Labor Union and Share Repurchases[*]

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Abstract

This paper studies how the labor union strength affects the repurchase decision. We argue that a low (high) unionized firm is more (less) likely to buy back shares. The low unionized firm may buy back more shares because of the wealth transfer effect between shareholders and labors. In addition, the high unionized firm may not buy back shares to avoid infuriating the powerful union. Yet, we also find that, once the high unionized repurchaser decides to buy back shares, the firm will complete the repurchase program against the labor union. Therefore, a negative relation between the post-buyback abnormal return and the extent to the unionization is suggested. Finally, we find that the impact of union on the repurchase decision is reduced if the buyback is associated with the mergers or employee stock options, and impact is increased whenever the buyback is related to the excess cash distribution or the corporate governance of the firm is well.

Keywords: Repurchase; Union; Labor.

Labor Union and Share Repurchases

The repurchase literature suggests the conflict of interest and wealth transfer effects between shareholders and different stakeholders. In a zero-sum game, one dollar of the revenue could be distributed as the cash payout to shareholders, the public or private of the managers, the interest payment of the bondholder, or as the salary of labors. The repurchase deals with the conflict of interest between agent (the manager) and principal (the shareholder) by reducing the free cash flow of a firm (Jensen, 1986; Howe, He, and Kao, 1992; Grullon and Michaely, 2004). Also, the buyback involves in the wealth effects between shareholders and bondholders where the repurchase leads to the decrease in the bond price (Maxwell and Stephens, 2003). Therefore, the repurchase is followed by a positive market reaction, implying that shareholder wealth improves in a repurchase program.[1]

In this paper, we examine the relation between the labor, union and share repurchase. We use the unionization rate as a proxy variable for the bargaining power of labors (Klasa, Maxwell and Ortiz-Molina, 2009). The unionization rate is the percentage of an industry's workers that are represented by labor union in the collective bargaining with the firm.[2] The higher unionization rate of a firm, the more bargaining power the labors have in a bargaining table. While the unionization rate is low, buyback would be a higher priority in the cash distribution over the labor benefit because of the low bargaining power of labors. In contrast, when the unionization rate is high, the firm may deter repurchases to avoid infuriating the labor union. One possible way for the union to fight back the repurchaser is labor strike, resulting in an

[1] Both short-term and long-term positive market reaction is suggested in the literature (see Vermaelen, 1981; Ikenberry, Lakonishok and Vermaelen, 1995; 2000; Chan, Ikenberry and Lee; 2004).

[2] One advantage of using industry unionization rate is that it includes the unionization spillover effect: the pressure of union is not limited to its own firm, but also provides credible threat to other firms in the same industry (Rosen, 1969). We also use the labor strength in a firm level data to proxy for the bargaining power of labors and obtain consistent results.

unfavorable market reaction. Thus, the stock return post to the repurchase announcement is poorer for those high unionized repurchasers.

We use U.S. firms during 1984 to 2007 to investigate the relation between the unionization rate and share repurchase, in which the buyback information comes from SDC. Figure 1 shows that 9.65% of firms with unionization rate below 5% buy back shares, whereas only 6.13% of firms with unionization rate above 20% buy back shares. In Tobit analysis of the share repurchases, we also find that the repurchase ratio is negatively associated with the unionization rate controlling for many other repurchase factors. We find similar results in more robustness checks based on Probit regression analysis (setting a binary dependent variable of repurchase or not) or industry aggregate regression. These results suggest that a low (high) unionized firm is more (less) likely to buy back shares.

Insert Figure 1 around here

In addition, we find the repurchase lowers the change in labor intensity, especially for those low unionized repurchasers. As our initial example, more proportion of the one dollar allocated to shareholders leads to less cash to labors. Our results of regression analyses indicate that the cash payout via repurchases slows down the employee recruiting. *Ceteris paribus*, lower changes in labor intensity of repurchase firms result in a poorer labor wealth improvement.[3] These results also imply a potential wealth transfer effect between shareholders and labors.

We then study the impact of the repurchase on the strike probability of a firm. We retrieve 137 strike events and their matching firms to analyze a Probit regression

[3] The other labor wealth is the wage. However, no evidence on the change in wage is found in a buyback program in this paper. We leave the discussion in later section.

analysis on the strike probability. We find that general repurchase activities do not results in a higher likelihood of strike. Yet the repurchase by a high unionized firm significantly increase the strike probability. This confirms our previous conjecture that high unionized firms deter repurchases to avoid the anger of the strong union.

Even though we have provided pieces of evidence on the negative relation between the unionization rate and share repurchase, the actual buyback status is unclear. Generally, many firms announce repurchase programs but do not follow up the completion of consequent actual buyback (Ikenberry and Vermaelen, 1996; Stephens and Weisbach, 1998; Lie, 2005). Accordingly, we examine the completion ratio (defined as the actual buyback ratio divided by intended repurchased ratio) for those firms announcing repurchases. We find a *positive* relation between the unionization rate and completion ratio for repurchasers. This implies that once a unionized firm is resolved to repurchase shares, it tends to complete the repurchase program. In particular, the completion ratio is high for those repurchasers that are likely faced with the strike. Intuitively, the buyback of the unionized firms will infuriate the union, and this argument has been supported by abovementioned high strike probability.

One nature question is how the stock market reacts to the repurchase announcement by unionized firms. We thus examine the relation between the long-run abnormal stock return of repurchase firms and the unionization rate.[4] We find that the abnormal return is negatively associated with the unionization rate. One implication on this negative relation is that shareholders gain more from the repurchase program, especially for those less unionized repurchasers with high repurchased ratio or with

[4] Generally speaking, the repurchase papers look at four-year long-run stock return to accommodate potential long-term impact from repurchases (Ikenberry, Lakonishok and Vermaelen, 1995; Chan, Ikenberry and Lee, 2004). We also study the short-run announcement return and the unionization rate, yet it seems investors do not pay attention to the impact of union on repurchases in the short run.

smaller changes in labor intensity. The lower return for those high unionized repurchasers also indicates that repurchases and consequent buyback followings do infuriate the union. In this sense, we find that the high unionized repurchasers perform poorer in stock performance if they are likely to be faced with the labor strike.

We finally examine the relation between the unionization rate and repurchased ratio conditional on motives of share repurchases. For some of repurchase cases, buybacks are announced to deter takeover threats (Dittmar, 2000; Billett and Xue, 2007). When a firm will be acquired, the union and labors are prone to oppose the bidding because of future potential layoffs. Hence, if a repurchase is announced for the antitakeover reason, union shall not object to the buyback program. In fact, we do find that the high unionized firm is more likely to repurchase stocks if the firm is faced with potential takeover threats. Another repurchase case that the strong union will not oppose is regarding the employee stock option. A firm may buy back shares to avoid the share dilution from the exercise of employee stock options (Dittmar, 2000; Kahle, 2002). Since this kind of repurchases is associated with the payment to employees, the labors and union shall not resist this repurchase. Indeed, we find that the high unionized firms buy back more shares if the firms issue employee stock options during the buyback year.

On the other hand, some firms may buy back shares to disgorge excess cash in attempt to avoid the overinvestment problem (Harford, Mansi and Maxwell, 2008). By the same token, papers suggest that unionized firms holding more cash loss their bargaining power against union (Bronars and Deere, 1991; Klasa, Maxwell and Ortiz-Molina, 2009; Atanassov and Kim, 2009; Matsa, 2010). Therefore, for any unionized firm with excess cash, it is more likely infuriate the union in the bargaining table if it announces a repurchase program. Empirically, we find that the unionized

firms with excess cash buy back further fewer shares than other unionized firms. We next investigate the role of corporate governance in the repurchase-union relation. Corporate governance deals with the issue regarding separation of ownership and control (Shleifer and Vishny, 1997). When a firm is well governed, shareholders and managers are aligned with each others, resulting in a relatively weakening power of the union. In this case, a unionized and well governed firm may buy back more shares than a unionized but poor governed firm, and this relation is also found in this paper.

This paper adds to the repurchase literature by following ways. First, we examine the relation between the labor union and shareholders. We suggest that, in many of repurchase cases, there exists a tradeoff between benefits of labors and shareholders. This study broadens our knowledge on the relation between shareholders and other stakeholders in repurchase cases. Second, we provide an additional determinant of repurchases. Previous papers have suggested book-to-market ratio, debt ratio, excess cash, prior return, antitakeover, employee stock option, industry concentration and earnings management as potential repurchase determinants (Ikenberry, Lakonishok and Vermaelen, 1995; 2000; Kahle, 2002; Massa, Rehman and Vermaelen, 2007; Chan, Ikenberry, Lee, 2004; Grullon and Michaely, 2004; Billett and Xue, 2007; Gong, Louis, and Sun, 2008; Peyer and Vermaelen, 2009; Chan, Ikenberry, Lee and Wang, 2010). We now propose the union strength as the additional determinant. Third, this paper shed light into labor and finance literature. Third, previous studies find that labor union will shape corporate finance policies such as merge and acquisition, , capital structural, dividend and manager compensation (Rose, 1989; DeAngelo and Deangelo, 1991; Rose, 1991; Klasa, Maxwell and Ortiz-Molina, 2009; Matsa, 2010). We extend this line of research by investigating the relationship between union power and the firms' use of share repurchase.

The remainder of this paper is organized as follows. Section 1 introduces the literature review on labor studies in finance and economic areas. Section 2 describes the data and methodology. Section 3 presents regression analyses on the relation between unions and repurchases. Section 4 states the repurchase motives and impact of union on repurchases. Section 5 concludes.

1. Literature Review on Labor Studies

Previous studies suggest firms can enhance their bargaining power against union by either making themselves more robust to strike or convincing union that a concession is need for firm to survive. To be more robust to strike, firms can diversify into unrelated business segments and using their deep-pocket to cross subsidizing strike cost. Rose (1989) and Rose (1991) find that a higher degree of diversification is associated with lower wage settlement. Chen and Chen (2009) show that struck firms diversifying into unrelated two-digit SIC industries have lower marginal strike cost. Also, firms can build inventory ahead of strike to reduce strike cost (Christenson, 1953; Kramer and Vasconcellos, 1996). Matsa (2010) find that Union firms hold 10 percent greater inventory levels than otherwise similar non-union firms.

There are many corporate policies that firms can take to extract union concession. DeAngelo and Deangelo (1991) study the steel industry in the U.S. and find that steel firms tend to cut dividend and manager compensation to signal firms' poor financial status before asking for union concession. Reducing firms' liquidity by issuing more debt or holding less cash reserves can also temper union's demand. Bronars and Deere (1991), and Matsa (2010) suggest firms facing strong union will use more debt, as higher interest expense resulted firm higher leverage can reduce what labor can demand from revenue without driving firm into bankruptcy. Atanassov and Kim (2009)

find firms with higher leverage are more likely to avoid manager-labor collusion when restructuring. Klasa, Maxwell and Ortiz-Molina (2009) indicate a negative relationship between union power and firms' cash holding. By holding less cash, union firm can more easily convince labor that the risk of liquidity shortage is threatening its viability and there is no ground for granting more concession to union.

2. Data ad Methodologies

2.1 Data

Our sample consists of all U.S. firms available in Compustat and Center for Research Security Prices (CRSP) during 1984 to 2007. We require those firms to have positive size and book-to-market ratio. We remove low price stocks (price below $3) to avoid extreme skewness in the return estimation. We obtain repurchase and acquisition data from Securities Data Company (SDC). Employee stock option information comes from S&P Execucomp database. Industry unionization rate is provided by Barry Hirsch and David Macpherson's database at www.unionstats.com. Our final sample includes 99,947 firm-year observations for 13,570 U.S. firms.[5]

2.2 Proxies for union strength

We adopt unionization rate for the union strength. Since public firms are not required to disclose union membership information, it is hard to collect reliable firm-level unionization data for large sample. Therefore, we follow Klasa, Maxwell and Ortiz-Molina (2009) and use industry unionization rate provided by Barry Hirsch and David Macpherson's database at www.unionstats.com to measure union bargaining power. Industry unionization rate is the percentage of an industry's

[5] We also examine our story upon a sample excluding all financial institutions. Our results are not changed.

workers that are represented by labor union in the collective bargaining with the firm measured at three-digit CIC industry. To make the industry classification more comparable, we convert each CIC code to four-digit SIC code. One advantage of using industry unionization rate is that it includes the unionization spillover effect: the pressure of union is not limited to its own firm, but also provides credible threat to other firms in the same industry (Rosen, 1969). Bronars and Deere (1994) find that the total negative effect of unionization on firm's profitability, when including spillover effect, is three times as large as the own-firm effect. In this context, using firm-level unionization could underestimate the impact of union on share repurchase.[6]

2.3 Buy-and-hold abnormal return estimation

Following Ikenberry, Lakonishok and Vermaelen (1995), we calculate the four-year buy-and-hold abnormal return (BHAR) controlling for the size and book-to-market effect. To ensure that we have full potential four-year return window, we start our BHAR calculation for sample during 1984 to 2004 (Chan, Ikenberry and Lee, 2004).[7] The four-year buy-and-hold return (BHR) is to compound 1,008 daily (assuming 252 trading days for a trading year) returns from the announcement date (day 0) to 1,007-th day, or to the delisted date for any early delisted firm. We remove the stocks with repurchases in concurrent and past five years from the matching pool. Then we select the matching firm by matching the most similar book-to-market ratio in the same size decile and book-to-market quintile in an exchange. The BHAR is the

[6] A firm's labor to capital ratio may affect union bargaining power, too. Holding industry unionization rate constant, labor intensive firms (firms with higher labor to capital ratio) would face greater pressure when union raises wage demand. Moreover, labor intensive firm are more vulnerable to labor strikes since it is difficult to find sufficient replacement workers to remain struck plant's normal operation. Thus, union in labor intensive firms will have greater bargaining power. Following Hilary (2006), we also use industry unionization rate multiplying by firm's labor intensity as a measure of union bargaining power, given that labor intensity is firm's number of employees divided by total asset. Yet our results do not change in this alternative measure.

[7] Even we end our sample for BHAR return at 2007, our results are unchanged.

BHR of the repurchaser minus the BHR of the matching firm.

2.4 Summary Statistics

Table 1 presents the summary statistics. During 1984 to 2007, we have 8,434 firm-year observations with repurchases and 91,513 observations without buyback program. *Unionization rate* is the percentage of an industry's workers that are represented by labor union in the collective bargaining with the firm. More precisely, we compute the percentage of labors joining the union in a four-digit SIC industry. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset subtracting the two-digit SIC industry median. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. Upon Dittmar (2000), *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. Following Massa, Rehman and Vermaelen (2007), *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year.[8] *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). *Option dummy* is one if a firm issue employee stock options; otherwise zero. *Repurchased ratio* is shares to be bought back authorized by the board of directors.

We firstly pay our attention to the relation between the unionization rate and the

[8] All of our results are quantitatively similar if we measure the *M&A dummy* in post-one year or post-three years period.

repurchases. The average (median) unionization rate is 7.89% (3.1%) for those repurchase firms while the average (median) unionization rate is 9.67% (4.4%) for all the others. The average (median) of the difference is -1.78% (-1.3%), and the difference is significant at 1% confidence level. This roughly provides consistent results with our conjecture that low unionized firms buy back fewer shares.

Similar to most of repurchase papers, repurchase firms tend to have lower debt ratio, high ROA, larger size, lower discretionary accrual and high chance of issuing employee stock options than non-repurchase firms (Kahle, 2002; Chan, Ikenberry and Lee, 2004; Lie, 2005; Gong, Louis and Sun, 2008; Peyer and Vermaelen, 2009). To some extent, repurchase firms also tend to have higher cash dividend and list in a low concentrated industry. Generally speaking, repurchase firms announce to buy back about 7.46% (for average) or 5.58% (for median) of shares relative to the entire shares outstanding.

Insert Table 1 around here

3. Relation between Labor Union and Share Repurchases

3.1 Buyback regression analyses

As our main argument, we suggest a negative relation between the unionization rate and share repurchases. For any repeating repurchase cases by the same firm, we aggregate the repurchased ratio in a year. We follow Dittmar (2000) and examine the Tobit regression analysis with *repurchased ratio* at year t+1 as the dependent variable.[9] Table 2 presents the regression estimates, average marginal effects and the

[9] We do not use the estimated actual buyback ratio as the dependent variable in our main results for two reasons. First, we will examine the following completion ratio for repurchase firms in later section. Thus, using the repurchased ratio at the announcement date allows a more dynamic observation in this paper. Second, Banyia, Dyl and Kahle (2008) find that using Compustat data to estimate the actual

P-values. In Model 1, the coefficient of *unionization rate* is -0.0459, which is significant at 1% confidence level. Model 2 further controls for general repurchase determinants, including debt ratio, return-on-asset (ROA), cash dividend, logarithm size, book-to-market ratio, prior abnormal return, Herfindahl index, M&A dummy and discretionary accrual, which have been defined in Table 1. Year dummies are incorporated but not reported in the paper. All these control variables are measured at year t. The coefficient of *unionization rate* is -0.0822 that is significant at 1% confidence level. Model 3 turns to adopt the industry-adjusted debt ratio and ROA and obtain similar results. Model 4 and 5 add the *option dummy* and have reduced sample size because employee stock option information coming from S&P Execucomp is available since 1992. The coefficients of *unionization rate* are -0.1315 and -0.1509 in Models 4and 5, respectively. They are both significant at 1% confidence level, too.[10]

Average marginal effects of the *unionization rate* range from -0.0039 to -0.0158 in different regression models. Taking Model 5 as the example, the average marginal effect is -0.0158, meaning that 10% decrease in *unionization rate* yields 0.158% increase in the repurchased ratio. Given the average repurchased ratio for all firms (both for repurchase and non-repurchase firms) is about 0.63%, such an increase explains about 25% of the repurchase program. This implies an economically significant effect of the unionization rate on the repurchase decision.

Insert Table 2 around here

Because we obtain repurchase from SDC, the raw repurchase information could

buyback sometimes has potential bias. Intended repurchase ratio is more accurate in this sense. Even though, we also follow Dittmar (2000) and use estimated actual buyback ratio to analyze the Tobit regression for whole U.S. firms, and obtain quantitatively similar results.

[10] Although not reported, we separate our sample into sub-periods: 1984 to 1995, and 1996 to 2007, and our results remain in both sub-periods.

be identified by daily frequency. Sometimes the repeating repurchases by one firm may convey additional information (Jagannathan and Stephens, 2003), and the aggregate repurchased ratio could not well capture this feature. Thus, we also try firm-month observations to examine the Tobit regression analyses. We use the first repurchase event in a month and extract the repurchased ratio. Size and prior return are kinds of market information and vary month-by-month in the Tobit regression, while the accounting information (book-to-market ratio, debt ratio and so on) repeats for a fiscal year. By using this approach, our results are not changed while we do not report them.

We try more robust checks in Table 3 based on whole firm-year sample. We use the Model 2 of Table 2 as the baseline for Table 3.[11] Model 1 of Table 3 replaces the *unionization rate* by *labor strength*. The *unionization rate* per se is measured based on an industry aggregation, one may argue that this industry effect does not describe the firm-specific influence from labor strength. Hence, as the suggestion of Hilary (2006), we measure the *labor strength* as the *unionization rate* multiplying the ratio of number of employees relative to total asset of a firm. As such, the *labor strength* ratio is higher, and then the more bargaining power the labors of a firm will have. In Model 1, we find that the coefficient of *labor strength* is -0.0287, which is significant at 1% confidence level. This is consistent with our previous results.[12]

Insert Table 3 around here

Model 2 of Table 3 presents the regression analysis by using the industry

[11] Although not reported, we obtain quantitatively similar results for those robust checks by using other Tobit models in Table 2.

[12] We also apply this measure to all following tests, the results are quantitatively similar under this measure.

aggregate variables, which also deal with the industry aggregation problem of the *unionization rate*. We use value-weighted averages in a four-digit SIC industry for all variables (repurchased ratio, debt ratio, ROA and so on) and run the Tobit regression upon industry-year observations.[13] The result in Model 2 shows that the coefficient of *unionization rate* is -0.0515, which is significant at 1% confidence level. This supports our main finding as well.

Model 3 presents the results of a Probit analysis. We use a binary variable, which equals one if a firm repurchases, and zero otherwise, as the dependent variable. We find that the coefficient of *unionization rate* is -0.5862. The coefficient estimate is significant at 1% confidence level. We also examine a Logit analysis by the same model setting as Model 3. The result is unchanged. Therefore, when we pay attention to whether a low unionized firm is more likely to buy back shares or not, we suggest a positive answer there.

Due to the asymmetric sub-groups between repurchase firms and non-repurchase firms, we also use those matching firms as the benchmark in the Probit analysis. We use the size/book-to-market matching firms as the benchmark, and examine the Pribit regression for the paired sample. Model 4 presents the results and suggests a negative relation between the *unionization rate* and the buyback probability. The coefficient is -0.9835, which is significant at 1% confidence level. As an additional check, we use the size/book-to-market/ROA matching firms to construct the paired sample, and find similar results. Finally, in Model 5, we use the industry aggregate variables for the Probit analysis as what we have examined in the Tobit regression. Once again, the result is consistent.

[13] We also try the equal-weighted average for all variables and run the industry regression. The results are quantitatively similar to the reported ones.

3.2 Regression analyses of changes in labor intensity

From abovementioned empirical results, we suggest a negative relation between the union strength and the repurchase. This negative relation indicates that low unionized firms are prone to buy back more shares. Low unionized firms have stronger collective bargaining power against the union; thus, low unionized firms tend to distribute the revenue to shareholders rather than labors. This kind of revenue or cash allocation might lead to a smaller change in labor intensity and/or wage growth rate. It also implies the wealth transfer effect between shareholders and labors.

We use *changes in labor intensity* at year t+1 as the dependent variable in the regression analysis, where the labor intensity is measured as the number of employees divided by plant, property and equipment (PPE). *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. All the other control variables are the same as those in Table 2.

Table 4 presents the regression results. Model 1 shows the coefficient of *unionization rate* is 0.0015, which is significant at 1% confidence level. This is reasonable because a strong union could be associated with the increase in labor intensity. The coefficient of repurchased ratio is -0.2954, which is significant at 10% confidence level. This means that buyback allocates cash to shareholders and reduces the chance to hire more employees; even buyback may leads to layoff in some extreme cases. We further add the interaction over *unionization rate* and the *repurchased ratio*, and the coefficient estimate is 4.0444, which is significant at 1% confidence level. Given the results of Tobit regressions that repurchased ratio is negatively related to the unionization rate, we here further suggest that the change in labor intensity is lower for low unionized firms, particularly for those firms buy back more shares. This result provides a piece of evidence consistent with the wealth

transfer effect between shareholders and labors.

Insert Table 4 around here

Model 2 presents the regression results controlling for the repurchase factors applied in previous tables. Results of Model 2 are quantitatively similar with those in Model 1. The coefficient of *unionization rate* is 0.0013. The coefficient of *repurchased ratio* is -0.4202. The interaction term over *unionization rate* and *repurchased ratio* is 2.5928. All these coefficients estimates are significant at 5% confidence level or better. Model 3 uses the industry-adjusted ROA and debt ratio as independent variables. Models 4 and 5 modify the regression models by adding the *option dummy*. These results obtain consistent results, too.

We also beware of the endogenous issue between the *changes in labor intensity* and the *unionization rate*. When the change in labor intensity is higher, the union could have more labors as well as more influences. To deal with this endogenous problem, we use the instrument variable for the *unionization rate*. The first stage regression includes *unionization rate* as the dependent variable controlling for changes in labor intensity, level of labor intensity, HH index and year dummies. The second stage uses the *changes in labor intensity* as the dependent variable, and incorporates independent variables including fitted value of *unionization rate* from the first stage regression and all other control variables in Table 4. Generally speaking, our unreported results are not changed in this approach.

In addition to changes in labor intensity, another possible variable relating the aggregate labor wealth is the *change in wage*. It is possible that buyback leads to lower changes in wages if the wealth transfer story is true. Accordingly, we examine

the regression with the *change in wage* as the dependent variable, yet we do not find consistent results. For the unreported results, we find no relation between the *change in wage* and the *unionization rate*. The *change in wage* is not related to the *repurchased ratio*, either.

We propose three reasons for this inconsistent result. First, the wage data (labeled as Staff Exepnse- Total in Compustat) are limited. We obtain only fewer than 10% of our original sample with available wage data. This small sample size might result in bias estimation. Second, the compensation package for labors could be complicated. A firm may pay labors for not only salary but also stock options, shares, non-cash welfare (annual medical examination, for example) and so on. These all make the pure wage less related to the real labor benefit. Third, decreases in employees could lead to a weaker union while decreases in wages do not. Thus, a firm that buys back shares might slow down the labor recruiting rather than stop the wage growth. Probably these are why we do not find the relation between the wage growth and repurchases.

3.3 Strikes and share repurchases

In previous two sections, we have concluded a negative relation between the repurchased ratio and unionization rate. One possible reason for the negative relation is that low unionized firms repurchase more as a manner to give shareholders more money that could be potential payment for salary. We next discuss the second reason for the negative relation, and argue that high unionized firms deter repurchase to avoid infuriating the strong union. If high unionized firms buy back shares, then they may anger the union; one extreme fighting activity taken by the union is labor strike.

In this paper, we examine the Probit analysis and learn how repurchases relate to the strike probability.[14] We hand-collect 137 strike events which involve at least 1,000 workers from Bureau of Labor Statistics from 1983 to 2007. For each strike sample, we first include firms with in the same size deciles in the strike year into the matching pool. We select the firm with most similar B/M ratio as strike firm to be the matching firm.[15] We use *repurchased ratio* in the pre-strike year to be the independent variable. *Size* is the market value of equity. *Cash dividend ratio* is cash dividend of common shares divided by net income. *Leverage* is equal to the sum of short-term debt and long-term debt divided by total assets. *ROA* is operating income before depreciation divided by total assets. *Market to book ratio* is the market value of total asset divided by book value of total asset. These control variables are suggested measured at the pre-strike year (Klasa, Maxwell and Ortiz-Molina, 2009).

Table 5 presents the results of the Probit regression analysis. Model 1 shows that, in general, the *repurchased ratio* is relevant to the strike probability. The coefficient of the *unionization rate* is 0.0321, which is significant at 1% confidence level. In particular, the coefficient of the *unionization rate* × *repurchased ratio* is 0.0275, which is significant at 10% confidence level. This indicates that the high unionized firm that buys back shares is more likely to suffer strike. Model 2 shows the results controlling for other variables. The coefficient of the *unionization rate* × *repurchased ratio* is 0.0295, which is significant at 5% confidence level. Even though we change other control variables in Model 3, this result is unchanged.

Insert Table 5 around here

[14] We also examine the Logit model on the strike probability and obtain quantitatively similar results.
[15] Our results do not change if we follow Klasa, Maxwell and Ortiz-Molina (2009) using industry and year as the matching criteria.

3.4 Tobit regression analysis of completion ratio

We have demonstrated that high unionized firms are less likely to buy back shares. One interesting question could be what the firm will do if it is resolved to repurchase shares. This question links to the actual buyback and completion status following the repurchase announcement. To answer this, we examine the Tobit regression of the completion ratio.

Following Stephens and Weisbach (1998) and Ikenberry, Lakonishok and Vermaelen (2000), we calculate the *completion ratio* that is the actual buyback ratio relative to the intended repurchased ratio. We calculate four-quarter actual buyback ratio in post-buyback period, in which actual buyback ratio is dollars spent on purchasing shares minus the change in preferred stock value and then divided by concurrent average stock price. Because many firms do not follow up the initial target repurchased ratio, yielding a zero completion ratio, we use the Tobit regression analysis for the completion ratio and its determinants. The dependent variable is the four-quarter completion ratio following repurchase date. Independent variables include those variables in Table 2. Year dummies are incorporated but not reported.

Table 6 reports Tobit regression results for completion ratio for 8,434 repurchase firms. Model 1 includes the *unionization rate* only; the result appears a positive relation between the *completion ratio* and the *unionization rate*. The coefficient is 0.9478 that is significant at 1% confidence level. Models 2 to 5 add control variables as those in Table 2, coefficients of the *unionization rate* range from 0.4211 to 0.6716, which are significant at 1% confidence level. In particular, Models 6 and 7 incorporate *unionization rate* × *strike dummy* where the *strike dummy* is equal to one if a firm will be faced with labor strike in current and future four years. Therefore, once a high unionized firm is resolved to buy back shares, it tends to complete the

repurchase program, which might be a manner to fight against the union. This buyback completion of unionized firms is particularly profound for those firms with high strike chance.

Insert Table 6 around here

We try two robust checks in the completion regression analysis. First, we follow Dittmar (2000) and use the annual Compustat data to compute the actual buyback ratio and the completion ratio for the Tobit regression. We obtain quantitatively similar results as presented table. Second, we look at two-year, three-year and four-year completion ratios in the Tobit regression analyses; once again, the results are not changed.

Why do some unionized firms buy back shares and follow up the following actual buybacks? One possibility is that managers of these firms use repurchases as a way to fight against the union. For one recent case, NBC news report that the International Association of Machinists (IAM), an union representing most of Boeing's machinists, demand a 13% rise in wage, which is far more than what Boeing are willing to offer, when Boeing making record profits, maintaining the share buyback plan and holding record backlogs in 2008. Finally, Boeing turned down union's demand and was struck by IAM's workers in Seattle. The strike last 58 days and cause Boeing a lost over 4 billion dollars. Because the unionized firm that buy back shares and complete the repurchase program would infuriate the union and lead to potential strike, investors may downgrade their valuation on this firm. We will discuss this in next section.

We also consider another possibility that a unionized firm may buy back shares

for purposes without conflict of interests between shareholders and labors. Antitakeover and the preparation for employee stock option issue are two potential reasons for repurchases, and these two are sort of beneficial to labors. We leave this issue to the last section of this paper.

3.5 Buy-and-hold abnormal return regression

We posit two reasons for the negative relation between the union strength and share repurchase. First, low unionized firms buy back more shares because of the wealth transfer effect. Second, high unionized firms buy back fewer or do not buy back shares to avoid the anger of the union. This section examines the long-run market reaction to the repurchase announcement to confirm our story. If our arguments are true, the stock market shall react to the repurchase announcement at the same direction.

We use four-year buy-and-hold abnormal return as the dependent variable of the regression analyses, and present results in Table 7. Model 1 shows that the coefficient of the *unionization rate* is -0.0057, which is significant at 1% confidence level. Modes 2 to 5 add more control variables for those in the Tobit regression. Coefficients of *unionization rate* range from -0.0112 to -0.0114, which are significant at 1% confidence level.[16] These results based on the market reaction aspect are aligned with Tobit regression results. In an unreported result, we also study the short-run announcement return and the unionization rate, yet it seems investors do not pay attention to the impact of union on repurchases in the short run.

Insert Table 7 around here

[16] We also examine one-year, two-year and three-year BHAR as dependent variables in the return regressions. These unreported results are quantitatively similar with the four-year BHAR regression result.

Models 6 and 7 add *unionization rate* × *repurchased ratio* into regression models. Coefficients of the *unionization rate* × *repurchased ratio* are about -0.1345 and -0.1359, which are significant at 10% confidence level. It means that investors pay higher valuation to low unionized repurchasers, particularly for those low unionized firms that buy back more shares. Models 8 and 9 incorporate the *unionization rate* × *changes in labor intensity* into regression models. The coefficients of this interaction term range from 0.0013 to 0.0015, which are significant at 5% confidence level. Thus, the abnormal return for low unionized repurchasers with lower labor intensity growth rate is higher than that with higher labor intensity growth rate. All these results are consistent with the notion that the market upgrades the valuation of a repurchase firm if it is less unionized, meaning that shareholders could gain more from the wealth transfer effect.

Models 10 and 11 present the regression results by adding the interaction term of *unionization rate* × *strike dummy*. Coefficients of *unionization rate* × *strike dummy* are -0.0435 and -0.0434, both significant at 5% confidence level. Thus, it suggests that the market downgrades the valuation of a repurchase firm if it is highly unionized, indicating that shareholders are afraid of the union. These results based on the market reaction aspect are once again consistent with previous regression results regarding changes in labor intensity and the Probit model for the strike probability.

4. Repurchase Motives and Impact of Union on Repurchases

So far we have provided pieces of evidence on the negative relation the labor union and share repurchases. Dittmar (2000) suggests that firms may repurchase shares because of multiply motives. Therefore, we link our argument to other

repurchase motives in this section. Namely, we examine whether different repurchase motives affect the tenseness between the labor union and shareholders in a repurchase program.

4.1 M&A, employee stock option and the impact of union on share repurchases

Some motives of share repurchases are related to the labor welfare, antitakeover and preparation for employee stock options are two important ones. First, a firm may buy back shares to avoid potential antitakeover (Dittmar, 2000; Billett and Xue, 2007). When a firm is acquired, labors and the union could be afraid of the possible layoff or being transferred to another post. Therefore, labors and the union will agree with those repurchases motivated by the antitakeover purpose.

Second, the manager could buy back shares as the manner to prevent the share dilution from the exercise of employee stock options (Dittmar, 2000; Kahle, 2002). Thus, labors expect to see continuous payment to labors via employee stock options in the future. In this sense, the repurchase is positively associated with the compensation of labors, and labor union would not oppose this kind of repurchases program.

We use the Tobit regression to examine these ideas and present results in Table 8. Based on Tobit regression settings in Table 2, we add the *unionization rate* × *M&A dummy* in the models. A firm that will be announced to be an M&A target could buy back shares for antitakeover reason. Even though this firm is highly unionized, it may not deter this kind of repurchases, and the coefficient of *unionization rate* × *M&A dummy* shall be positive. Models 2 and 3 report the empirical results. Coefficients of *unionization rate* × *M&A dummy* are 0.0524 and 0.0509 in Models 1 and 2, respectively. The coefficient estimates are significant at 5% confidence level.

Insert Table 8 around here

In Models 3 and 4, we incorporate *unionization rate* × *option dummy* to test how the repurchase motive regarding employee stock options matters. We conjecture that a firm issuing employee stock options may buy back shares in attempt to prevent the share dilution from the exercise of employee stock options.[17] If labors and the union beware of this motive behind, then a highly unionized firm may buy back shares with implicit agreement from the union. We do find positive coefficients for *unionization rate* × *option dummy*, and estimates are 0.0658 and 0.0637 in Model 3 and 4, which are significant at 1% confident level. These results are consistent with our conjecture.

4.2 Excess cash, corporate governance and the impact of union on share repurchases

In this section, we discuss other repurchase motives against the union welfare. First, a firm could repurchase shares to disgorge excess cash to shareholders, and this reduces the overinvestment problem. (Harford, Mansi and Maxwell, 2008). By the same token, papers suggest that unionized firms holding more cash loss their bargaining power against union (Bronars and Deere, 1991; Klasa, Maxwell and Ortiz-Molina, 2009; Atanassov and Kim, 2009; Matsa, 2010). Therefore, if a firm intends to buy back shares to reduce excess cash, it also potentially increases its power in the collective bargaining, which is not favorable to the union. This kind of repurchases increases the tense relationship between labors and shareholders, and it is expected that the negative relation between the union and repurchases would be stronger.

Second, we further consider the role of the manager. In a traditional agency theory, there exists conflict of interests between mangers and shareholders (Jensen

[17] In fact, the repurchase motive is usually not observable; the firm frequently uses terms such as "general purpose" for the declaration of the repurchase purpose, if any. Therefore, we look at the firm characteristic as a proxy for the repurchase motive.

and Meckling, 1976). To alleviate the agency problem, corporate governance is developed to deals with the issue regarding separation of ownership and control (Shleifer and Vishny, 1997). When a firm is well governed, shareholders and managers tend to be aligned with each others, and this alignment results in a relatively weakening power of the union. In this case, a unionized and well governed firm may buy back more shares than a unionized but poor governed firm. We here follow Bebchuk, Cohen and Ferrell (2009) and use Entrenchment Index (E-index) as a proxy variable for corporate governance. As such, the E-index is higher for a poorer governed firm.[18]

We again use the Tobit regression to examine these ideas and present results in Table 9. Models 1 and 2 add the *excess cash* of Harford, Mansi and Maxwell (2008) into Tobit regressions.[19] We find that coefficients of *excess cash* per se are 0.0070 and 0.0078, both significant at 5% confidence level. In particular, in Models 1 and 2, coefficients of *unionization rate* × *excess cash* are -0.1890 and -0.2414, which are significant at 1% confidence level. The negative relation between the union and share repurchases does become stronger for those firms with excess cash.

Insert Table 9 around here

We next incorporate the E-index (a proxy for the corporate governance) and its

[18] Bebchuk, Cohen and Ferrell (2009) compute the E-index by improving the G-index in Gompers, Ishii, and Metrick (2003). Bebchuk, Cohen and Ferrell (2009) use six provisions in the E-index, including staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments.

[19] Upon their paper, the excess cash is the regression residual from a cash-to-sale ratio regression controlling for the logarithm total assets, leverage, growth options (proxied by M/B ratio), ROA, working capital-to-assets ratio, cash flow volatility, R&D to sales, capital expenditures to assets, and acquisition to sales as well as industry and year indicator variables. In which, Harford, Mansi and Maxwell (2008) measure the cash flow volatility based on earnings after interest, dividend, and taxes, but before depreciation, divided by assets. The standard deviation of the firm's cash flows is computed as the firm's standard deviation of the cash flow ratio for the past ten years.

interaction term over the *unionization rate* in the Tobit model. We find no direct effect of the E-index on the extent of the repurchased ratio. Yet, coefficients of *unionization rate* × *E-index* are 0.0353 and 0.0383 in Models 3 and 4, respectively. These estimates are significant at 1% confidence level, too. This indicates that a high unionized firm with well corporate governance mechanism buys back fewer shares, or buys no share at all.

We also discuss other potential repurchase motives against the union effect. Repurchases are usually announced as a signal to the undervaluation of a firm (Ikenberry, Lakonishok and Vermarlen, 1995; 2000). A firm is identified as an undervalued stock if it has high book-to-market ratio (Lakonishok, Shleifer and Vishny, 1994; Ikenberry, Lakonishok and Vermarlen, 1995). When a labor union observes a high book-to-market firm planning to buy back shares, the union may expect to see good aspect of this firm, and then request more in the collective bargaining. This leads to a more negative relation between the union and the buyback. In an unreported result, we do find a stronger negative impact of the *unionization rate* on the *repurchased ratio* for those firms with high book-to-market ratio in a Toibit model analyses. In addition, we test the buyback motive regarding the leverage adjustment, yet the coefficient of *unionization rate* × *debt ratio* is negative and significant. Finally, we consider the *unionization rate* × *cash dividend ratio* in the Tobit regression analyses. The coefficient of this interaction term is negative and significant. Skinner (2008) propose that many firms pay out cash by both repurchases and cash dividend; thus, a low unionized firm that has paid cash dividend may buy back as well. This is also a sort of evidence consistent with the wealth transfer effect. We do not report these results to save space.

5. Conclusion

In this paper examines the relation between the labor union and share repurchase. We use the unionization rate to proxy for the bargaining power of labors because more workers that are represented by labor union in the collective bargaining stand for more powerful labors and union. (Klasa, Maxwell and Ortiz-Molina, 2009). We argue that, while the unionization rate is low, buyback would be a major priority in the cash distribution over the labor benefit, leading to a wealth transfer effect between labors and shareholders. In contrast, when the unionization rate is high, the firm may not buy back shares to avoid infuriating the labor union. One possible way for the union to fight back the repurchaser is labor strike, resulting in a further fewer buybacks.

We use U.S. firms during 1984 to 2007 to investigate the relation between the unionization rate and share repurchase. In Tobit analysis of the share repurchases, we find that a negative relation between the repurchase ratio and the unionization rate controlling for many other repurchase factors. More robust checks are examined and still suggest a negative relation there. These results suggest that a low (high) unionized firm is more (less) likely to buy back shares.

In addition, we suggest that the repurchase is negatively associated with the change in labor intensity, especially for those low unionized repurchasers. *Ceteris paribus*, the smaller changes of labor intensity of repurchasers result in a poorer labor wealth improvement. These results also imply a potential wealth transfer effect from labors to shareholders. Furthermore, we study the impact of the repurchase on the strike probability of a firm. Based on 137 strike events during 1984 to 2007, we find that the repurchase by a high unionized firm significantly increase the strike probability. This confirms our previous conjecture that high unionized firms deter repurchases to avoid the anger of the strong union.

Given the fact that many repurchases are not followed by actual buybacks, we

further examine the completion ratio against the unionization rate. In such a test, we turn to find a *positive* relation between the unionization rate and completion ratio for repurchasers. This implies that once a unionized firm is resolved to repurchase shares, it tends to complete the repurchase program.

We also examine the long-run abnormal stock return of repurchases. We find that the abnormal return is negatively associated with the unionization rate. One implication on this negative relation is that shareholders gain more from the repurchase program, especially for those less unionized repurchasers with high repurchased ratio or with smaller changes in labor intensity. Also, we find that the high unionized repurchasers perform poorer in stock performance if they are likely to be faced with the labor strike.

We finally examine the relation between the unionization rate and repurchased ratio conditional on motives of share repurchases. We find that the high unionized firm is more likely to repurchase stocks if the firm is faced with potential takeover threats, or if the firms issue employee stock options during the buyback year. On the other hand, we suggest that the unionized firms further fewer shares if a unionized has with more excess cash or if the firm is well governed.

Although we propose a wealth transfer effect between labor union and shareholder in repurchase cases, there is one caveat on the wealth transfer implications. We do not argue that a firm intends to lay off employee or cut wages and then pay out those saved cash to shareholders by repurchases. Our expectation is that when a firm earns revenues, repurchases reduce potential growth of employees. Likewise, the wealth transfer effect between shareholders and bondholders (Maxwell and Stephens, 2003), firms do not entrench labors nor entrench bondholders. In our opinion, only the allocation of expected and current revenues (among shareholders,

labors and bondholders) should be considered in relating research works.

Reference

Atanassov, J., and E.H. Kim, 2009. Labor and corporate governance: international evidence from restructuring decisions. *Journal of Finance* 64, 341-374.

Banyia, M., E., Dyl, and K. Kahle, 2008. Errors in estimating share repurchases. *Journal of Corporate Finance* 14, 460-474.

Billett, M., and H. Xue, 2007. The takeover deterrent effect of open market share repurchases. *Journal of Finance* 62, 1827-1850.

Bronars, S., and D. Deere, 1991. The threat of unionization, the use of debt, and the preservation of shareholder wealth. *The Quarterly Journal of Economics* 106, 231-254.

Bronars, S., and D. Deere, 1994. Unionization and profitability, evidence of spill-over effect. *Journal of Political Economy* 102, 1281-1287.

Chan, K., D. Ikenberry, and I. Lee, 2004. Economic sources of gain in share repurchases. *Journal of Financial and Quantitative Analysis* 39, 461-479.

Chan, K., D. Ikenberry, I. Lee and Y. Wang, 2010. Share repurchases as a potential tool to mislead investors. *Journal of Corporate Finance* 16, 137-158.

Chen, S.S. and Y.S. Chen, 2009. Corporate strategies, bargaining power, and post-strike operating performance. Working paper.

Christenson, C.L., 1953. The theory of the offset factor: the impact of labor disputes upon coral production. *American Economic Review* 43, 513-547.

DeAngelo, H., and L. DeAngelo, 1991. Union negotiations and corporate policy. *Journal of Financial Economics* 30, 3-43.

Dittmar, A., 2000. Why do firms repurchase stock? *Journal of Business* 73, 331-355.

Gompers, P., J. Ishii, and A. Metrick, 2003. Corporate Governance and Equity Prices. *Quarterly Journal of Economics* 118, 107-55.

Gong, G., H., Louis, and A. Sun, 2008. Earnings management and firm performance following open-market repurchases. *Journal of Finance* 63, 947-986.

Grullon, G., and R. Michaely, 2004. The information content of share repurchase programs. *Journal of Finance* 59, 651-680.

Grullon, G., and R. Michaely, 2004. The information content of share repurchase programs. *Journal of Finance* 59, 651-680.

Harford, J., S. Mansi, and W. Maxwell, 2008. Corporate governance and firm cash holdings in the US. *Journal of Financial Economics* 87, 535-555.

Hilary, G., 2006. Organized labor and information asymmetry in the financial markets. *Review of Accounting Studies* 11, 525-548.

Howe, K., J. He, and W. Kao, 1992. One-time cash flow announcement and free cash-flow theory: share repurchases and special dividends. *Journal of Finance* 47, 1963-1975.

Ikenberry, D., and T., Vermaelen, 1996. The option to repurchase stock. *Financial Management* 25, 9-24.

Ikenberry, D., J. Lakonishok, and T. Vermaelen, 1995. Market underreaction to open market share repurchases. *Journal of Financial Economics* 39, 181-208.

Ikenberry, D., J. Lakonishok, and T. Vermaelen, 2000. Stock repurchases in Canada: performance and strategic trading. *Journal of Finance* 55, 2373-2397.

Jagannathan M, and C. Stephens, 2003. Motives for multiple open-market repurchase programs. *Financial Management* 32, 71-91.

Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323-329.

Jensen, M., and W. Meckling, 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.

Kahle, K.M., 2002. When a buyback isn't a buyback: open market repurchases and employee options. *Journal of Financial Economics* 63, 235-261.

Klasa, S., W. Maxwell, and H. Ortiz-Molina, 2009. The strategic use of corporate cash holdings in collective bargaining with labor unions. *Journal of Financial Economics* 92, 421-442.

Kramer, J., and G. Vasconcellos, 1996. The economic effect of strike on the shareholders of nonstruck competitors. *Industrial and Labor Relations Review* 49, 213-222.

Lakonishok, J., A. Shleifer, and R. Vishny, 1994. Contrarian investment, extrapolation, and risk. *Journal of Finance* 49, 1541-1578.

Lie, E., 2005. Operating performance following open market share repurchase announcements. *Journal of Accounting and Economics* 39, 411-436.

Massa, M., Z. Rehman and T. Vermaelen, 2007. Mimicking repurchase. *Journal of Financial Economics* 84, 624-666.

Matsa, D., 2010. Capital structural as a strategic variable: evidence from collective bargaining. *Journal of Finance* 65, 1197-1232.

Maxwell, W., and C. Stephens, 2003. The wealth effects of repurchases on bondholders. *Journal of Finance* 58, 895-919.

Peyer, U., and T., Vermaelen, 2009, The nature and persistence of buyback anomalies. *Review of Financial Studies* 22, 1693-1745.

Rose, D., 1989. The effect of changes in firm diversification on union wage settlement for 15 major U.S. industrial firms. *Southern Economics Journal* 55, 896-907.

Rose, D., 1991. Are strikers less effective in the conglomerate firms? *Industrial and Labor Relations Review* 45, 131-144.

Rosen, S., 1969. Trade union power, threat effects and the extent of organization.

Review of Economic Studies 36, 185-196.

Shleifer, A., and R. Vishny, 1997. A survey of corporate governance. *Journal of Finance* 52, 737-783.

Skinner, D., 2008. The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics* 87, 582-609.

Stephens, C., and M. Weisbach, 1998. Actual share reacquisitions in open-market repurchase programs. *Journal of Finance* 53, 313-333.

Vermaelen, T., 1981, Common stock repurchases and market signaling, *Journal of Financial Economics* 9, 139-183.

Table 1
Summary Statistics

The table presents summary statistics. *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset after adjusting by median of two-digit SIC industry. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year. *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). *Option dummy* is one if a firm issue employee stock options; otherwise zero. *Repurchased ratio* is shares to be bought back authorized by the board of directors. Repurchase firms (Non-repurchase firms) refer to the firm-year observations with repurchases in the year. Numbers in italic are average marginal effect. Numbers in the parentheses are P-values based on a *t*-test.

	Repurchase firms	Non-repurchase firms	Diff	P-value
N	8,434	91,513		
Unionization rate	0.0789	0.0967	-0.0178	(0.000)
	0.0310	*0.0440*	*-0.0130*	*(0.000)*
Debt ratio	0.1307	0.1589	-0.0282	(0.977)
	0.0874	*0.1049*	*-0.0175*	*(0.000)*
Industry-adj debt ratio	0.0311	0.0367	-0.0056	(0.923)
	0.0007	*-0.0005*	*0.0012*	*(0.138)*
ROA	0.1258	0.0896	0.0361	(0.923)
	0.1218	*0.1080*	*0.0138*	*(0.000)*
Industry-adj ROA	0.0257	-0.0187	0.0444	(0.000)
	0.0067	*-0.0011*	*0.0078*	*(0.000)*
Cash dividend payout ratio	0.2065	0.1721	0.0344	(0.000)
	0.1136	*0.0000*	*0.1136*	*(0.000)*
Size	3191	1564	1627	(0.000)
	516	*214*	*302*	*(0.000)*
B/M	0.6047	0.6118	-0.0070	(0.000)
	0.5275	*0.5152*	*0.0122*	*(0.000)*
Prior AR	0.0276	0.0620	-0.0343	(0.000)
	-0.0393	*-0.0475*	*0.0082*	*(0.310)*
HH	0.2051	0.2240	-0.0188	(0.000)
	0.1452	*0.1669*	*-0.0218*	*(0.000)*
M&A dummy	0.1056	0.1057	-0.0001	(0.167)
	0.0000	*0.0000*	*0.0000*	*(0.977)*
DA	-0.0007	-0.0006	-0.0001	(0.000)
	0.0000	*0.0000*	*0.0000*	*(0.031)*
Option dummy	0.3690	0.2430	0.1261	(0.000)
	0.0000	*0.0000*	*0.0000*	*(0.031)*
Repurchased ratio	0.0746			
	0.0558			

Table 2
Tobit Regression of Repurchases

This table presents the Tobit regression analysis on repurchases. Dependent variable is the repurchased ratio authorized by board of directors. *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset after adjusting by median of two-digit SIC industry. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year. *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). *Option dummy* is one if a firm issue employee stock options; otherwise zero. Numbers in italic are average marginal effect. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.1886	-0.4752	-0.4499	-0.4020	-0.3748
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate	-0.0459	-0.0822	-0.0996	-0.1315	-0.1509
	-0.0039	*-0.0070*	*-0.0084*	*-0.0137*	*-0.0158*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Debt ratio		-0.0973		-0.0900	
		-0.0082		*-0.0094*	
		(0.000)		(0.000)	
ROA		0.1663		0.1612	
		0.0141		*0.0168*	
		(0.000)		(0.000)	
Industry-adj debt ratio			-0.0419		-0.0474
			-0.0035		*-0.0050*
			(0.000)		(0.000)
Industry-adj ROA			0.2565		0.2544
			0.0217		*0.0266*
			(0.000)		(0.000)
Cash dividend payout ratio		0.0110	0.0075	0.0176	0.0131
		0.0009	*0.0006*	*0.0018*	*0.0014*
		(0.000)	(0.001)	(0.000)	(0.000)
Log(size)		0.0181	0.0167	0.0133	0.0118
		0.0015	*0.0014*	*0.0014*	*0.0012*
		(0.000)	(0.000)	(0.000)	(0.000)
B/M		0.0414	0.0394	0.0419	0.0400
		0.0035	*0.0033*	*0.0044*	*0.0042*
		(0.000)	(0.000)	(0.000)	(0.000)
Prior AR		-0.0127	-0.0140	-0.0110	-0.0124
		-0.0011	*-0.0012*	*-0.0011*	*-0.0013*
		(0.000)	(0.000)	(0.000)	(0.000)
HH		-0.0248	-0.0222	-0.0368	-0.0347
		-0.0021	*-0.0019*	*-0.0038*	*-0.0036*
		(0.000)	(0.000)	(0.000)	(0.000)
M&A dummy		0.0154	0.0153	0.0110	0.0109
		0.0013	*0.0013*	*0.0012*	*0.0011*
		(0.000)	(0.000)	(0.001)	(0.001)
DA		-0.0115	-0.0173	-0.0105	-0.0167
		-0.0010	*-0.0015*	*-0.0011*	*-0.0017*
		(0.248)	(0.089)	(0.271)	(0.087)
Option dummy				0.0172	0.0182
				0.0018	*0.0019*
				(0.000)	(0.000)
Year dummies	Yes	Yes	Yes	Yes	Yes
N	99947	96406	96406	66855	66855
Log-likelihood	-14107	-12475	-12416	-9822	-9730

Table 3
Regression of Repurchases- Some Robust Checks

This table presents the some robust checks for regression analyses on repurchases. Model 1 presents the Tobit regression with *labor strength* as an independent variable. Model 2 presents the Tobit regression using industry data. We use value-weighted averages of all variables in a 4-digit SIC industry to run the regression. Model 3 examines a Probit model with the dependent variable as a binary variable that equals one if the firm announces repurchases in next year; otherwise zero. Model 4 presents the Probit model using repurchase and matching firms controlling for size and book-to-market ratio. Model 5 presents the Probit model using industry data. We use value-weighted averages of all variables in a four-digit SIC industry to run the regression where dependent variable is equal to one if a firm announces repurchase in next year. *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. *Labor strength* is *unionization rate* multiplying total employees and then divided by total book asset. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset after adjusting by median of two-digit SIC industry. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year. *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). Numbers in italic are average marginal effect. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Tobit model	Tobit mode by industry data	Probit model	Probit model by matching firms	Probit model by industry data
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.4689	-0.4085	-3.1974	-0.4076	-3.7708
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate		-0.0515	-0.5862	-0.9835	-0.5403
		-0.0108	*-0.0838*	*-0.3750*	*-0.1283*
		(0.000)	(0.000)	(0.000)	(0.000)
Labor strength	-0.0287				
	-0.0024				
	(0.000)				
Debt ratio	-0.1079	-0.0952	-0.6881	-1.0372	-0.9887
	-0.0091	*-0.0200*	*-0.0984*	*-0.3955*	*-0.2347*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.1645	0.0788	1.0965	1.7087	0.6511
	0.0139	*0.0165*	*0.1568*	*0.6515*	*0.1546*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash dividend payout ratio	0.0096	-0.0106	0.0732	0.1022	-0.1018
	0.0008	*-0.0022*	*0.0105*	*0.0390*	*-0.0242*
	(0.000)	(0.004)	(0.000)	(0.000)	(0.001)
Log(size)	0.0174	0.0257	0.1282	0.0257	0.2518
	0.0015	*0.0054*	*0.0183*	*0.0098*	*0.0598*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
B/M	0.0399	0.0223	0.2464	0.3383	0.1582
	0.0034	*0.0047*	*0.0352*	*0.1290*	*0.0376*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Prior AR	-0.0126	-0.0018	-0.0855	-0.1180	-0.0172
	-0.0011	*-0.0004*	*-0.0122*	*-0.0450*	*-0.0041*
	(0.000)	(0.595)	(0.000)	(0.000)	(0.570)
HH	-0.0273	-0.1078	-0.1895	-0.0692	-1.0669
	-0.0023	*-0.0226*	*-0.0271*	*-0.0264*	*-0.2533*
	(0.000)	(0.000)	(0.000)	(0.214)	(0.000)
M&A dummy	0.0151	0.0074	0.0930	0.1089	0.0404
	0.0013	*0.0016*	*0.0133*	*0.0415*	*0.0096*
	(0.000)	(0.169)	(0.000)	(0.001)	(0.397)
DA	-0.0122	0.0033	-0.0470	-0.1788	0.0671
	-0.0010	*0.0007*	*-0.0067*	*-0.0682*	*0.0159*
	(0.219)	(0.891)	(0.479)	(0.113)	(0.752)
Year dummies	Yes	Yes	Yes	Yes	Yes
N	96406	18489	96406	15878	18489
Log-likelihood	-12511	-1695	-25583	-10550	-7821

Table 4
Regression Analyses of Changes in Labor Intensity

The table reports regression model for changes in labor intensity. The dependent variable is *changes in labor intensity* where labor intensity is measured as the number of employees divided by plant, property and equipment (PPE). *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset after adjusting by median of two-digit SIC industry. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year. *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). *Option dummy* is one if a firm issue employee stock options; otherwise zero. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.1038	-0.9755	-0.9619	-0.7284	-0.7251
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate	0.0015	0.0013	0.0014	0.0008	0.0009
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Repurchased ratio	-0.2954	-0.4202	-0.5451	-0.5124	-0.6385
	(0.078)	(0.014)	(0.001)	(0.006)	(0.001)
Unionization rate	4.0444	2.5928	3.0976	3.1053	3.8356
x Repurchased ratio	(0.000)	(0.005)	(0.001)	(0.002)	(0.000)
Debt ratio		0.3539		0.2838	
		(0.000)		(0.000)	
ROA		0.1976		0.1754	
		(0.000)		(0.000)	
Industry-adj debt ratio			0.1499		0.1280
			(0.000)		(0.000)
Industry-adj ROA			0.2143		0.2005
			(0.000)		(0.000)
Cash dividend payout ratio		0.0019	0.0019	0.0016	0.0016
		(0.000)	(0.000)	(0.000)	(0.000)
Log(size)		0.0570	0.0604	0.0397	0.0430
		(0.000)	(0.000)	(0.000)	(0.000)
B/M		0.0944	0.1044	0.0745	0.0844
		(0.000)	(0.000)	(0.000)	(0.000)
Prior AR		0.0436	0.0412	0.0409	0.0390
		(0.000)	(0.000)	(0.000)	(0.000)
HH		-0.0191	0.0035	0.0035	0.0277
		(0.288)	(0.846)	(0.854)	(0.143)
M&A dummy		0.0083	0.0121	0.0197	0.0230
		(0.486)	(0.313)	(0.157)	(0.098)
DA		0.0051	0.0051	0.0067	0.0065
		(0.433)	(0.441)	(0.345)	(0.359)
Option dummy				0.0544	0.0509
				(0.000)	(0.000)
Year dummies	Yes	Yes	Yes	Yes	Yes
N	71372	70087	70087	49099	49099
F-value	91.8357	80.6128	65.1226	38.0277	34.6709
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adj. R-sq	0.0146	0.0352	0.0320	0.0272	0.0248

Table 5
Probit Model Predicting the Likelihood of Strike

This table presents Probit model of the strike probability. The strike sample is obtained from Bureau of Labor Statistics. We collect 137 strike events which involve at least 1,000 workers from 1983 to 2007. For each strike sample, we first include firms with in the same size deciles in the strike year into the matching pool. We select the firm with most similar B/M ratio as strike firm to be the matching firm. We use repurchased ratio in the pre-strike year to be the independent variable. *Size* is the market value of equity. *Cash dividend ratio* is cash dividend of common shares divided by net income. *Leverage* is equal to the sum of short-term debt and long-term debt divided by total assets. *ROA* is earnings-before-interest-tax-depreciation divided by total assets. Market to book ratio is the market value of total asset divided by book value of total asset. All control variables are winsorized at 1%. Year dummy are included in each setting. Numbers in italic are the marginal effect. Numbers in the parentheses are *p*-value of regression coefficients.

	Model 1	Model 2	Model 3
Intercept	-1.1043	-1.5045	-0.9491
	(0.004)	(0.010)	(0.008)
Repurchased ratio	-3.4000	-4.2774	-3.4441
	-0.0375	*-0.0453*	*-0.0368*
	(0.430)	(0.330)	(0.431)
Unionization rate	0.0321	0.0313	0.0327
	0.1976	*0.2011*	*0.1952*
	(0.000)	(0.000)	(0.000)
Unionization rate	0.0275	0.0295	0.0270
x Repurchased ratio	*0.0903*	*0.0931*	*0.0861*
	(0.055)	(0.047)	(0.061)
Log(size)		-0.0265	-0.0172
		-0.0161	*-0.0105*
		(0.634)	(0.760)
Cash dividend		0.0028	0.0075
		0.0022	*0.0060*
		(0.943)	(0.845)
Leverage ratio		0.3185	
		0.0166	
		(0.613)	
ROA		3.8408	
		0.0804	
		(0.014)	
Change in leverage			-2.9187
			-0.0803
			(0.026)
Change in ROA			-1.2965
			-0.0181
			(0.589)
Change in book-to-market ratio		0.3969	0.3924
		0.0442	*0.0440*
		(0.182)	(0.229)
Year dummies	Yes	Yes	Yes
N for Strike sample	137	100	100
N for Matching sample	137	106	106
Log-likelihood	-163.248	-149.644	-150.418

Table 6
Tobit Regression of Completion Ratio

The table reports Tobit regression model based on repurchase sample. The dependent variable is one-year completion ratio (i.e., actual buyback ratio divided by repurchased ratio). Actual buyback ratio is the dollar spent on purchasing shares adjusted by the preferred stocks divided by the shares outstanding in four quarters after each repurchase announcement. *Strike dummy* is equal to one if a firm is faced with strike in current and future four years; zero otherwise. All other independent variables are measured as in Table 2. Numbers in italic are average marginal effect. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-0.0405	-0.9927	-0.7733	-0.9399	-0.7246	-0.9132	-0.6995
	(0.730)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate	0.9478	0.4784	0.6716	0.4211	0.6204	0.3555	0.5606
	0.5907	*0.2938*	*0.4148*	*0.2543*	*0.3768*	*0.2147*	*0.3406*
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.009)	(0.000)
Strike dummy						-0.3346	-0.3747
						-0.2021	*-0.2277*
						(0.484)	(0.439)
Unionization rate						3.9495	3.9132
x strike dummy						*2.3856*	*2.3773*
						(0.020)	(0.023)
Debt ratio		-0.0170		-0.0113		-0.0047	
		-0.0105		*-0.0068*		*-0.0028*	
		(0.830)		(0.896)		(0.957)	
ROA		2.1149		2.1202		2.1291	
		1.2991		*1.2805*		*1.2860*	
		(0.000)		(0.000)		(0.000)	
Industry-adj debt ratio			-0.1959		-0.2348		-0.2326
			-0.1210		*-0.1426*		*-0.1413*
			(0.023)		(0.012)		(0.013)
Industry-adj ROA			1.0992		1.1293		1.1395
			0.6790		*0.6859*		*0.6923*
			(0.000)		(0.000)		(0.000)
Cash dividend payout ratio		-0.3469	-0.4169	-0.4411	-0.5287	-0.4435	-0.5311
		-0.2131	*-0.2575*	*-0.2664*	*-0.3212*	*-0.2679*	*-0.3226*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(size)		0.0617	0.0686	0.0573	0.0636	0.0550	0.0616
		0.0379	*0.0424*	*0.0346*	*0.0386*	*0.0333*	*0.0374*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
B/M		0.2539	0.1259	0.2340	0.1155	0.2334	0.1151
		0.1560	*0.0777*	*0.1413*	*0.0702*	*0.1410*	*0.0699*
		(0.000)	(0.001)	(0.000)	(0.004)	(0.000)	(0.004)
Prior AR		-0.1208	-0.1162	-0.1257	-0.1218	-0.1264	-0.1225
		-0.0742	*-0.0718*	*-0.0759*	*-0.0740*	*-0.0764*	*-0.0744*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HH		0.4239	0.6078	0.4261	0.6238	0.4250	0.6247
		0.2604	*0.3754*	*0.2573*	*0.3789*	*0.2567*	*0.3795*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M&A dummy		-0.0115	-0.0134	-0.0262	-0.0270	-0.0324	-0.0328
		-0.0071	*-0.0083*	*-0.0158*	*-0.0164*	*-0.0196*	*-0.0199*
		(0.718)	(0.676)	(0.474)	(0.464)	(0.376)	(0.374)
DA		-0.0129	0.0120	0.0117	0.0407	0.0095	0.0378
		-0.0079	*0.0074*	*0.0071*	*0.0247*	*0.0058*	*0.0230*
		(0.921)	(0.927)	(0.930)	(0.762)	(0.943)	(0.778)
Option				0.0787	0.0967	0.0800	0.0979
				0.3795	*0.3795*	*0.3795*	*0.3795*
				(0.010)	(0.002)	(0.009)	(0.002)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8434	8015	8015	7000	7000	7000	7000
Log-likelihood	-8381	-7814	-7937	-6759	-6866	-6750	-6859

Table 7
Regression Analysis of Buy-and-Hold Abnormal Return

The table reports buy-and-hold abnormal return regressions. The sample period is between 1983 and 2004 where we stop at 2004 to ensure every firm has full four-year return information, if available. The dependent variable is four-year buy-and-hold abnormal return controlling for size and book-to-market matching firms. *Unionization rate* is the percentage of labors joining the union in a four-digit SIC industry. *Repurchased ratio* is shares to be bought back authorized by the board of directors. *Changes in labor intensity* use the labor intensity as the number of employees divided by PPE. *Strike dummy* is equal to one if a firm is faced with strike in current and future four years; zero otherwise. *Debt ratio* is the long-term debt divided by book equity. *Industry-adj debt ratio* is long-term debt divided by book value of equity after adjusting by median of two-digit SIC industry. *ROA* is operating income before depreciation divided by book assets. *Industry-adj ROA* is operating income before depreciation to total book asset after adjusting by median of two-digit SIC industry. *Cash dividend payout ratio* is common equity dividends divided by net income. *Size* is stock price multiplying outstanding shares from CRSP, adjusted by 2007 CPI. *B/M* is book value of equity divided by *Size*. *Prior AR* is one-year prior buy-and-hold abnormal return controlled for CRSP value-weighted market index return. *HH* is Herfindahl index that is the sum of squared market shares (using sales as proxy of output) in a three-digit SIC industry. *M&A dummy* is equal to one if a firm is announced as an M&A target in next two year. *DA* is discretionary accrual measured in Gong, Louis and Sun (2008). *Option dummy* is one if a firm issue employee stock options; otherwise zero. Numbers in the parentheses are p-values based on White (1980) *t*-statistics. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Intercept	0.3806	-1.2845	-1.2742	-0.9277	-0.9180	-1.1050	-1.0979	-0.9001	-0.9019	-0.6763	-0.6640
	(0.000)	(0.000)	(0.000)	(0.018)	(0.018)	(0.007)	(0.007)	(0.025)	(0.023)	(0.002)	(0.003)
Unionization rate	-0.0057	-0.0113	-0.0114	-0.0112	-0.0114	-0.0018	-0.0021	-0.0108	-0.0110	-0.0053	-0.0051
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.735)	(0.677)	(0.003)	(0.002)	(0.008)	(0.009)
Repurchased ratio						2.1998	2.2106				
						(0.060)	(0.058)				
Unionization rate						-0.1359	-0.1345				
x repurchased ratio						(0.053)	(0.056)				
Changes in labor intensity								-0.0145	-0.0127		
								(0.080)	(0.145)		
Unionization rate								0.0015	0.0013		
x changes in labor intensity								(0.019)	(0.048)		
Strike dummy										0.9204	0.9056
										(0.141)	(0.149)
Unionization rate										-0.0435	-0.0434
x strike dummy										(0.046)	(0.048)
Debt ratio		-0.0307		-0.0566		-0.0583		-0.0321		0.1011	
		(0.913)		(0.843)		(0.840)		(0.913)		(0.485)	
ROA		0.4695		0.4419		0.4337		0.4042		0.4327	
		(0.202)		(0.238)		(0.248)		(0.311)		(0.038)	

Table 7 (Continued)

Industry-adj debt ratio			-0.0068		-0.0399		-0.0305		-0.0469		-0.0094
			(0.978)		(0.876)		(0.905)		(0.857)		(0.950)
Industry-adj ROA			0.9408		0.8277		0.8333		0.8015		0.4894
			(0.018)		(0.043)		(0.042)		(0.060)		(0.047)
Cash dividend payout ratio		-0.0075	-0.0087	0.0012	-0.0004	0.0004	-0.0011	0.0011	-0.0004	0.0168	0.0163
		(0.582)	(0.522)	(0.953)	(0.986)	(0.983)	(0.957)	(0.954)	(0.982)	(0.302)	(0.313)
Log(size)		0.0787	0.0776	0.0426	0.0421	0.0457	0.0452	0.0411	0.0413	0.0229	0.0251
		(0.000)	(0.000)	(0.118)	(0.125)	(0.099)	(0.105)	(0.137)	(0.138)	(0.119)	(0.086)
B/M		0.3964	0.4553	0.3167	0.3648	0.2919	0.3404	0.3164	0.3667	0.2299	0.2452
		(0.003)	(0.001)	(0.020)	(0.010)	(0.036)	(0.019)	(0.022)	(0.011)	(0.004)	(0.003)
Prior AR		-0.0196	-0.0231	-0.0290	-0.0311	-0.0305	-0.0325	-0.0300	-0.0307	-0.0538	-0.0557
		(0.728)	(0.679)	(0.616)	(0.588)	(0.600)	(0.573)	(0.613)	(0.601)	(0.118)	(0.104)
HH		-0.3270	-0.3124	-0.3259	-0.3068	-0.3159	-0.2972	-0.3333	-0.3141	-0.2432	-0.2166
		(0.122)	(0.146)	(0.167)	(0.200)	(0.180)	(0.214)	(0.163)	(0.197)	(0.050)	(0.079)
M&A dummy		0.1002	0.1024	0.1894	0.1896	0.1907	0.1911	0.1852	0.1861	0.1369	0.1349
		(0.322)	(0.310)	(0.090)	(0.089)	(0.089)	(0.088)	(0.102)	(0.100)	(0.051)	(0.054)
DA		0.1393	0.1134	0.1118	0.0868	0.1178	0.0928	0.1394	0.1069	0.0325	0.0198
		(0.381)	(0.475)	(0.485)	(0.588)	(0.465)	(0.565)	(0.386)	(0.512)	(0.820)	(0.889)
Option dummy				0.2479	0.2450	0.2439	0.2405	0.2384	0.2350	0.1635	0.1624
				(0.015)	(0.016)	(0.017)	(0.019)	(0.021)	(0.023)	(0.001)	(0.001)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7323	7183	7183	5975	5975	5975	5975	4083	4083	5975	5975
F-value	5.1712	2.1277	2.2577	1.7868	1.8786	1.8092	1.8949	1.5807	1.6554	3.4997	2.4695
	(0.000)	(0.001)	(0.000)	(0.008)	(0.004)	(0.005)	(0.003)	(0.025)	(0.015)	(0.000)	(0.000)
Adj. R-sq	0.0127	0.0104	0.0115	0.0086	0.0094	0.0094	0.0103	0.0070	0.0078	0.0255	0.0250

Table 8
Tobit Regression of Repurchases- Role of M&A and Employee Stock Options

This table presents the Tobit regression analysis on repurchases. Dependent variable is the repurchased ratio authorized by board of directors. All independent variables are measured as in Table 2. Numbers in italic are average marginal effect. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4
Intercept	-0.4532	-0.4293	-0.3832	-0.3570
	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate	-0.0875	-0.1054	-0.1596	-0.1792
	-0.0077	*-0.0093*	*-0.0174*	*-0.0195*
	(0.000)	(0.000)	(0.000)	(0.000)
Debt ratio	-0.0996		-0.0923	
	-0.0088		*-0.0101*	
	(0.000)		(0.000)	
ROA	0.1645		0.1608	
	0.0146		*0.0175*	
	(0.000)		(0.000)	
Industry-adj debt ratio		-0.0446		-0.0501
		-0.0039		*-0.0055*
		(0.000)		(0.000)
Industry-adj ROA		0.2486		0.2467
		0.0220		*0.0269*
		(0.000)		(0.000)
Cash dividend payout ratio	0.0111	0.0076	0.0183	0.0137
	0.0010	*0.0007*	*0.0020*	*0.0015*
	(0.000)	(0.001)	(0.000)	(0.000)
Log(size)	0.0172	0.0158	0.0128	0.0113
	0.0015	*0.0014*	*0.0014*	*0.0012*
	(0.000)	(0.000)	(0.000)	(0.000)
B/M	0.0331	0.0314	0.0339	0.0323
	0.0029	*0.0028*	*0.0037*	*0.0035*
	(0.000)	(0.000)	(0.000)	(0.000)
Prior AR	-0.0159	-0.0171	-0.0137	-0.0149
	-0.0014	*-0.0015*	*-0.0015*	*-0.0016*
	(0.000)	(0.000)	(0.000)	(0.000)
HH	-0.0224	-0.0197	-0.0352	-0.0330
	-0.0020	*-0.0017*	*-0.0038*	*-0.0036*
	(0.000)	(0.000)	(0.000)	(0.000)
DA	-0.0111	-0.0166	-0.0104	-0.0163
	-0.0010	*-0.0015*	*-0.0011*	*-0.0018*
	(0.259)	(0.098)	(0.269)	(0.092)
M&A dummy	0.0099	0.0099	0.0102	0.0101
	0.0009	*0.0009*	*0.0011*	*0.0011*
	(0.014)	(0.014)	(0.003)	(0.003)
Unionization rate	0.0524	0.0509		
x M&A dummy	*0.0046*	*0.0045*		
	(0.036)	(0.042)		
Option dummy			0.0085	0.0100
			0.0009	*0.0011*
			(0.006)	(0.001)
Unionization rate			0.0658	0.0637
x Option dummy			*0.0072*	*0.0069*
			(0.001)	(0.002)
Year dummies	Yes	Yes	Yes	Yes
N	96406	96406	66855	66855
Log-likelihood	-11708	-11676	-9150	-9086

Table 9
Tobit Regression of Repurchases- Role of Excess Cash and E-Index

This table presents the Tobit regression analysis on repurchases. Dependent variable is the repurchased ratio authorized by board of directors. All independent variables are measured as in Table 2. *Excess cash* is measured by Harford, Mansi and Maxwell (2008). *E-index* is the entrenchment index measured by Bebchuk, Cohen and Ferrell (2009). Numbers in italic are average marginal effect. Numbers in the parentheses are P-values. Year dummies are included but not reported.

	Model 1	Model 2	Model 3	Model 4
Intercept	-0.5197	-0.4908	-0.4910	-0.4634
	(0.000)	(0.000)	(0.000)	(0.000)
Unionization rate	-0.0684	-0.1000	-0.1708	-0.1953
	-0.0060	*-0.0088*	*-0.0144*	*-0.0165*
	(0.000)	(0.000)	(0.000)	(0.000)
Debt ratio	-0.1011		-0.0965	
	-0.0089		*-0.0082*	
	(0.000)		(0.000)	
ROA	0.2312		0.1669	
	0.0203		*0.0141*	
	(0.000)		(0.000)	
Industry-adj debt ratio		-0.0641		-0.0424
		-0.0056		*-0.0036*
		(0.000)		(0.000)
Industry-adj ROA		0.2374		0.2560
		0.0209		*0.0216*
		(0.000)		(0.000)
Cash dividend payout ratio	-0.0109	-0.0117	0.0113	0.0079
	-0.0010	*-0.0010*	*0.0010*	*0.0007*
	(0.001)	(0.001)	(0.000)	(0.000)
Log(size)	0.0207	0.0200	0.0190	0.0175
	0.0018	*0.0018*	*0.0016*	*0.0015*
	(0.000)	(0.000)	(0.000)	(0.000)
B/M	0.0306	0.0274	0.0422	0.0402
	0.0027	*0.0024*	*0.0036*	*0.0034*
	(0.000)	(0.000)	(0.000)	(0.000)
Prior AR	-0.0213	-0.0206	-0.0129	-0.0142
	-0.0019	*-0.0018*	*-0.0011*	*-0.0012*
	(0.000)	(0.000)	(0.000)	(0.000)
HH	-0.0008	0.0003	-0.0250	-0.0223
	-0.0001	*0.0000*	*-0.0021*	*-0.0019*
	(0.902)	(0.968)	(0.000)	(0.000)
M&A dummy	0.0137	0.0129	0.0153	0.0153
	0.0012	*0.0011*	*0.0013*	*0.0013*
	(0.001)	(0.001)	(0.000)	(0.000)
DA	-0.0192	-0.0200	-0.0116	-0.0172
	-0.0017	*-0.0018*	*-0.0010*	*-0.0015*
	(0.090)	(0.082)	(0.242)	(0.091)
Excess cash	0.0070	0.0078		
	0.0006	*0.0007*		
	(0.033)	(0.017)		
Unionization rate	-0.1890	-0.2414		
x excess cash	*-0.0166*	*-0.0212*		
	(0.000)	(0.000)		
E-index			0.0011	0.0006
			0.0001	*0.0000*
			(0.421)	(0.678)
Unionization rate			0.0353	0.0383
x E-index			*0.0030*	*0.0032*
			(0.000)	(0.000)
Year dummies	Yes	Yes	Yes	Yes
N	52204	52204	96406	96406
Log-likelihood	-7112	-7185	-12460	-12400

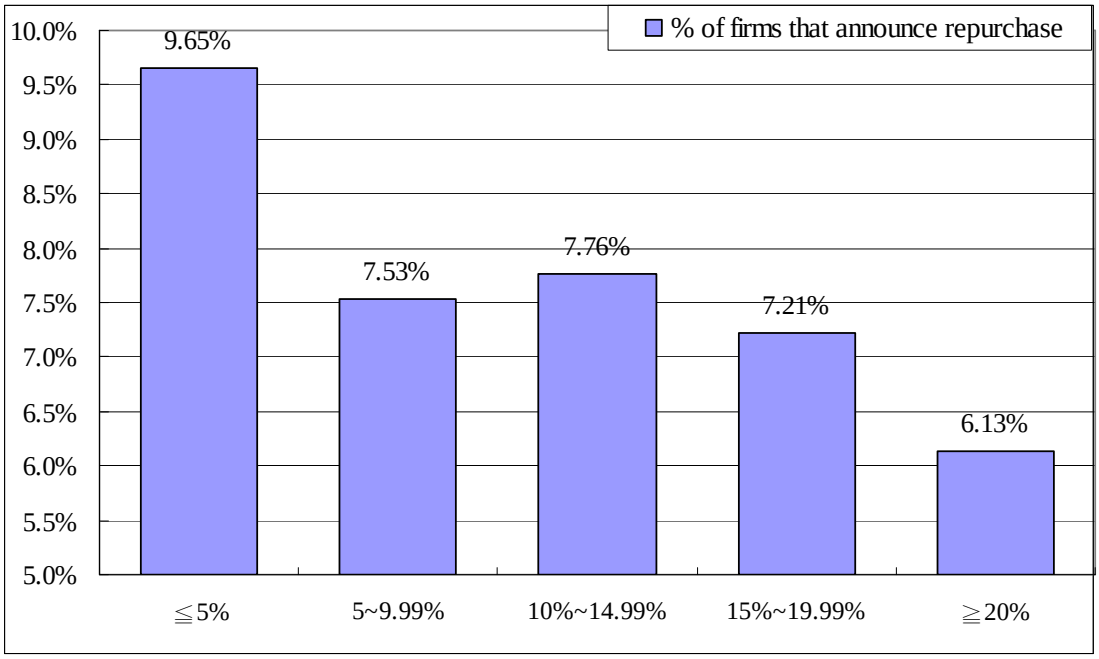

Figure 1 Percentage of Firms that Announce Repurchases

This figure plots the percentage of firms that announce repurchases, sorted by unionization rate, where unionization rate is the percentage of labors joining the union in a four-digit SIC industry.