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

Brett W. Myers
The Krannert School of Management
Purdue University†

Alessio Saretto
The Krannert School of Management
Purdue University‡

January 2010

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.

*We thank David Denis, John McConnell, Michael Roberts, Amir Sufi and seminar participants at Cornell University, Purdue University, Texas A&M University, and the University of Alabama for helpful comments. All errors are our responsibility.

†West Lafayette, IN 47907, phone: (765) 496-7674, e-mail: bmyers@purdue.edu.

‡West Lafayette, IN 47907, phone: (765) 496-7591, e-mail: asaretto@purdue.edu.

1. Introduction

A growing part of the capital structure literature 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]

One important input market and non-financial stakeholder is represented by labour unions. Existing theoretical studies argue that firms, from here on intended as the shareholders, employing a unionized workforce might 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 cash flows. As debt financing obligates a firm to devote portions of its future revenues to creditors, it reduces future cash flows available to unions and increases the probability of bankruptcy. If bankruptcy is a bad state for the union, debt financing can preserve shareholder wealth by precluding the formation of unions, as in Bronars and Deere (1991), or by improving a firm's bargaining position during contract negotiations with existing unions, as in Dasgupta and Sengupta (1993) and Perotti and Spier (1993). If unions are senior claimants in bankruptcy, as in Simintzi, Vig, and Volpin (2009), debt financing cannot be effectively used to obtain concessions from unions. As of the empirical evidence, on the one hand, in the United States, leverage is positively correlated with unionization rates at both the industry and firm level — Bronars and Deere (1991) and Matsa (2009), and firms lower their debt ratios when the states in which they operate experience legal shocks that reduce union bargaining power — Matsa (2009). On the other hand, in a sample of 21 countries, leverage is found to be negatively correlated with employment protection — Simintzi, Vig, and Volpin (2009).

In this paper, we study whether capital structure decisions affect the outcomes of contract negotiations between labor unions and firms and how these outcomes affect subsequent

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

capital structure decisions.[2] In particular, first we examine whether leverage affects the likelihood and the duration of a union strike. Our objective in doing so is to explicitly study whether non-financial stakeholders (in this case unionized labor) respond to the strategic incentives supplied by capital structure. The relevance of this analysis rests on the fact that we test the underlying premise of this literature that the behavior of non-financial stakeholders is altered by capital structure decisions of firms. Second, we analyze whether firm's capital structure decisions are related to the outcome of the negotiation process. In particular, we study changes in leverage after strikes as well as the related issuance activities. We compare changes in leverage that follow a strike to changes in leverage that follow a negotiation that ends without a strike. Further, 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. The relevance of this analysis rests on the fact that we provide another measure of how much the interaction of firms and unions affect capital structure decisions. In summary we ask two questions: Is the probability of a strike related to changes in leverage? Is the rise in leverage due to firms actively managing their capital structure in the years following the strike?

As to the first 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 cash flows, thus reducing the attractiveness of a 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 a bargaining tactic. We test the hypothesis that changes in leverage affects the probability of a strike by estimating the parameters of a probabilistic model of union strikes. Since in our sample, on average, firms renegotiate large contracts every 4.5 years we condition the strike probability not only on the level of leverage in the fiscal year preceding the strike but also on the five year change in leverage as a way to capture the change of bargaining power relative to the previous negotiation. 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. We find that a one standard deviation increase in the five year change of leverage results in a reduction in the strike probability of 7%, where the unconditional probability is 25%. Leverage is effective at diminishing union power to the extent that it moves the firm closer to bankruptcy. Consistent with this, we find that the interaction between leverage and equity volatility strongly affects the likelihood of a strike: a decrease in leverage has very little effect on strike likelihood for firms with low equity, but a large effect for firms with high equity volatility. Similarly, firms that do not pay dividends, have a longer maturity structure, or rely exclusively on publicly traded debt can more credibly use debt strategically thus leading to lower strike probabilities.

As to the second 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]

We find that, after a 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. Increases in leverage are not

[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. Lee and Mas (2009) show that the formation of unions lead a decrease in equity value of at least $40,500 per unionized worker. See also Ruback and Zimmerman (1984), Clark (1984), and Voos and Mishel (1986).

driven by changes in equity value; we find post-strike increases in book as well as in market ratios. In the case of market leverage, we find that post-strike "implied" market leverage ratios also increase, where implied market leverage ratios are calculated using the equity price returns from matched firms. Post-strike leverage increases are particularly pronounced when the union wins the strike. These firms have, presumably, the greatest incentive to increase their leverage (having realized a bad strike outcome) and this behavior is consistent with these firms seeking to enhance their bargaining position and to deter strike activity prior to the next round of contract negotiations. 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.

Post-strike financing activities are consistent with firms intentionally increasing leverage. 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. We also 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 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 (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). 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 and insignificant when the firm 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. The latter result is therefore in contrast with the international evidence presented by Simintzi, Vig, and Volpin (2009) who find that increases in employment protection are associated with lower leverage ratios.

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 evidence in support of the rationale that underscores this strain of the literature, namely that capital structure can be used as a strategic variable because it influences the behavior non-financial stakeholders.

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. In Section 3 we present the results of our analysis of the determinants of strike activity and strike duration. Section 4 contains the analysis of the post-strike capital structure decisions of the firms. Section 5 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). Contract negotiation data are obtained from BNA. The BNA Labor PLUS database. The combined dataset extends from January 1993 through December 2008 and includes the following data fields: company name, contract end date, announcement and end date of the strike, number of workers involved, union identifier. Work stoppages and contract negotiations for firms in the BNA and BLS database are matched to firm permanent numbers in the intersection of the CRSP and COMPUSTAT 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 601 contract negotiations, 155 of which result in a work stoppage. 98 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. The number of strikes and contract negotiations are reported by industry in Tables 1 from which 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. Credit rating are from the Standard and Poor's credit rating database and from SDC.

Union coverage information is obtained from the Union Membership and Coverage Database maintained by Barry Hirsh and David Macpherson (www.unionstats.com). The dataset contains union coverage information at the industry level. Data before 2003 is matched to the firm level observations by 4-digit SIC, while data after 2003 is matched by NAICS.

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) repurchase. 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 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 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% 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%. 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 re-hired. 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. Leverage and Union Strikes

In this section we study whether leverage affects the likelihood and the duration of a union strike. Our objective in doing so is to study whether non-financial stakeholders (in this case unionized labor) respond to the strategic incentives supplied by capital structure. The relevance of this analysis rests on the fact that we test the underlying premise of this literature that the behavior of non-financial stakeholders is altered by the capital structure decisions of firms.

3.1. Change in Leverage and the Likelihood of a Strike

We expect leverage to 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. There may be cases where this is not true. For example, if layoffs are imminent, a labor union may have little to lose by initiating a strike. We argue that this is not generally the case and a review of news articles about the strikes in our sample reveal little support to the idea that unions initiate strikes when they are weak. 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). Among other things, bankruptcy can result in job loss, wages being revised downward, and the loss or reduction of pension benefits. Further, labor claims are often junior to creditors. An increasing possibility of bankruptcy therefore 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). For instance, firms often seek an advantage in bargaining by pleading poverty. Unions can test the truthfulness of this claim by striking. If the firm is financially sound, they may be willing to settle quickly, otherwise they may be willing to endure a longer strike (as we will study in the next section). We argue that leverage decreases informational asymmetries between firms and unions by credibly constraining future cash flows, thus reducing the attractiveness of a strike as a bargaining tactic.

There are two testable implications: in the cross-section firms with high leverage at the time of the contract negotiation should be less likely to experience a strike; in the time-series firms with increasing leverage leading to a contract negotiation should be less likely to experience a strike. We test these hypotheses by pooling all firm/year observations that correspond to a contract negotiation and estimate the parameters of probabilistic models of union strikes. In order to test for the time-series implication we include as a key independent variable the level of leverage; in order to test for the time-series implication we include the change in leverage. Since in our sample, firms renegotiate large contracts with unions every 4.5 years and we condition the analysis on the level and five year change, from $t-5$ to $t-1$, of all independent variables. Most of our results are robust to using four or three year changes, from $t-4$ or $t-3$ to $t-1$ and all results of these analysis hold if we estimate separately coefficients of strike model with only levels or only changes.

We include a number of control variables. Strike activity is related to the ability of unions to organize the labour force, therefore the most obvious determinant of a strike is the extent to which the union represents employees; we therefore include union coverage. 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), companies 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 ratios of inventory to sales, fixed assets to total assets, and number of employees to total assets. As a measure of firm size we include the natural logarithm of sales. 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 effects that profitability and dividend policy have on capital structure, we include ratios of profitability and dividends to total assets. 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 the ratio of cash holdings to total assets.

In Table 4 we report the estimated marginal effects and t-statistics of the coefficients of a probit, a logit, and a linear probability model that we separately estimate for market and book leverage as the key independent variables. In all our analysis we include year fixed effects. In order to account for industry norms and industry demographic information, we include industry fixed effects (based on 2-digit SIC codes). Finally, similar to Tracy (1986), we include union fixed effects for unions with more than 8 strikes in the sample. All independent variables are standardized with mean zero and unit standard deviation to ease the interpretation of the marginal effects.

Consistent with previous studies on strike activity we find that, in the cross-section, firms that at the time of the negotiation are larger, have more cash holdings and more representative unions are more likely to experience a strike — Tracy (1986), Card (1990), Card (1991), Cramton and Tracy (1992), and Klasa, Maxwell, and Ortiz-Molina (2009). The

level of leverage has a positive and insignificant impact on the strike probability. Although theory would suggest a negative relationship, the result is not surprising and might in fact be mechanically due to the fact that, in the cross-section, firms with highly unionized work force have high leverage ratios and union coverage is the most strong determinant of strike activity. Notably the stock market return has a negative impact on the likelihood of a strike. This result is entirely driven by the stock return in the year previous to the strike. Conversely the firm's profitability in the year before the strike has a positive but insignificant marginal effect (the coefficient is although significant when we only include levels and exclude changes in the control variables.) Those two findings may be indicating that the market is able to anticipate that the upcoming contract negotiation will be problematic.

Consistent with our intuition that negotiation dynamics are determined by the relative change in bargaining power from the previous contract negotiation, we find that the five year change in leverage is positively related to the probability of a strike. Across all statistical specification of the strike probability, the marginal effect of an increase in leverage is positive and statistically significant. A one standard deviation increase (around the mean) in the five year change in market leverage decreases the probability of a strike by approximately 9%, while an increase in book leverage lead to a decrease of the strike probability of approximately 5%.[4]

The effect that leverage has in reducing the union bargaining power is related to the incentive and the credibility that the firm has in using debt strategically. On the one hand, firms with high volatility of equity have greater incentives in using debt strategically than firms with low volatility because they can use the threat of bankruptcy more effectively — Matsa (2009). On the other hand, firms that pay dividends have a harder time convincing unions that the firm is in bad financial wealth — DeAngelo and DeAngelo (1991). Similarly firms that have a short maturity structure of debt have a harder time obtaining concessions from unions during negotiations because they might have to include debt holders in the negotiation process — Perotti and Spier (1993). An analogue argument, which is however not supported by any theoretical model that we know of, can be made for firms that rely on

[4]The five year change in market and book leverage have standard deviations equal to 18.3% and 13.0%, respectively.

bank debt as opposed to publicly traded debt.

We test these implications by estimating the parameter of a probit model of strike duration which includes, besides all the independent variables used in the previous analysis, interaction terms of leverage levels and changes in leverage with, respectively, an indicator variable set to one if the firm is not paying dividends (NoDiv), the proportion of debt that is due in more than one year (Maturity), and indicator variable set to one if the firm has a credit rating (Rating), and the level of the equity volatility (Volatility). All the variables are measured as of the end of the fiscal year before the negotiation.

In Table 5 we report the estimated marginal effects and t-statistics of the coefficients of the change in leverage and of the interaction terms. All other marginal effects and t-statistics are in line with those reported in Table 4, are omitted for brevity, and are available upon request. All specifications include a constant and time, industry and union fixed effects. The impact of the interaction terms with the level of leverage is positive and non-statistically significant, leading us not to be able to reject the null hypothesis of no relationship between leverage and strike probability in the cross-sectional test. On the contrary, the estimated coefficients on the interaction terms with the change in leverage have a negative sign, as expected, and, with the exception of the rating interaction with the change in book leverage that has a t-statistic of -1.63, are statistically significant. Moreover, with the exception of the rating indicator, the inclusion of the interaction terms makes the coefficient on the change in leverage insignificant, thus indicating that only firms that are credible in their use of debt can discourage 2unions from being aggressive during negotiations.

3.2. Change in Leverage and the Duration of a Strike

Another important aspect of the negotiation outcome between unions and firms is the duration of a strike, conditional on a strike having occurred. There are several negotiation models that allow for strikes to happen and they are generally based on the assumption of asymmetric information between the firm and the union as in Hayes (1984) and Tracy (1987). In this setting, the procedural rules of the negotiation affect the terms and the settlement of the labor dispute — see Kennan and Wilson (1989) and Kennan and Wilson

(1993) for complete reviews. In particular, if only the firm has private information the union uses a strike as a way to extract some of this private information. The solution to the negotiation involves the so called "screening" equilibrium in which the union engages in price discrimination by submitting a series of subsequently lower offers to the firm. Those models are often favored because they explain some basic empirical properties of US strikes, namely that there is a negative correlation between settlement wages and strike duration. In this sense long strikes are generally seen as favorable outcomes to the firm — Kennan and Wilson (1989) . Our sample seems to confirm this empirical regularity: the average duration of strikes won by unions is equal to 55 days while the average duration of strikes won by the firm is equal to 110 days.

The "screening" equilibrium provides us with two more testable implications of the relationship between leverage and union bargaining power. In the cross-section, unions should take longer to obtain concession from firms with high leverage, and hence strike duration should be long. In the time-series, unions should take longer to obtain concession from firms with increasing leverage.

We test this hypotheses by estimating the parameters of a hazard rate model of strike duration. In order to test for the time-series implication we include as a key independent variable the level of leverage; in order to test for the time-series implication we include the change in leverage. Since in our sample, firms renegotiate large contracts with unions every 4.5 years and we condition the analysis on the level and five year change, from $t-5$ to $t-1$, of all independent variables. Most of our results are robust to using four or three year changes, from $t-4$ or $t-3$ to $t-1$ and all results of these analysis hold if we estimate separately coefficients of strike model with only levels or only changes.

We include the same set of control variables included in the analysis of the strike probability discussed in the previous section. In Table 6 we report the parameters and t-statistics of the coefficients of an exponential hazard rate model that we separately estimate for market and book leverage as the key independent variables. We include industry, and union fixed effects. In order to preserve some degrees of freedom we exclude year fixed effects and include the aggregate unemployment rate. All independent variables are standardized with

mean zero and unit standard deviation.

The results are indicate that firms that are larger, have more employees, more union coverage and more cash experience shorter strikes. Leverage is negatively associated with strike duration, but as for the analysis of strike likelihood, the parameter is not statistically significant. Notably, the ratio of inventory to sales is positively and significantly related to strike duration, suggesting that the ability of the firm to sustain long periods of stopped production because of the large inventory leads to longer strikes. More importantly, the coefficient of the change in leverage is positive and statistically significant. Strikes for which the firm has been increasing leverage are therefore longer suggesting that it is harder for the union to obtain concessions because the firm is successful in claiming poverty.

4. Firm Behavior Following Contract Negotiations

In this section, we analyze whether firm's capital structure decisions are related to the outcome of the negotiation process. In particular, we study changes in leverage after strikes as well as the related issuance activities.

4.1. Post-Strike Change in Leverage

In Table 7 we tabulate average 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.

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. The changes in leverage are not due to changes in industry median, as the difference between changes in the two are statistically significant for both market and book leverage. 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.

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. The results mirror almost exactly those reported in Panel A.

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.[5] Again, we obtain similar results.

[5]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:

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

4.2. Changes in Leverage Controlling for Determinants of Capital Structure

Table 8 tabulates coefficient estimates of a regression model of changes in leverage for firm/year observations corresponding to a contract negotiation. The dependent variable is the change in market leverage (Panel A) and the change in book leverage (Panel B). The key independent variable is an indicator set to one for changes in leverage that follow a strike and set to zero for changes in leverage that follow a negotiation that does not lead to a strike. We repeat the analysis over different time horizons in order to provide an empirical description of changes in leverage over the five years following a negotiation ($t = +1, +2, ..., +5$). Among the independent variable we include the corresponding changes in common determinants of capital structure as in Byoun (2008): median industry debt ratios (which Frank and Goyal (2008) find is an important determinant of a firms leverage ratio), the marginal tax rate, the market-to-book ratio of assets (which is associated with growth options), firm size, Altman's modified Z-Score, and ratios of profitability, depreciation, fixed assets, research and development, and dividends to total assets. Finally, we include the change in the union coverage ratio. Each specification includes a constant and time, industry, and union fixed effects.

We find that, after controlling for determinants of capital structure, firms which experience a strike during contract negotiations increase their leverage in the years following a strike, relative to firms that experience contract negotiations but no strike. This effect is economically large: market leverage increases by 6.2% and book leverage increases by 4.6% five years after a strike. The increase in leverage is significant by time $t+2$ for book leverage and $t+1$ for market leverage. These results are consistent with a firm increasing its leverage in order to be in a better bargaining position for the next round of contract negotiations.

We also estimate the coefficients of a linear regression model of leverage changes in which the key independent variables are indicators set to one if the union wins the strike (Union win), if the company wins the strike (Company win) and if the result is undetermined (No win), respectively. The procedure used to determined the strike winner is described in

$MktCap_0$ 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.

Sectionr̃efsec:outcome-determination. Results are reported in Table 9. We find that the post-strike increase in leverage is most pronounced when the union wins the strike. Market and book leverage increases by 13.9% and 8.2% for firms that lose the strike. When the company wins, increases in leverage are economically small and statistically insignificant. Results for the case when the firm wins the strike lie in the middle and are sometimes significant.

4.3. 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 10 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.

4.4. 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 11. 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 11 are consistent with firms being more active than the average firm in the cross-section in the years following a strike.

5. Conclusion

We provide evidence that unions respond to the incentives provided by capital structure in determining whether or not to strike. In particular, unions are more likely to strike if their employer lowers its leverage prior to the contract negotiation. This result is robust to unionization rates, employment rates, other determinants of a firm's capital structure, and as other financial variables that are known to influence the likelihood of a strike (including changes in a firm's 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 relative to other firms in the cross-section. We interpret this evidence as suggesting that labor unions, which are important non-financial stakeholders, impact the capital structure decisions that shareholders make to maximize firm value.

These results support the idea that firms use capital structure as a strategic variable in their interactions with non-financial stakeholders. Empirical investigation into the effects of non-financial stakeholders on a firms capital structure may offer insight into one unresolved issues in the capital structure literature: why debt ratios are lower than tradeoff theory predicts. The non-financial stakeholder literature that is applicable to labor unions argues that firms optimally increase their leverage in order to maximize firm value in the presence of organized labor. However, much of the theoretical non-financial stake holder literature predicts downwards pressure on leverage ratios. For example, firms which employ a labor

force with expensive, non-transferable human capital may reduce their labor costs by reducing the likelihood of bankruptcy, and therefore optimally use less leverage. Similarly, firms that produce durable goods may demand higher prices for their products by reducing the probability of bankruptcy. An appeal to non-financial stakeholders may help explain why firms opt to use lower levels of debt than predicted by standard tradeoff theory.

In conclusion, we provide evidence that the behavior of important non-financial stakeholder, namely the decision to strike by organized labor, is impacted by a firms capital structure. We argue that this strengthens existing work on non-financial stakeholders by confirming the underlying premise of this strain of the literature: that non-financial stakeholders respond to the incentives supplied by capital structure, thereby providing a rationale for firms to use leverage as a strategic variable. In turn, firms respond to union strikes by adjusting their capital structure, which is consistent with their using capital structure as a strategic variable.

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.

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.

Card, David, 1990, Strikes and bargaining: a survey of the recent empirical literature, *American Economic Review* 80, 410–415.

———, 1991, Strikes and wages: a test of an asymmetric information model, *Quarterly Journal of Economics* 105, 625–660.

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.

Frank, Murray Z., and Vidhan K. Goyal, 2008, Capital structure decisions: Which factors are reliably important?, *SSRN Working Paper*.

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, 1989, Strategic bargaining models and interpretation of strike data, *Journal of Applied Econometrics* 4, 87–130.

——— , 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.

Lee, David S., and Alexandre Mas, 2009, Long-run impacts of unions on firms: new evidence from financial markets, 1961-1999, *NBER 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.

Simintzi, Elena, Vikrant Vig, and Paolo Volpin, 2009, Labor and capital: Is debt a bargaining tool?, *Working Paper*.

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.

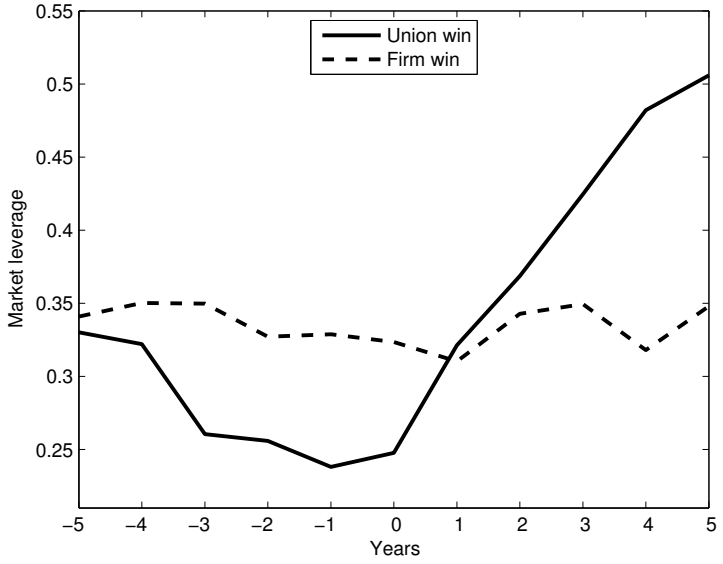
———, 1987, An empirical test of an asymmetric information model of strikes, *Journal of Labor Economics* 5, 149–173.

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 Strike Conditional on Strike Winner

This figure plots average leverage ratios in the years surrounding the strike. In Panel A we plot market leverage for firms for which the unions win the strikes (solid line) and for firms for which the firms win the strikes (dotted line). In Panel B we plot book leverage. Our sample is composed by 601 contract negotiations, of which 155 lead to a union strike involving at least 1,000 workers. 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 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 as resulting in a clear company win. 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

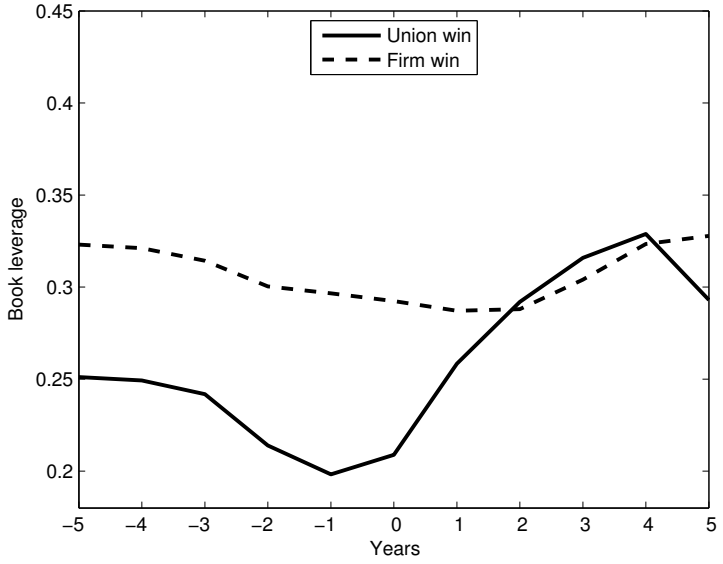


Figure 2: Distribution of Strike Durations

This figure shows an histogram of the duration of strikes in our sample. The duration is expressed in days. The average duration in the sample is equal to 66 days while the median duration is 19 days. Our sample is composed by 601 contract negotiations, of which 155 lead to a union strike involving at least 1,000 workers. 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.

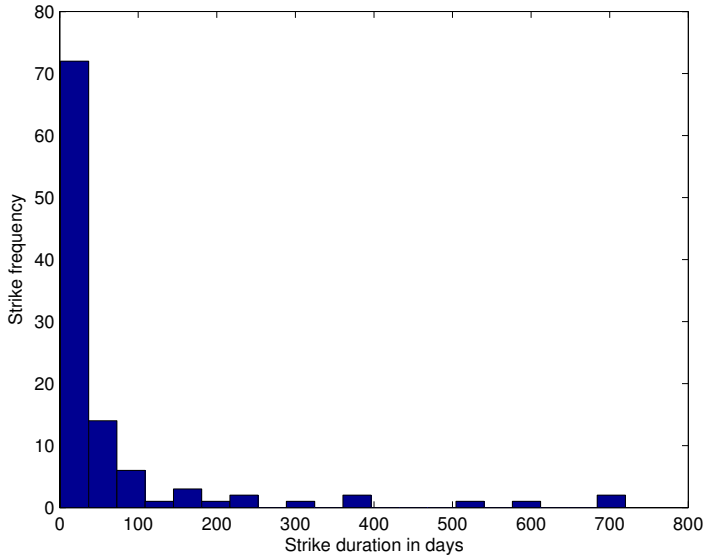


Table 1: Contract Negotiations By Industry

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 601 contract negotiations involving at least 1,000 workers, of which 155 lead to a union 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. Of the 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 as resulting in a clear company win. 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.

	Number of contract negotiations	Number of strikes	Number of strikes won by union	Number of strikes won by company
Consumer non-durables	91	13	2	2
Consumer durables	72	29	1	5
Manufacturing	172	54	7	12
Oil, gas, and coal Extraction	6	1	0	0
Chemicals and allied products	15	3	0	3
Business equipment	36	8	0	2
Telephone and television transmission	47	7	2	1
Wholesale, retail, and some services	101	14	0	9
Health care, medical equipment, and drugs	10	1	0	0
Other (mines, construction, etc.)	51	25	2	4
Total	601	155	14	38

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 601 contract negotiations involving at least 1,000 workers, of which 155 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.

	Negotiation/year			Strike/year			Universe		
	Mean	Median	Stdev	Mean	Median	Stdev	Mean	Median	Stdev
MktLev	0.355	0.339	0.228	0.364	0.344	0.226	0.230	0.154	0.241
BookLev	0.326	0.321	0.168	0.303	0.295	0.143	0.230	0.194	0.215
Inventory/Sales	0.109	0.100	0.064	0.114	0.110	0.071	0.114	0.093	0.115
Fixed Assets/TA	0.372	0.355	0.184	0.363	0.336	0.198	0.282	0.211	0.231
Employees/TA	0.008	0.005	0.009	0.007	0.004	0.007	0.008	0.005	0.011
Ebit/TA	0.136	0.133	0.070	0.125	0.116	0.061	0.094	0.115	0.149
Cash/TA	0.053	0.030	0.064	0.061	0.034	0.071	0.172	0.087	0.199
Dividend/TA	0.016	0.011	0.030	0.012	0.011	0.012	0.008	0.000	0.020
NetDebtIss/BVA	0.036	-0.001	0.193	0.030	-0.002	0.148	0.039	0.000	0.196
NetEquityIss/BVA	-0.024	-0.002	0.093	-0.021	-0.003	0.063	0.044	0.001	0.218
Return	0.105	0.094	0.482	0.108	0.137	0.363	0.129	0.017	0.694
Volatility	0.096	0.083	0.055	0.090	0.082	0.045	0.152	0.129	0.093

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 601 contract negotiations involving at least 1,000 workers, of which 155 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	0.389	0.386	0.363	0.345	0.343	0.336
Δ MktLev	0.053**	0.048**	0.027	0.009	0.007	
	(2.54)	(2.54)	(1.59)	(0.73)	(0.85)	
MktLevInd	0.317	0.304	0.291	0.272	0.262	0.255
Δ MktLevInd	0.062**	0.048**	0.036**	0.017*	0.007	
	(5.32)	(4.37)	(3.27)	(1.95)	(1.09)	
Δ(MktLev- MktLevInd)	-0.009	-0.000	-0.009	-0.008	0.000	
	(-0.54)	(-0.00)	(-0.60)	(-0.73)	(0.03)	
BookLev	0.315	0.310	0.305	0.295	0.292	0.290
Δ BookLev	0.025**	0.019*	0.015	0.005	0.001	
	(2.08)	(1.72)	(1.62)	(0.74)	(0.24)	
BookLevInd	0.277	0.270	0.271	0.262	0.258	0.253
Δ BookLevInd	0.023**	0.017**	0.018**	0.009**	0.005*	
	(4.22)	(3.27)	(3.64)	(2.11)	(1.82)	
Δ(BookLev- BookLevInd)	0.001	0.002	-0.003	-0.004	-0.004	
	(0.11)	(0.16)	(-0.32)	(-0.65)	(-0.85)	

Panel B: Firms with contract negotiations and no strikes						
	-5	-4	-3	-2	-1	Negotiation
MktLev	0.312	0.307	0.307	0.310	0.306	0.321
Δ MktLev	-0.009	-0.015	-0.014*	-0.012	-0.016**	
	(-0.94)	(-1.57)	(-1.71)	(-1.55)	(-2.95)	
MktLevInd	0.270	0.262	0.254	0.246	0.243	0.246
Δ MktLevInd	0.024**	0.016**	0.008	0.000	-0.003	
	(3.82)	(2.62)	(1.36)	(0.10)	(-0.86)	
Δ(MktLev- MktLevInd)	-0.033**	-0.031**	-0.022**	-0.012*	-0.013**	
	(-3.62)	(-3.44)	(-2.85)	(-1.69)	(-2.43)	
BookLev	0.288	0.289	0.290	0.295	0.294	0.305
Δ BookLev	-0.017**	-0.016**	-0.015**	-0.010**	-0.010**	
	(-2.53)	(-2.58)	(-2.74)	(-2.15)	(-2.88)	
BookLevInd	0.270	0.268	0.265	0.261	0.260	0.262
Δ BookLevInd	0.008**	0.006**	0.003	-0.001	-0.002	
	(2.72)	(1.98)	(1.18)	(-0.21)	(-1.06)	
Δ(BookLev- BookLevInd)	-0.025**	-0.022**	-0.018**	-0.010**	-0.009**	
	(-3.98)	(-3.65)	(-3.41)	(-2.04)	(-2.29)	

Table 4: Probability 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 include all firm/year observations that correspond to a contract negotiation (t). Independent variables are measured at year $t-1$ and as the change from year $t-5$ to the year $t-1$. We include: leverage (MktLev and BookLev), the ratio of inventories to sales (Inv/Sales), the ratio of fixed assets to total assets (Ppe/TA), the ratio of employees to total assets (Empl/TA), ratio of operating profits to total assets (Ebitda/TA), the ratio of cash to total assets (Cash/TA), ratio of dividends to total assets (Div/TA), the natural logarithm of sales (Sales), the five year cumulative stock market return, the five year monthly volatility of stock market returns, and the union coverage ratio. For a contract negotiation in fiscal year t, the change in firm variable X is calculated as $\Delta X_t = X_{t-1} - X_{t-5}$. 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. We report estimates from logit, probit and linear probability models. The first three columns of the tables refer to model specifications that include market leverage and the last three columns of the table refer to model specifications that include book leverage. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 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.

	MktLev			BookLev		
	Logit	Probit	Linear	Logit	Probit	Linear
Returns	-0.070**	-0.073**	-0.061**	-0.040	-0.044*	-0.035*
	(-2.19)	(-2.25)	(-2.65)	(-1.53)	(-1.64)	(-1.79)
Volatility	0.005	0.003	0.005	0.009	0.009	0.014
	(0.15)	(0.10)	(0.19)	(0.30)	(0.32)	(0.57)
Δ Lev	-0.091**	-0.090**	-0.090**	-0.052**	-0.048**	-0.047**
	(-2.65)	(-2.63)	(-2.94)	(-2.22)	(-2.03)	(-2.22)
Δ Inv/Sales	-0.027	-0.027	-0.034	-0.027	-0.027	-0.034
	(-1.03)	(-1.02)	(-1.47)	(-0.99)	(-1.00)	(-1.44)
Δ Ppe/TA	-0.017	-0.019	-0.013	-0.019	-0.020	-0.017
	(-0.71)	(-0.76)	(-0.69)	(-0.77)	(-0.82)	(-0.88)
Δ Employees/TA	-0.030	-0.026	-0.034	-0.027	-0.021	-0.029
	(-1.37)	(-1.17)	(-1.42)	(-1.21)	(-0.96)	(-1.22)
Δ Profit/TA	-0.007	-0.007	-0.005	0.025	0.022	0.025
	(-0.22)	(-0.25)	(-0.18)	(0.88)	(0.76)	(0.91)
Δ Cash/TA	-0.029	-0.027	-0.031	-0.017	-0.016	-0.018
	(-1.13)	(-1.06)	(-1.21)	(-0.68)	(-0.62)	(-0.72)
Δ Div/TA	-0.018	-0.015	-0.024	-0.020	-0.016	-0.027
	(-0.81)	(-0.64)	(-1.28)	(-0.88)	(-0.69)	(-1.31)
Δ Sales	0.007	0.005	0.005	-0.000	-0.003	-0.003
	(0.32)	(0.22)	(0.24)	(-0.01)	(-0.13)	(-0.13)
Δ Union Coverage	0.012	0.010	0.014	0.002	-0.002	0.004
	(0.48)	(0.37)	(0.66)	(0.06)	(-0.07)	(0.20)
Lev	0.042	0.044	0.050	0.005	0.004	0.002
	(1.47)	(1.49)	(1.54)	(0.19)	(0.16)	(0.10)
Inv/Sales	0.015	0.019	0.025	0.009	0.014	0.018
	(0.57)	(0.68)	(0.80)	(0.33)	(0.50)	(0.57)
Ppe/TA	0.002	-0.004	0.006	0.008	0.001	0.012
	(0.06)	(-0.13)	(0.20)	(0.26)	(0.03)	(0.38)
Employees/TA	0.004	0.011	0.015	0.001	0.009	0.011
	(0.16)	(0.41)	(0.48)	(0.06)	(0.35)	(0.37)
Profit/TA	0.047	0.053	0.040	0.015	0.023	0.005
	(1.31)	(1.48)	(1.06)	(0.46)	(0.68)	(0.15)
Cash/TA	0.065**	0.063**	0.074**	0.054**	0.052**	0.057**
	(2.42)	(2.44)	(2.53)	(1.99)	(2.00)	(2.00)
Div/TA	0.000	-0.004	0.002	0.002	-0.002	0.005
	(0.02)	(-0.15)	(0.08)	(0.10)	(-0.09)	(0.19)
Sales	0.073**	0.073**	0.079**	0.074**	0.075**	0.081**
	(2.77)	(2.78)	(3.36)	(2.82)	(2.83)	(3.37)
Union Coverage	0.067**	0.068**	0.083**	0.066**	0.068**	0.083**
	(2.49)	(2.45)	(2.81)	(2.43)	(2.42)	(2.78)
Time Fixed Effects	X	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X	X
pseudo$-R^2$	0.228	0.225	0.129	0.223	0.218	0.122

Table 5: Probability Model of Union Strike Activity with Interaction Terms

This table presents results of the estimation of an union strike model using all firm/year observations that correspond to a contract negotiation. We include all firm/year observations that correspond to a contract negotiation (t). Independent variables are measured at year $t-1$ and as the change from year $t-5$ to the year $t-1$. Each specification include all the variables used in Table 4 (Control Variables). The key independent variables are interaction terms of the change in leverage with the following variables: an indicator set to one if the firm does not pay dividends (NoDiv), the proportion of debt due after one year (Maturity), an indicator set to one if the firm has a credit rating by Standard and Poor's (Rating), and the firm's equity volatility (Vol). For a contract negotiation in fiscal year t, the change in firm variable X is calculated as $\Delta X_t = X_{t-1} - X_{t-5}$. We report marginal effects estimated at the mean of the independent variables and t-statistics of the coefficient estimates, in parenthesis. ** and * denote significance levels of 5% and 10%, respectively. All specifications include a constant term and time, industry, and union 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. We report estimates from logit probability model. The first four columns of the tables refer to model specifications that include market leverage and the last four columns of the table refer to model specifications that include book leverage. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 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.

	MktLev				BookLev			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Lev	-0.058	0.101	-0.092**	0.040	-0.042	0.063	-0.064**	0.038
	(-1.47)	(0.97)	(-2.43)	(0.61)	(-1.41)	(0.77)	(-2.22)	(0.69)
Δ Lev $\times$ NoDiv	-0.060**				-0.049*			
	(-2.27)				(-1.87)			
Δ Lev $\times$ Maturity		-0.197**				-0.138*		
		(-1.98)				(-1.71)		
Δ Lev $\times$ Rating			-0.052**				-0.041	
			(-1.97)				(-1.63)	
Δ Lev $\times$ Volatility				-0.148**				-0.114**
				(-2.29)				(-2.09)
Control Variables	X	X	X	X	X	X	X	X
Time Fixed Effects	X	X	X	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X	X	X	X
pseudo$-R^2$	0.249	0.257	0.253	0.261	0.244	0.256	0.247	0.259

Table 6: Hazard Rate Model of Union Strike Duration

This table presents results of the estimation of exponential hazard rate model of the duration of a union strike using all firm/year observations that correspond to a union strike. We report estimated parameters and the relative t-statistics, in parenthesis. ** and * denote significance levels of 5% and 10%, respectively. All specifications include a constant term and time, industry and union 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 601 contract negotiations involving at least 1,000 workers, of which 155 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.

	MktLev	BookLev
Ret	0.137	-0.230
	(0.65)	(-1.34)
Vol	0.061	0.037
	(0.34)	(0.22)
Δ Lev	0.814**	0.532**
	(3.40)	(2.92)
Δ Inv/Sales	-0.142	-0.093
	(-1.13)	(-0.77)
Δ Ppe/TA	0.106	0.171
	(0.74)	(1.16)
Δ Employees/TA	0.184	0.050
	(1.19)	(0.33)
Δ Profit/TA	0.261	0.149
	(1.53)	(0.96)
Δ Cash/TA	0.503**	0.661**
	(2.95)	(3.61)
Δ Div/TA	-0.232	-0.418**
	(-1.35)	(-2.43)
Δ Sales	-0.032	0.025
	(-0.20)	(0.15)
Δ Union Coverage	-0.084	-0.068
	(-0.58)	(-0.46)
Lev	-0.022	-0.191
	(-0.10)	(-1.11)
Inv/Sales	0.261*	0.293**
	(1.76)	(2.05)
Ppe/TA	0.123	0.091
	(0.55)	(0.43)
Employees/TA	-0.576**	-0.585**
	(-2.85)	(-2.97)
Profit/TA	-0.228	-0.115
	(-0.94)	(-0.54)
Cash/TA	-0.379**	-0.576**
	(-2.35)	(-3.44)
Div/TA	0.242	0.168
	(1.28)	(0.89)
Sales	-0.763**	-0.843**
	(-4.31)	(-4.69)
Union Coverage	-0.482**	-0.315
	(-2.16)	(-1.41)
Unemployment	-0.107	-0.240*
	(-0.72)	(-1.70)
Industry Fixed Effects	X	X
Union Fixed Effects	X	X

Table 7: Changes in Leverage After Contract Negotiations

This table contains average leverage ratios in the five years following the negotiation along with first differences from the negotiation year to year t, ($t = +1, +2, ..., +5$). 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. t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 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	0.336	0.352	0.370	0.379	0.394	0.407
Δ MktLev		0.016*	0.034**	0.043**	0.058**	0.071**
		(1.73)	(2.62)	(2.72)	(2.98)	(3.50)
MktLevInd	0.255	0.254	0.263	0.269	0.279	0.284
Δ MktLevInd		-0.001	0.007	0.014	0.024*	0.029**
		(-0.21)	(0.82)	(1.28)	(1.83)	(2.28)
Δ(MktLev- MktLevInd)		0.017*	0.027**	0.029*	0.034*	0.042**
		(1.74)	(2.27)	(1.79)	(1.75)	(2.15)
BookLev	0.290	0.301	0.305	0.315	0.327	0.330
Δ BookLev		0.010*	0.015**	0.025**	0.037**	0.040**
		(1.84)	(2.20)	(2.85)	(3.28)	(3.54)
BookLevInd	0.253	0.251	0.250	0.251	0.253	0.253
Δ BookLevInd		-0.002	-0.003	-0.002	-0.000	-0.001
		(-0.75)	(-0.83)	(-0.37)	(-0.08)	(-0.09)
Δ(BookLev- BookLevInd)		0.012**	0.018**	0.027**	0.037**	0.040**
		(2.07)	(2.69)	(3.04)	(3.48)	(3.69)

Panel B: Firms with contract negotiations and no strikes						
	Negotiation	+1	+2	+3	+4	+5
MktLev	0.321	0.320	0.324	0.319	0.318	0.327
Δ MktLev		-0.001	0.002	-0.002	-0.003	0.006
		(-0.22)	(0.29)	(-0.27)	(-0.33)	(0.63)
MktLevInd	0.246	0.240	0.238	0.241	0.237	0.239
Δ MktLevInd		-0.006*	-0.008*	-0.005	-0.009	-0.007
		(-1.82)	(-1.89)	(-0.84)	(-1.44)	(-1.06)
Δ(MktLev- MktLevInd)	0.000	0.005	0.011	0.002	0.006	0.013
		(0.98)	(1.47)	(0.28)	(0.67)	(1.44)
BookLev	0.305	0.305	0.301	0.302	0.300	0.298
Δ BookLev		0.000	-0.003	-0.003	-0.005	-0.006
		(0.04)	(-0.76)	(-0.49)	(-0.86)	(-1.00)
BookLevInd	0.262	0.256	0.254	0.252	0.245	0.239
Δ BookLevInd		-0.006**	-0.008**	-0.011**	-0.017**	-0.023**
		(-3.74)	(-3.41)	(-3.68)	(-5.27)	(-6.72)
Δ(BookLev- BookLevInd)		0.006*	0.005	0.008	0.012**	0.017**
		(1.83)	(1.06)	(1.51)	(2.13)	(2.76)

Table 8: Changes in Leverage After Negotiation Controlling for Determinants of Capital Structure

This table reports estimated parameters of an empirical model of changes in leverage ratios from the negotiation year to year t, ($t = +1, +2, ..., +5$) controlling for common determinants of capital structure. We include all firm/year observations that correspond to a contract negotiation ($t = 0$). The key independent variable is an indicator variable set to one when the observation corresponds to a strike (Strike). The other independent variables are the corresponding changes of: industry leverage (MktLevInd and BookLevInd), marginal tax rate (MargTax), ratio of market value of assets to total assets (Mva/TA), natural logarithm of sales (Sales), Altman's Z-score (Z-score), ratio of operating profits to total assets (Ebitda/TA), ratio of depreciation to total assets (Deprec/TA), ratio of fixed assets to total assets (Ppe/TA), ratio of research and development expenses to total assets (R&D/TA), and ratio of dividends to total assets (Div/TA), and the union coverage (Union Coverage). Panel A presents results for market leverage. Panel B presents results for book leverage. All specifications include a constant term, and time and industry 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, for example, the five year change in variable X is calculated as $\Delta X_t = X_{t+5} - X_t$. Standard errors are clustered at the firm level and t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 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: Dependent variable is Δ MktLev					
	t+1	t+2	t+3	t+4	t+5
Strike	0.015*	0.028**	0.044**	0.033	0.062**
	(1.90)	(2.33)	(2.90)	(1.62)	(2.59)
Δ IndLev	0.012**	0.022**	0.030**	0.032**	0.034**
	(2.75)	(3.36)	(2.75)	(2.40)	(2.12)
Δ MargTax	-0.001	-0.009*	-0.025**	-0.027**	-0.020*
	(-0.29)	(-1.65)	(-3.26)	(-2.65)	(-1.70)
Δ Mva/TA	-0.032**	-0.044**	-0.063**	-0.078**	-0.083**
	(-5.53)	(-4.48)	(-5.08)	(-4.53)	(-4.32)
Δ Size	0.009**	0.010*	0.016*	0.006	-0.004
	(2.60)	(1.89)	(1.87)	(0.61)	(-0.37)
Δ Z-Score	-0.030**	-0.037**	-0.036**	-0.049**	-0.039*
	(-4.36)	(-4.43)	(-2.10)	(-2.42)	(-1.69)
Δ Ebit/TA	-0.011*	-0.009	-0.021	-0.017	-0.025
	(-1.79)	(-0.95)	(-1.42)	(-0.82)	(-1.20)
Δ Deprec/TA	0.010**	0.013**	0.004	-0.005	0.003
	(2.26)	(2.02)	(0.40)	(-0.46)	(0.27)
Δ Ppe/TA	0.003	-0.004	0.009	0.018	0.024*
	(0.46)	(-0.61)	(0.72)	(1.64)	(1.78)
Δ R&D/TA	0.001	0.004	-0.001	-0.014**	-0.016*
	(0.35)	(0.78)	(-0.25)	(-2.14)	(-1.76)
Δ Div/TA	-0.000	-0.005	0.000	0.008	0.009
	(-0.11)	(-0.94)	(0.06)	(0.92)	(0.91)
Δ Union Coverage	0.001	0.012**	0.011*	0.013	0.002
	(0.45)	(2.23)	(1.73)	(1.49)	(0.18)
Time Fixed Effects	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X
adjusted$-R^2$	0.436	0.486	0.507	0.511	0.536

Panel B: Dependent variable is Δ BookLev					
	t+1	t+2	t+3	t+4	t+5
Strike	0.008	0.017*	0.022*	0.027*	0.046**
	(1.54)	(1.83)	(1.90)	(1.75)	(2.76)
Δ IndLev	0.005*	0.009**	0.011	0.015	0.003
	(1.90)	(2.10)	(1.32)	(1.52)	(0.22)
Δ MargTax	-0.003	-0.008*	-0.020**	-0.017**	-0.012
	(-0.91)	(-1.85)	(-4.24)	(-2.31)	(-1.32)
Δ Mva/TA	-0.002	-0.006	-0.016**	-0.020**	-0.015
	(-0.77)	(-1.44)	(-2.91)	(-2.75)	(-1.59)
Δ Size	0.006**	0.003	0.006	-0.003	-0.012
	(2.01)	(0.66)	(1.01)	(-0.32)	(-1.33)
Δ Z-Score	-0.030**	-0.046**	-0.048**	-0.045**	-0.045**
	(-6.20)	(-5.97)	(-3.46)	(-2.82)	(-2.08)
Δ Ebit/TA	0.003	0.024**	0.021*	0.020	0.021
	(0.76)	(2.77)	(1.74)	(1.49)	(1.20)
Δ Deprec/TA	0.004	-0.001	-0.004	-0.005	-0.006
	(1.07)	(-0.25)	(-0.59)	(-0.56)	(-0.57)
Δ Ppe/TA	0.004	-0.002	0.001	0.010	0.009
	(0.90)	(-0.44)	(0.20)	(1.20)	(0.75)
Δ R&D/TA	-0.002	-0.002	-0.005	-0.008	-0.002
	(-0.90)	(-0.53)	(-0.96)	(-1.21)	(-0.22)
Δ Div/TA	-0.006*	-0.006	0.002	0.006	0.007
	(-1.93)	(-1.19)	(0.24)	(0.70)	(0.75)
Δ Union Coverage	-0.001	0.005	0.004	0.006	0.007
	(-0.51)	(1.16)	(0.70)	(1.04)	(0.88)
Time Fixed Effects	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X
adjusted$-R^2$	0.290	0.285	0.270	0.248	0.248

Table 9: Changes in Leverage After Negotiation Controlling for Determinants of Capital Structure and Strike Winner

This table reports estimated parameters of an empirical model of changes in leverage ratios from the negotiation year to year t, $(t = +1, +2, ..., +5)$ controlling for common determinants of capital structure. We include all firm/year observations that correspond to a contract negotiation $(t = 0)$. The key independent variables are indicators set to one when the observation corresponds to a strike won by the union (Union win), by the firm (Firm win), or is undetermined (No win), respectively. The other independent variables are the corresponding changes of: industry leverage (MktLevInd and BookLevInd), marginal tax rate (MargTax), ratio of market value of assets to total assets (Mva/TA), natural logarithm of sales (Sales), Altman's Z-score (Z-score), ratio of operating profits to total assets (Ebitda/TA), ratio of depreciation to total assets (Deprec/TA), ratio of fixed assets to total assets (Ppe/TA), ratio of research and development expenses to total assets (R&D/TA), and ratio of dividends to total assets (Div/TA). Panel A presents results for market leverage. Panel B presents results for book leverage. All specifications include a constant term, and time and industry 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, for example, the five year change in variable X is calculated as $\Delta X_t = X_{t+5} - X_t$. Standard errors are clustered at the firm level and t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 lead to a union 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. Of the 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 as resulting in a clear company win. 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: Dependent variable is Δ MktLev					
	t+1	t+2	t+3	t+4	t+5
Union win	0.050**	0.054*	0.093**	0.060*	0.139**
	(3.23)	(1.87)	(3.66)	(1.87)	(3.37)
No win	0.017*	0.015	0.033*	0.049**	0.047*
	(1.87)	(1.12)	(1.93)	(2.26)	(1.81)
Company win	-0.008	0.022	0.019	0.006	0.040
	(-0.54)	(1.03)	(0.62)	(0.13)	(0.98)
Δ IndLev	0.018**	0.026**	0.031**	0.031**	0.033**
	(3.36)	(3.82)	(2.91)	(2.46)	(2.24)
Δ MargTax	-0.001	-0.011*	-0.025**	-0.028**	-0.022**
	(-0.22)	(-1.88)	(-3.37)	(-2.98)	(-2.02)
Δ Mva/TA	-0.032**	-0.043**	-0.056**	-0.075**	-0.081**
	(-5.64)	(-4.41)	(-5.00)	(-4.80)	(-4.49)
Δ Size	0.009**	0.009*	0.012	0.005	-0.002
	(2.46)	(1.70)	(1.45)	(0.47)	(-0.17)
Δ Z-Score	-0.029**	-0.039**	-0.032**	-0.054**	-0.043**
	(-3.87)	(-4.40)	(-2.02)	(-3.06)	(-2.14)
Δ Ebit/TA	-0.014**	-0.009	-0.026*	-0.016	-0.020
	(-2.09)	(-0.88)	(-1.84)	(-1.01)	(-1.07)
Δ Deprec/TA	0.012**	0.014**	0.006	-0.007	0.007
	(2.40)	(2.09)	(0.62)	(-0.61)	(0.66)
Δ Ppe/TA	0.004	-0.003	0.010	0.019*	0.021*
	(0.57)	(-0.38)	(0.82)	(1.82)	(1.71)
Δ R&D/TA	0.001	0.004	-0.001	-0.015**	-0.018**
	(0.41)	(0.83)	(-0.14)	(-2.43)	(-2.14)
Δ Div/TA	-0.000	-0.009	-0.001	0.005	0.007
	(-0.04)	(-1.39)	(-0.09)	(0.62)	(0.73)
Δ Union Coverage	0.002	0.010*	0.012*	0.013	-0.000
	(0.68)	(1.83)	(1.95)	(1.47)	(-0.05)
Time Fixed Effects	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X
adjusted$-R^2$	0.488	0.498	0.510	0.528	0.544

Panel B: Dependent variable is Δ BookLev					
	t+1	t+2	t+3	t+4	t+5
Union win	0.032**	0.043*	0.066**	0.059**	0.082**
	(2.32)	(1.83)	(2.43)	(2.24)	(2.14)
No win	0.010	0.016	0.024*	0.033**	0.042**
	(1.50)	(1.38)	(1.66)	(2.01)	(2.28)
Company win	-0.005	0.000	0.001	0.009	0.021
	(-0.61)	(0.03)	(0.08)	(0.36)	(0.76)
Δ IndLev	0.005*	0.009*	0.011	0.012	0.003
	(1.87)	(1.94)	(1.37)	(1.25)	(0.23)
Δ MargTax	-0.003	-0.008**	-0.019**	-0.018**	-0.013
	(-1.04)	(-2.02)	(-4.27)	(-2.64)	(-1.53)
Δ Mva/TA	-0.000	-0.007	-0.011**	-0.018**	-0.013
	(-0.14)	(-1.55)	(-2.05)	(-2.54)	(-1.44)
Δ Size	0.006*	0.003	0.006	-0.003	-0.010
	(1.94)	(0.58)	(0.89)	(-0.43)	(-1.24)
Δ Z-Score	-0.029**	-0.045**	-0.045**	-0.049**	-0.050**
	(-5.99)	(-5.65)	(-3.43)	(-3.23)	(-2.45)
Δ Ebit/TA	0.002	0.023**	0.017	0.023**	0.023
	(0.47)	(2.63)	(1.45)	(2.05)	(1.48)
Δ Deprec/TA	0.004	-0.000	-0.002	-0.006	-0.002
	(1.29)	(-0.05)	(-0.26)	(-0.67)	(-0.26)
Δ Ppe/TA	0.005	-0.002	0.003	0.011	0.007
	(1.20)	(-0.40)	(0.48)	(1.58)	(0.67)
Δ R&D/TA	-0.002	-0.002	-0.004	-0.009	-0.003
	(-0.88)	(-0.46)	(-0.78)	(-1.38)	(-0.36)
Δ Div/TA	-0.006**	-0.006	0.001	0.004	0.007
	(-1.97)	(-1.36)	(0.16)	(0.52)	(0.73)
Δ Union Coverage	-0.001	0.003	0.005	0.003	0.002
	(-0.30)	(0.82)	(0.90)	(0.53)	(0.34)
Time Fixed Effects	X	X	X	X	X
Industry Fixed Effects	X	X	X	X	X
Union Fixed Effects	X	X	X	X	X
adjusted$-R^2$	0.303	0.273	0.274	0.269	0.246

Table 10: 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. t-statistics are in parentheses; ** and * denote significance levels of 5% and 10%, respectively. Our sample is composed by 601 contract negotiations involving at least 1,000 workers, of which 155 lead to a union 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. Of the 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 as resulting in a clear company win. 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 11: 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 601 contract negotiations involving at least 1,000 workers, of which 155 lead to a union 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. Of the 155 strikes in our sample, we are able to classify 14 as resulting in a clear union victory, and 38 as resulting in a clear company win. The regression uses 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