0.213	-0.007	-0.005	0.155
Cash/TA	0.185	0.091	0.217	-0.009	-0.001	0.144
Dividend/TA	0.008	0.000	0.019	-0.001	0.000	0.013
NetDebtIss/BVA	0.040	0.000	0.204			
NetEquityIss/BVA	0.081	0.002	0.326			
Return	0.544	0.095	1.654			
Volatility	0.167	0.145	0.094			

Table 3: Changes in Leverage Before Contract Negotiations

This table contains average leverage ratios in the five years leading to the negotiation along with first differences from year t, $(t = -5, -4, ... - 1)$ to the negotiation year. We tabulate these statistics for market leverage (MktLev), 3-digit SIC median industry market leverage (MktLevInd), book leverage (BookLev), and 3-digit SIC median industry book leverage (BookLevInd). We also include the average difference in difference (Δ(MktLev − MktLevInd) and Δ(BookLev − BookLevInd)): first firm leverage versus industry leverage, second year t versus negotiation year. Panel A presents results for negotiations that lead to strikes. Panel B presents results for negotiations that do not lead to work stoppages. t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

Panel A: Firms with contract negotiations and strikes

	-5	-4	-3	-2	-1	Strike
MktLev	0.393	0.388	0.368	0.351	0.350	0.344
Δ MktLev	0.049**	0.043**	0.024	0.008	0.006	
	(2.46)	(2.31)	(1.46)	(0.61)	(0.80)	
MktLevInd	0.307	0.300	0.289	0.270	0.261	0.253
Δ MktLevInd	0.054**	0.045**	0.035**	0.017**	0.007	
	(4.73)	(4.08)	(3.29)	(2.01)	(1.20)	
Δ(MktLev − MktLevInd)	-0.005	-0.002	-0.011	-0.009	-0.001	
	(-0.31)	(-0.16)	(-0.82)	(-0.95)	(-0.14)	
BookLev	0.317	0.312	0.307	0.298	0.294	0.294
Δ BookLev	0.023**	0.018*	0.013	0.004	0.000	0.000
	(2.03)	(1.70)	(1.50)	(0.67)	(0.10)	
BookLevInd	0.277	0.271	0.267	0.261	0.257	0.251
Δ BookLevInd	0.025**	0.019**	0.016**	0.010**	0.006*	
	(4.38)	(3.67)	(3.54)	(2.24)	(1.94)	
Δ(BookLev − BookLevInd)	-0.002	-0.001	-0.003	-0.005	-0.005	
	(-0.18)	(-0.07)	(-0.33)	(-0.85)	(-1.17)	

Panel B: Firms with contract negotiations and no strikes						
	-5	-4	-3	-2	-1	Negotiation
MktLev	0.322	0.318	0.319	0.321	0.317	0.332
Δ MktLev	-0.009	-0.014	-0.013	-0.011	-0.014**	
	(-0.96)	(-1.49)	(-1.63)	(-1.51)	(-2.80)	
MktLevInd	0.271	0.263	0.254	0.248	0.246	0.250
Δ MktLevInd	0.021**	0.013**	0.004	-0.001	-0.004	
	(3.43)	(2.29)	(0.78)	(-0.26)	(-1.05)	
Δ(MktLev − MktLevInd)	-0.030**	-0.027**	-0.017**	-0.010	-0.011**	
	(-3.42)	(-3.13)	(-2.33)	(-1.40)	(-2.15)	
BookLev	0.292	0.294	0.294	0.298	0.298	0.307
Δ BookLev	-0.015**	-0.014**	-0.014**	-0.009**	-0.009**	
	(-2.46)	(-2.43)	(-2.64)	(-2.05)	(-2.73)	
BookLevInd	0.270	0.267	0.263	0.261	0.260	0.261
Δ BookLevInd	0.009**	0.005*	0.002	0.000	-0.002	
	(3.02)	(1.84)	(0.72)	(0.00)	(-0.95)	
Δ(BookLev − BookLevInd)	-0.025**	-0.020**	-0.016**	-0.009**	-0.008**	
	(-4.07)	(-3.43)	(-3.07)	(-2.06)	(-2.17)	

Table 4: Probit Model of Union Strike Activity

This table presents results of the estimation of an union strike model using all firm/year observations that correspond to a contract negotiation. We report marginal effects estimated at the mean of the independent variables and t-statistics of the coefficient estimates, in parenthesis. Standard errors are adjusted for clustering at the firm level; ** and * denote significance levels of 5% and 10%, respectively. All specifications include a constant term and time fixed effects. All independent variables are defined as in Section 2.1 and are standardized so that they have a mean of zero and a standard deviation of one. For a contract negotiation in fiscal year t, the change in firm variable X is calculated as $\Delta X_t = X_{t-1} - X_{t-5}$. Stock market return and volatility are calculated between $t-1$ and $t-5$. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

	(1)	(2)	(3)
Δ MktLeverage	−0.033 **	−0.045 **	−0.027 **
	(−2.69)	(−2.24)	(−3.51)
Equity return		−0.040	−0.016 *
		(−1.62)	(−1.69)
Equity volatility		−0.016	−0.006
		(−0.88)	(−0.98)
Δ Inventory/Sales		−0.016	−0.001
		(−0.87)	(−0.17)
Δ Fixed Assets/TA		0.010	0.004
		(0.71)	(0.67)
Δ Employees/TA		0.003	−0.001
		(0.20)	(−0.12)
Δ Profit/TA		0.009	0.008
		(0.52)	(1.12)
Δ Cash/TA		0.013	0.006
		(0.91)	(1.19)
Δ Dividends/TA		0.011	0.006
		(1.05)	(0.90)
Δ MktLevInd		0.011	
		(0.68)	
Right-to-work State		−0.065 *	
		(−1.82)	
Time Effects	X	X	X
Industry Effects			X
State Effects			X
pseudo-R^2	0.074	0.114	0.321

Table 5: Changes in Leverage After Contract Negotiations

This table contains average leverage ratios in the five years following the negotiation along with first differences from year t, $(t = +1, +2, ..., +5)$ from the negotiation year. We tabulate these statistics for market leverage (MktLev), 3-digit SIC median industry market leverage (MktLevInd), book leverage (BookLev), and 3-digit SIC median industry book leverage (BookLevInd). We also include the average difference in difference We also include the average difference in difference (Δ(MktLev − MktLevInd) and Δ(BookLev-BookLevInd)): first firm leverage versus industry leverage, second year t versus negotiation year. Panel A presents results for negotiations that lead to strikes. Panel B presents results for negotiations that do not lead to work stoppages. Panel C presents the average triple-difference: first firm leverage versus industry leverage, second year t versus negotiation year, third firms with strikes versus firms with no strikes ($\Delta\Delta$(MktLev − MktLevInd) and $\Delta\Delta$(BookLev − BookLevInd)). Panel D presents the average triple-difference: first firm leverage versus "target" leverage, second year t versus negotiation year, third firms with strikes versus firms with no strikes ($\Delta\Delta$(MktLev − MktLevTgt) and $\Delta\Delta$(BookLev − BookLevTgt)). "Target" leverage ratios (MktTgt and BookTgt) is obtained from cross-sectional regressions that control for commonly accepted determinants of capital structure as in Byoun (2008). t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

Panel A: Firms with contract negotiations and strikes

	Strike	+1	+2	+3	+4	+5
MktLev	0.344	0.358	0.374	0.382	0.395	0.408
Δ MktLev		0.014	0.030**	0.038**	0.052**	0.064**
		(1.62)	(2.36)	(2.50)	(2.77)	(3.27)
MktLevInd	0.253	0.255	0.264	0.271	0.276	0.279
Δ MktLevInd		0.002	0.010	0.018*	0.023*	0.026**
		(0.37)	(1.22)	(1.70)	(1.91)	(2.19)
Δ(MktLev − MktLevInd)		0.012	0.019*	0.020	0.028	0.038**
		(1.34)	(1.67)	(1.30)	(1.51)	(2.00)
BookLev	0.294	0.303	0.308	0.317	0.328	0.330
Δ BookLev		0.010*	0.014**	0.024**	0.034**	0.037**
		(1.75)	(2.14)	(2.78)	(3.10)	(3.37)
BookLevInd	0.251	0.253	0.249	0.252	0.252	0.250
Δ BookLevInd		0.001	-0.002	0.001	0.001	-0.001
		(0.54)	(-0.58)	(0.17)	(0.09)	(-0.17)
Δ(BookLev − BookLevInd)		0.008	0.016**	0.023**	0.034**	0.038**
		(1.42)	(2.47)	(2.65)	(3.22)	(3.59)

Panel B: Firms with contract negotiations and no strikes						
	Negotiation	+1	+2	+3	+4	+5
MktLev	0.332	0.330	0.335	0.330	0.330	0.338
Δ MktLev		-0.002	0.003	-0.002	-0.002	0.006
		(-0.33)	(0.40)	(-0.22)	(-0.22)	(0.67)
MktLevInd	0.250	0.242	0.242	0.244	0.243	0.245
Δ MktLevInd		-0.008**	-0.007*	-0.006	-0.007	-0.005
		(-2.24)	(-1.76)	(-1.00)	(-1.11)	(-0.85)
Δ(MktLev − MktLevInd)		0.006	0.011	0.004	0.005	0.012
		(1.12)	(1.50)	(0.44)	(0.54)	(1.34)
BookLev	0.307	0.307	0.304	0.305	0.302	0.302
Δ BookLev		-0.000	-0.003	-0.003	-0.005	-0.006
		(-0.02)	(-0.72)	(-0.56)	(-0.92)	(-0.95)
BookLevInd	0.261	0.256	0.253	0.250	0.246	0.241
Δ BookLevInd		-0.005**	-0.008**	-0.011**	-0.015**	-0.020**
		(-3.44)	(-3.24)	(-3.75)	(-5.06)	(-6.21)
Δ(BookLev − BookLevInd)		0.005*	0.005	0.008	0.010*	0.015**
		(1.69)	(1.07)	(1.57)	(1.95)	(2.55)

Panel C: Firms with strikes minus firms with no strikes relative to industry median leverage					
	+1	+2	+3	+4	+5
ΔΔ(MktLev − MktLevInd)	0.001	0.012	0.031*	0.043**	0.043**
	(0.14)	(0.89)	(1.79)	(2.16)	(2.14)
ΔΔ(BookLev- BookLevInd)	-0.000	0.012	0.020**	0.032**	0.034**
	(-0.03)	(1.45)	(1.97)	(2.73)	(2.81)

Panel D: Firms with strikes minus firms with no strikes relative to "target" leverage					
	+1	+2	+3	+4	+5
ΔΔ(MktLev − MktTgt)	0.003	0.008	0.036**	0.040**	0.057**
	(0.34)	(0.68)	(2.33)	(2.48)	(3.11)
ΔΔ(BookLev − BookTgt)	0.000	0.007	0.023**	0.025**	0.039**
	(0.07)	(0.90)	(2.40)	(2.18)	(3.46)

Table 6: Changes in Leverage After Contract Negotiations Conditional on Strike Winner

This table contains average market and book leverage triple-differences in the five years following a strike. Results for the cases where the unions win the strike are reported in Panel A. Results for the cases where the company wins are reported in Table B. We are able to determine whether the union or the company won a strike by examining contemporary news reports contained in the Factiva database. Of the 162 strikes in our sample, we are able to classify 15 as resulting in a clear union victory, and 41 as resulting in a clear company win. We tabulate the average triple-difference: first firm leverage versus 3-digit SIC median industry leverage, second year t ($t = +1, +2, ..., +5$) versus negotiation year, third firms with strikes versus firms with no strikes ($\Delta\Delta$(MktLev − MktLevInd) and $\Delta\Delta$(BookLev − BookLevInd)). We also report the average triple-difference relative to "target" ratios ($\Delta\Delta$(MktLev − MktLevTgt) and $\Delta\Delta$(BookLev − BookLevTgt)). "Target" leverage ratios (MktTgt and BookTgt) are obtained from cross-sectional regressions that control for commonly accepted determinants of capital structure as in Byoun (2008). t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

Panel A: Union win						
	Negotiation	+1	+2	+3	+4	+5
$\Delta\Delta$(MktLev- MktLevInd)		0.060*	0.077**	0.130**	0.135**	0.151**
		(1.92)	(2.67)	(3.19)	(2.53)	(2.96)
$\Delta\Delta$(BookLev- BookLevInd)		0.036*	0.066**	0.092**	0.087**	0.049
		(1.68)	(2.50)	(3.04)	(2.18)	(1.15)
$\Delta\Delta$(MktLev − MktTgt)		0.063**	0.086**	0.135**	0.101**	0.154**
		(2.38)	(2.66)	(3.93)	(3.15)	(2.96)
$\Delta\Delta$(BookLev − BookTgt)		0.027	0.065*	0.073**	0.066	0.030
		(1.36)	(1.85)	(2.32)	(1.60)	(0.97)
Panel A: Company win						
	Negotiation	+1	+2	+3	+4	+5
$\Delta\Delta$(MktLev − MktLevInd)		-0.020	-0.004	-0.002	-0.010	0.010
		(-1.04)	(-0.15)	(-0.06)	(-0.23)	(0.25)
$\Delta\Delta$(BookLev − BookLevInd)		-0.020*	-0.003	0.008	0.034	0.031
		(-1.94)	(-0.27)	(0.50)	(1.61)	(1.46)
$\Delta\Delta$(MktLev − MktTgt)		-0.016	-0.006	-0.027	-0.024	-0.025
		(-0.84)	(-0.31)	(-0.92)	(-0.72)	(-0.92)
$\Delta\Delta$(BookLev − BookTgt)		-0.010	-0.005	0.008	0.011	0.021
		(-0.98)	(-0.47)	(0.61)	(0.55)	(1.24)

Table 7: Net Equity and Net Debt Issues Before and After Strikes

This table contains average net debt issuance (NetDebtIss), net equity issuance (NetEquityIss), and net issuance (NetIss), defined as net debt issuance minus net equity issuance. All variables are scaled by book value of assets defined as debt plus book value of equity plus preferred stock minus deferred taxes. We define the average issuance from year $t-5$ to year $t-1$ as the Before issuance, and the average issuance from $t+1$ to $t+5$ as the After issuance, where t is the year of the strike. Panel A reports results for all strikes, Panel B for strikes won by unions, Panel C for strikes won by the company. We are able to determine whether the union or the company won a strike by examining contemporary news reports contained in the Factiva database. Of the 162 strikes in our sample, we are able to classify 15 as resulting in a clear union victory, and 41 as resulting in a clear company win. t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

Panel A: All strikes

	Before	After	After − Before
NetDebtIss	0.008	0.018**	0.010
	(1.55)	(2.80)	(1.13)
NetEquityIss	-0.010**	-0.027**	-0.016**
	(-2.10)	(-5.39)	(-2.63)
NetIss	0.018**	0.045**	0.026**
	(2.56)	(6.31)	(2.33)

Panel B: Union wins

	Before	After	After − Before
NetDebtIss	-0.020*	0.037*	0.056**
	(-1.74)	(1.89)	(2.09)
NetEquityIss	0.001	-0.019**	-0.020**
	(0.10)	(-2.34)	(-1.99)
NetIss	-0.021	0.056**	0.076**
	(-1.47)	(3.25)	(3.04)

Panel C: Company wins

	Before	After	After − Before
NetDebtIss	0.011	-0.005	-0.017
	(1.04)	(-0.39)	(-0.99)
NetEquityIss	-0.016*	-0.034**	-0.018
	(-1.72)	(-2.38)	(-1.02)
NetIss	0.027*	0.028*	0.001
	(1.79)	(1.70)	(0.05)

Table 8: Net Equity and Net Debt Issuance After Strikes Relative to Cross-Sectional Issuance Activity

This table contains estimated coefficients of pooled linear regressions of net debt issuance (NetDebtIss) and net equity issuance (NetEquityIss) where the key independent variable (Strike) is an indicator variable equal to one when that year/firm observation corresponds to a firm that has experienced a strike in either one of the previous five years. Similarly we construct indicator variables that indicate whether there was a strike in the past five years and the strike was won but the union (Union win), or by the firm (Company win) or is undetermined (No winner). Net issuance variables are scaled by book value of assets (BVA). In choosing control variables, we employ the empirical decision model of corporate financing proposed by Byoun (2008), and include: the distance of market leverage from a "target" debt ratio obtained from cross-sectional regressions that control for commonly accepted determinants of capital structure (MktLev – Tgt); a measure of the firms financial surplus (FinSurp) that we compute as FinSurp = OCF-DIV-I+Δ W, where OCF is operating cash flow, DIV dividends, I investments, and Δ W the change in working capital; and an interaction term, (MktLev − Tgt) × FinSurp. Each one of this variables is included in the regression specification controlling for the asymmetric effect caused by the variable's sign. We used indicator variables to identify the sign of (MktLev − Tgt): Above is set equal to one when (MktLev − Tgt)>0; Below is set equal to one when (MktLev − Tgt)<0; Surplus is set equal to one when FinSurp>0; Deficit is set equal to one when FinSurp<0. All dependent and independent variables are winsorized at 1^{st} and 99^{th} percentile. All specifications include time effects. Standard errors are adjusted for clustering at the firm level. t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 528 contract negotiations involving at least 1,000 workers, of which 162 lead to a union strike (15 union victories, and 41 company wins), and a total of 80,991 firm/year observations. Contract negotiation data are from the BNA Labor Plus database. Strike data are from the BNA Labor Plus and the BLS Work Stoppages database. Accounting and stock market data are from COMPUSTAT and CRSP, respectively. The sample extends from January 1993 to December 2008.

	(1) NetDebtIss	(2) NetDebtIss	(3) NetEquityIss	(4) NetEquityIss
Strike	0.012**		-0.021**	
	(2.64)		(-7.35)	
Union win		0.022*		-0.020**
		(1.84)		(-3.30)
No winner		0.012**		-0.020**
		(2.07)		(-6.26)
Company win		-0.002		-0.011*
		(-0.21)		(-1.81)
Above × (MktLev − Tgt)	-0.081**	-0.081**	0.033**	0.033**
	(-4.32)	(-4.32)	(2.72)	(2.72)
Below × (MktLev − Tgt)	-0.018	-0.018	0.020	0.020
	(-1.19)	(-1.18)	(1.31)	(1.31)
Surplus × FinSurp	-0.523**	-0.523**	-0.104**	-0.104**
	(-7.66)	(-7.66)	(-4.37)	(-4.37)
Deficit × FinSurp	-0.232**	-0.232**	-0.859**	-0.859**
	(-15.43)	(-15.43)	(-34.80)	(-34.80)
Above × Surplus × (MktLev − Tgt) × FinSurp	-0.093	-0.093	0.250**	0.250**
	(-0.26)	(-0.26)	(3.68)	(3.68)
Above × Deficit × (MktLev − Tgt) × FinSurp	-0.462**	-0.462**	0.823**	0.823**
	(-3.32)	(-3.32)	(3.35)	(3.35)
Below × Surplus × (MktLev − Tgt) × FinSurp	0.504**	0.505**	-0.431**	-0.431**
	(3.45)	(3.45)	(-1.99)	(-1.99)
Below × Deficit × (MktLev − Tgt) × FinSurp	-1.351**	-1.351**	1.324**	1.324**
	(-3.38)	(-3.38)	(5.74)	(5.74)
Adjusted R^2	0.279	0.279	0.526	0.526