# Union Effects on Performance and Employment Relations:

# Evidence from China

Yi Lu[a], Zhigang Tao[a*], and Yijiang Wang[b]

[a] University of Hong Kong

[b] Cheung Kong Graduate School of Business

August 2009

*Abstract*: This paper empirically studies union effects on the performance of, and employment relations in, China's private enterprises.   The study finds a positive and statistically significant union effect on labor productivity, but not on profitability.   It further finds that unions lead to better employee benefits and increased contract signing in employment.   These findings suggest that, in the era of transition from a centrally planned to a market economy, unions in China's private enterprises do promote workers' interests as unions do in other economies.   And they do that without abandoning their traditional role of harmonizing employment relations, as required by the Party.

**Keywords:** Unions, Labor Productivity, Profitability, Employee Benefits, Transitional Economy, Employment Relations.

**JEL Codes:** J51, P36, D21, L25

# Union Effects on Performance and Employment Relations: Evidence from China

## 1. Introduction

This paper empirically studies the impact of labor union on performance of, and employment relations in, China's private enterprises.   The study is particularly valuable because it is about union effect in the context of a set of unique and striking institutional features.   As the largest developing economy, China also has the largest labor force and the largest union membership in the world.   Economic reform has allowed China to achieve a record of thirty years of fast economic growth with new employment going mostly into the nonstate sector.   In the process, unions in China have acquired the new role of protecting workers' interests, while continuing their traditional role of harmonizing employment relations (more on this shortly).   In such a unique context, what are the union effects on the performance of a business and on employment relations?   How do these effects compare with those in other economies that the literature has amply studied?   These are questions of great academic interest and practical importance.

During the time of central planning, almost all of China's industrial enterprises were state-owned.   Labor union was mandated in these state-owned enterprises (SOEs) and subordinated to the Communist Party with union leaders appointed by the Party rather than elected by union members (Ng and Warner, 1998).   With the citizens of the country as the ultimate owners of these SOEs, workers' interest was

said to coincide with that of their employers.[1]  Thus the union was not seen as a

countervailing force to the employer and not allowed to organize strikes or conduct

collective bargaining as its counterparts in other parts of the world would do (Metcalf

and Li, 2006).  Instead, its main function was to help the government to maintain

social and political stability.[2]  The union accomplished this function mainly by

sponsoring social and entertainment activities and by promoting certain welfare

programs, e.g., short-term financial aid to its members with temporary financial

difficulties.

   Thirty years of economic reform has witnessed a drastic increase of the share of

the nonstate sector in China's economy through privatization of SOEs, massive entry

of private enterprises and that of multinational companies.  Currently the nonstate

sector accounts for two thirds of China's gross domestic products (GDP) and 70 to 80

percent of its GDP growth (*CAI JING*, 2007).  Unlike in SOEs, labor union is not

mandated in nonstate enterprises.  Instead, the employees would have to initiate it.

With conflicting interests recognized in nonstate employment, unions in China

acquired the new role of defending workers' interests, as their counterparts in other

economies do (White, 1996).  Free election of union leaders has also become a

common practice in China's nonstate enterprises.  However, despite all these

changes, it remains mandatory that all unions in China follow the Party's rules and

---

[1] The unity of labor's interest with that of the SOEs as employers is consistent with the
unitarist view of the employment relation as in Budd and Bhave (2008).

[2] As the founding leader of the former Soviet Union Lenin famously states, one central role
of unions is to be the transmission belt for delivering the Party's agenda to the working class
(e.g., Lucio, 1990).

policies.    Under this principle, promoting social harmony remains the highest goal

for unions across China, as demanded by the Party.[3]

Given the mixed roles for the union to play these days (i.e., the traditional role of

promoting harmony and the new role of representing the interests of workers), it is an

empirical question to what extent have, or have not, unions in China transformed

themselves, or how effective are they playing their roles (Clarke, 2005).    Specific

questions include: Do unions in China help the workers to increase their incomes?    If

yes, in what forms and how significantly do they do it?    Do unions in China affect

other aspects of employment relations, such as total employment, job security, signing

of employment contracts, etc?    What implications does unionization have for the

performance of a business?    As important as they are, to our best knowledge, these

questions have not been empirically studied.    This paper studies these questions and

thereby fills a gap in the union literature.

Our study finds evidence of a positive and statistically significant union effect on

labor productivity.[4]    However, there is no evidence of a positive union effect on

---

[3] Mr. Wang Ying, a senior official of the state-backed All-China Federation of Trade Unions (ACFTU) states: "Our purpose is to guarantee a win-win situation for companies and workers. We coordinate labor relations rather than fighting against management" (Ford, 2008). Constance Thomas, head of the China Office of the United Nation's International Labor Organization, states: "They (unions in China) will not necessarily be confrontational as in the West" (Ford, 2008).

ACFTU is the only legitimate union organization in China, with branches in all China's regions and major industries.    Unions at individual enterprises must be approved and their operations directed by ACFTU branches at regional or industrial levels.

In Budd and Bhave (2008), an employment relationship is considered pluralistic are assumed to have some conflicting interests but also interests in make mutually beneficial arrangements between them.

[4] Freeman and Medoff (1984) suggest that "what unions do to productivity is one of the key factors in assessing the overall economic impact of unions".    A landmark study by Freeman

profitability.[5]   These findings remain robust when the regression models are

modified to address typical technical concerns in empirical studies.[6]

After the study on productivity and profitability, we further study union effects on

various aspects of an employment relation, such as wage, benefits, total employment,

and percentage of workers signing legally binding employment contracts[7].   Besides

their proper importance, findings on these employment variables also shed light on

possible reasons for the positive union effect on labor productivity.

It turns out that we find no evidence of a union effect on wages and bonuses,

which is in contrast to the findings of most previous studies using data of developed

countries.   However, we do find positive and statistically significant union effects on

many types of benefits, e.g., medical insurance, pension, unemployment insurance,

work-related injury insurance, maternity insurance and housing subsidy.   These

---

and Medoff (1984) finds that unions in general increase productivity.   The effect varies with respect to time, place and labor relations environment.   Subsequent studies report mixed findings about union effect on productivity.   For good surveys, see Becker and Olson (1987), Addison and Hirsch (1989), Belman (1992), Freeman (1992), Booth (1995), Kuhn (1998), Hirsch (1997), Aidt and Tzannatos (2002), Doucouliagos and Laroche (2003), Metcalf (2003), Menezes-Filho and Van Reenen (2003) and Bennett and Kaufman (2007), among others.

[5] In general, when productivity improves, profitability may increase with it, remain unchanged or even go down.   The reason is that revenue and profit may both increase with productivity, but, without further specification, their relative magnitudes of increases are not determined.   Empirically, negative union effect on profitability has been found using data of developed countries, e.g., Freeman and Medoff (1984).

[6] To address the possibility of reverse causality, the presence of unions is regressed on enterprise performance in the previous year with or without control for a host of other variables.   No evidence of reverse causality is found.   The findings on productivity and profitability are also robust to the median regression analysis, to the subsample of enterprises started as private enterprises as opposed to those privatized from SOEs, and to the subsample of enterprises whose majority shareholder has more than 50 percent equity shares.

[7] In China's private sector, it has been more typical than not that an employer does not sign an official employment contract with a worker.

findings are consistent with those in the existing literature, although the magnitudes of union effects on benefits in China are generally much smaller.

Besides a positive effect on income (in the forms of benefits), we also find statistically significant and positive union effects on other aspects of employment relations in an enterprise, i.e., the size of total employment, and the percentage of workers signing individual or collective employment contracts with the employer.

Two conclusions emerge from these findings. First, unions in China's private enterprises promote workers' interest, albeit mainly in the form of various employment benefits, not wages and bonuses. Second, while playing the newly acquired role of promoting workers' interests, they seem to maintain their traditional role of promoting harmony in employment relations as the union presence has an overall positive effect on labor productivity.[8]

The rest of the paper is organized as follows. Section 2 discusses the data and the variables. Section 3 reports the findings. Section 4 summarizes and concludes the paper.

---

[8] We thank an anonymous referee for pointing out that the increase of labor productivity in unionized enterprises could be due to many possible reasons. For example, higher productivity could also be explained by greater work effort induced by higher employment benefits, as in the logic of agency theory. Alternatively, enterprises could attract more capable workers with higher employment benefits. Note that these explanations are not mutually exclusive. The small union effect on benefits we found, however, suggests likely limited effect of effort or ability, and thus a nontrivial impact of employment relations on productivity. Regardless of its explanation, the higher productivity we found suggests that unions promote workers' interests *not* at the cost of harmony.

## 2. Data and Variables

The dataset used for this study comes from the *Private Enterprise Survey* in China, which was conducted in 2006 jointly by the United Front Work Department of the Central Committee of the Communist Party of China, the All China Industry and Commerce Federation, and the China Society of Private Economy at the Chinese Academy of Social Sciences.[9]   The Survey used the multi-stage stratified random sampling method to achieve a balanced representation across all regions and industries.   It first determined the total number of private enterprises to be surveyed. Afterwards, it selected two cities from each of the thirty-one province-level regions (i.e., the 22 provinces, 4 province-level municipalities and 5 minority autonomous regions), which included the capital city of each region or one prefecture-level city, and one county-level city.   The number of private enterprises to be surveyed in each region is calculated as the product of the region's share of private enterprises in the national total with the total number of private enterprises in the survey.   The same method is used to determine the number of enterprises in each city or industry. Finally, private enterprises are randomly chosen from each sub-sample.   The initial sample size is 3,837 enterprises.

Our data set has information on enterprise operation and performance, such as employment, output, profits, fixed asset, etc.   Two dependent variables are used to

---

[9]  This dataset has been used by others, e.g., Bai, Lu, and Tao (2006) in a study of private enterprises' access to bank loans; Li, Meng, Wang, and Zhou (2008) in a study of entrepreneurial party membership and enterprise performance; and Du, Lu, and Tao (2008) in a study examining the impact of property rights protection on enterprise diversification.

study enterprise performance: *Labor Productivity* (the logarithm of output divided by total employment) and *Profitability* (profits divided by total fixed assets). The key explanatory variable used in the study is the presence of a union. In the Survey, there is a question asking whether or not an enterprise has a union. Of the 3,837 enterprises surveyed, 3,239 answered this question. A dummy variable called *Union* is constructed, taking value one if the answer is affirmative and zero otherwise. 53.29 percent of those enterprises who answered the question have unions. Summary statistics are given in Table 1.

To alleviate the concern of omitted variables, we include a host of variables that may affect an enterprise's performance. The background and capability of entrepreneurs can be important determinants of private enterprise performance. Therefore, we include some conventional managerial human capital variables like *Age* (the age of the entrepreneur by the end of 2005), *Education* (years of formal schooling) and *Managerial Experiences* (a dummy variable taking value one if the entrepreneur had had a managerial position before s/he started his or her own business or zero otherwise) and some political participation variables such as *Party Membership* (a dummy variable taking value one if the entrepreneur is a member of Chinese Communist Party or zero otherwise), *Government Cadre* (a dummy variable taking value one if the entrepreneur used to be a government official or zero otherwise), *CPC Membership* (a dummy variable taking value one if the entrepreneur is a member of the Chinese People's Congress or zero otherwise), and *CPPCC Membership* (a dummy variable taking value one if the entrepreneur is a member of the Chinese

People's Political Consultative Conference or zero otherwise).[10] We also control for

enterprise characteristics, such as *Enterprise Size* (the logarithm of the number of

employees in each enterprise) and *Enterprise Age* (the logarithm of the number of

years an enterprise was established by the end of 2005). Finally, industrial and

regional dummies are included to control for industry- and region-specific factors

affecting performance.

In the study of the union effects on employment relations in China's private

enterprises, the following dependent variables are regressed on whether or not a union

exists: *Wages and Bonuses* (total wages and bonuses divided by total employment),

*Medical Insurance* (measured by the percentage of employees having medical

insurance), *Pension* (measured by the percentage of employees having pension),

*Unemployment Insurance* (measured by the percentage of employees having

unemployment insurance), *Work-related Injury Insurance* (measured by the

percentage of employees having work-related injury insurance), *Maternity Insurance*

(measured by the percentage of employees having maternity insurance), and *Housing*

*Subsidy* (a dummy variable taking value one if the enterprise offers housing subsidy

and zero otherwise), *Employment* (measured by the logarithm of the number of

employees by the end of 2005), *Individual Contract* (measured by the percentage of

---

[10] The Chinese People's Congress (CPC) is the highest organ of state power in China, while the Chinese People's Political Consultative Conference (CPPCC) is the advisory organ to the Chinese People's Congress and the government. A person can have memberships in both CPC and CPPCC. Party membership is not a necessary condition for either CPC or CPPCC membership. 71.5 percent of the ninth CPC members (elected in 1998) were members of the Communist Party, whereas only 4.4 percent of the 10th CPPCC members (elected in 2003) were members of the Communist Party.

employees having individual contracts with the employer), and *Collective Contract* (measured by the percentage of employees having collective contracts with the employer).   Besides the great importance in its own sake, finding out about union effects on these key employment variables can shed light on reasons for the positive union effect on labor productivity reported in Section 3.1.

# 3. Empirical Analysis

## 3.1. Union Effects on Performance

The regression model used to study the union effects on enterprise performance is as follows:

$$y_{eir} = \alpha + \beta \bullet \text{Union}_{eir} + X_{eir}^{'}\gamma + \varepsilon_{eir} \tag{1}$$

where $y_{eir}$ is the measure of performance (*i.e.*, *Labor Productivity* or *Profitability*) for enterprise $e$ in industry $i$ in region $r$ ,   $X_{eir}$ is a set of control variables including entrepreneurial characteristics, enterprise characteristics, and industrial and regional dummies. Standard error is clustered at the region-level, allowing arbitrary correlation within the region.

Ordinary-least-squares regression results are reported in Table 2, in which *Labor Productivity* and *Profitability* are the dependent variables for, respectively, columns 1 and 2.   It is found that unions have a positive and statistically significant impact on labor productivity, but not a significant impact on profitability.   Specifically, having

a union is associated with a 0.079-standard-deviation increase in labor productivity.[11]

To alleviate the concern of omitted variables, we add a host of variables reflecting industrial, regional, enterprise and entrepreneurial characteristics as defined earlier in section 2.   To save space, from hereon, we report only results for *Labor Productivity* as the dependent variable.[12]   Regression results are reported in Columns 3-6 of Table 2.   It is clear from these results that the positive union effect on labor productivity we found earlier remains robust to these controls.

The coefficients of the control variables are also interesting and meaningful. Results reported in columns 3-4 of Table 3 show that both industrial affiliation and regional characteristics have statistically significant impact on labor productivity. Those reported in column 5 show that smaller and older enterprises exhibit higher labor productivity.   Finally, those reported in column 6 show that an entrepreneur's education and managerial experience contribute positively to labor productivity.

To address the potential concern of reverse causality, a regression of *Union* on labor productivity in the previous year is run.   Probit regression results with a set of control variables are reported in Column 1 of Table 3.   These results make clear that labor productivity in the previous year does not have any significant impact on the

---

[11] 0.079 is obtained by dividing the estimated coefficient (0.201) by the standard deviation of labor productivity (1.497).   In general, higher productivity does not necessarily imply higher profitability, as higher productivity leads to both higher revenue and higher total profit.   It is thus possible to find no significant union effect on profitability despite the positive union effect on productivity.   In our study, positive union effect on profit is found when firm size is not controlled (results available upon request). When firm size is controlled for, union effect on profit is essentially similar to union effect on profitability, hence the ambiguous result.

[12] Results for *Profitability* as the performance measure are available upon request.   They are similar to those reported in column 2 of Table 2 and are not statistically significant.

presence of a union in an enterprise, suggesting that the concern for reverse causality is not a major one in our case.

To further alleviate the concern of endogeneity (i.e., omitted variables bias and reverse causality), we use the instrumental variable estimation. Specifically, we use *Party Membership*, *Government Cadre*, *CPC Membership*, and *CPPCC Membership* as the instruments for the union presence. The instrumental variable estimation results are reported in Column 2 of Table 3. It is found that the presence of a union still casts a positive and statistically significant effect on labor productivity. Meanwhile, the Anderson canonical correlation LR statistic confirms that our instrumental variables are relevant, while the Hansen J statistic shows that our instrumental variables are valid.

Three robustness checks are further conducted. First, in Column 1 of Table 4, the median regression, which is less sensitive to outliers, is done. It confirms the robustness of the earlier results. Second, some of China's private enterprises were privatized from SOEs, where a union is mandated. To address the potential concern that the presence of a union is the legacy of an SOE, the analyses are repeated using the subsample of the enterprises that started as private enterprises. As summarized in column 2 of Table 4, all the results remained robust. Finally, the analyses are repeated using the subsample of the enterprises whose majority shareholder has more than 50% equity shares. Results reported in column 3 of Table 4 show that our main results also remain robust to this subsample.

The message from Tables 2 through 4 is clear: unions in China's private

enterprises have a positive and statistically significant impact on labor productivity, but not on profitability. These findings are in sharp contrast to the mixed findings of union effect on productivity reported in the literature using the data of developed economies (Hirsch, 2004a).

## 3.2. Union Effects on Employment Relations

In this subsection, we study union effects on employment relation, focusing on a set of variables on employment relation as listed in section 2: wages and bonuses, non-wage benefits, size of workforce employed, and signing of legally binding contracts. As explained in section 2, all the regressions control for the same set of variables used earlier, e.g., those representing industry, region, enterprise and entrepreneurial characteristics. To save space, the results with regard to these control variables are not reported, but available upon request.

Regression results are reported in Tables 5-6. Column 1 of Table 5 reports union effect on wages and bonuses per employee. It is found that the employees in the unionized enterprises do not have higher wages and bonuses compared to their counterparts in non-unionized enterprises. This is in sharp contrast to the findings reported in the literature.[13]

Columns 2-7 of Table 5 examines the union effects on various types of workers' non-wage benefits, such as medical insurance, pension, unemployment insurance,

---

[13] For example, using US data, Lewis (1963, 1986) finds an average 15 percent wage gap in union and nonunion employments. Fuchs, Krueger and Poterba (1998) find the mean and median responses from professional economists regarding union-nonunion wage gap are 15 percent and 13.1 percent, respectively. For a recent survey of union effect on wage, see Hirsch (2004b).

work-related injury insurance, maternity insurance, and housing subsidy.[14]    It is

found that *Union* has positive and statistically significant estimated coefficients along

all these types of benefits, generally in line with the results found by other authors,

e.g., Freeman and Medoff (1979, 1984), Freeman (1981, 1984, 1985).

Specifically, we find that 10.3 percent more employees are offered medical

insurance in unionized as compared to those in nonunionized enterprises.    This is

consistent with the findings of positive union effect on medical insurance in the

existing literature, e.g., Wunnava and Ewing (1999) who report a 10 percent union

effect on medical insurance using the U.S. National Longitudinal Survey of Youth,

and Budd (2004) who finds a 20 percent premium of union effect on health insurance

using the U.S. Current Population Survey.    See also Fosu (1993) and Buchmueller,

DiNardo, and Valletta (2002), among others.

It is also found that 12.4 percent more employees are provided pension in

unionized than in nonunionized enterprises.    This finding is, again, consistent with

those in the existing literature.    For example, Allen and Clark (1986) report that

unionized individuals are 50 to 100 percent more likely to receive pension than

nonunionized individuals using the US Department of Labor data.    Renaud (1998)

finds that in Canada the union premium on pension is around 20 percent.    See also

---

[14] According to China's regulations on labor employment, enterprises and employees jointly
contribute to the employment benefits.    Specifically, an enterprise needs to pay 20% of its
employee's monthly wage for his pension, 8% for the medical benefits, 1.5% for the
unemployment insurance, 1% for the work-related injury insurance and maternity insurance,
and 10% for the housing subsidy.    In the meanwhile, the employee needs to pay 8% of his
monthly wage for the pension, 2% for the medical benefits, 0.5% for the unemployment
insurance, 0.8% for the work-related injury insurance and maternity insurance, and 10% for
the housing subsidy.

Freeman (1984, 1985), Swidinsky and Kupferschmidt (1991), Fosu (1993), Kornfeld (1993), Montgomery and Shaw (1997), and Budd (2004), among others.

The unionized workers are also found to be 9.5 percent, 11.8 percent, 7.5 percent and 3.8 percent more likely to receive unemployment insurance, work-related injury insurance, maternity insurance, and housing subsidy, respectively. Using data of the National Longitudinal Survey of Youth, Budd and McCall (1997, 2004) find that unionization increases unemployment insurance by 23%. However, Guthrie and Roth (1999) and Kelly and Dobbin (1999) found no statistically significant impacts of unions on maternity leave programs in U.S. organizations. As some of these benefits, such as housing subsidy, are unique to the setting of China, they have not been extensively studied in the existing literature, and hence our estimation represents one of the first few studies on the union premium on these non-wage benefits.

Table 6 reports the regression results of the union effects on several other aspects of employment relations. As shown in column 1, unionized enterprises have larger total employment than their nonunionized counterparts. This finding is in contrast to the zero or small negative union effect on employment found in the private sector in the US, e.g., by Montgomery (1989). Columns 2 and 3 report that employers in unionized enterprises are more likely to sign formal employment contracts with their employees, both individually and collectively.[15]

---

[15] As mentioned earlier, against the law, employers in China often chose not to sign employment contracts with their workers.

# 4. Summary and concluding remarks

The role of union in China as the largest transitional economy with the largest union membership has changed.    Before the economic reform was initiated in 1978, union was mandated in China's SOEs and subordinate to the ruling Party.    Its main charge was to help the government maintain harmony in employment relations.    In the process of three decades of economic reform, the nonstate sector has emerged and become dominant in the economy.    In the new nonstate sector, labor union is no longer mandatory and has some new roles to play when it exists.    With conflicting interests between workers and their employers more pronounced in the nonstate sector, unions need to do more to promote workers' interests than it traditionally did in China. At the same time, harmonizing employment relations remains a primary responsibility and objective of the unions, as required by the Party.    We have endeavored to study how effective unions in China's private enterprises are playing their mixed roles.

Our study finds a positive and statistically significant union effect on labor productivity, but not on profitability.    The results are robust to the control of omitted variables and reverse causality issue.

The study also finds that, although unions do not directly contribute to positive wage gains for the workers, they do contribute to better employee benefits, increased signing of formal employment contracts, and hence more harmonious employment relations in China's private enterprises.    The performance findings suggest that workers' interests are promoted not at the cost of harmony in employment relations.

The study contributes to the literature by being one of the first to study unions in

the largest transitional and fastest growing economy in the past thirty years. It filled

some gaps in the literature and enriched our understanding of unions.

Our findings may shed light on why some of the largest MNCs seem much more

receptive to unions in their operations in China than at home or in other parts of the

world. A highly publicized case is Wal-Mart. Deviating from its long standing

anti-union position, Wal-Mart officially announced in 2004 that "should associates

request formation of a union, Wal-Mart China would respect their wish."[16] Five out

of Wal-Mart's 59 stores in China established unions shortly after the company

announced this new policy. Wal-Mart is not alone. Almost all Fortune 500

companies now allow unions in their operations in China (Ford, 2008). It is quite

possible that such receptive policies towards unionization involve multiple

considerations. For example, it could be a public relations effort and/or yielding to

outside pressure from, e.g., the government. However, Meyerson (2004) believes

that Wal-Mart's policy signals its preference for old-line communist-dominated labor

unions to other kinds of unions. By demonstrating that unions in China's private

enterprises tend to promote workers' interests and performance at the same time, our

study suggests it is worthwhile to explore internal-based rationales for Wal-Mart's and

other MNCs' receptive union policies as conjectured by Meyerson (2004).

---

[16] Wal-Mart refers to its workers as associates.

# References

Addison, John T. and Barry T. Hirsch (1989), "Union Effects on Productivity, Profits, and Growth: Has the Long Run Arrived?", *Journal of Labor Economics* 7, 72-105.

Aidt, Toke and Zafiris Tzannatos (2002), *Unions and Collective Bargaining: Economic Effects in a Global Environment*, Washington, D.C.: World Bank.

Allen, Steven G. and Robert L. Clark (1986), "Unions, Pension Wealth, and Age-Compensation Profiles", *Industrial and Labor Relations Review* 39, 502-517.

Bai, Chong-en, Jiangyong Lu, and Zhigang Tao (2006), "Property Rights Protection and Access to Bank Loans: Evidence from Private Enterprises in China", *Economics of Transition* 14, 611-628.

Becker, Brain E. and Craig A. Olson (1987), "Labor Relations and Firm Performance", in M. Kleiner, R. Block, M. Roomkin, and S. Salsburg, eds. *Human Resources and the Performance of the Firm*, Madison, Wisc.: Industrial Relations Research Association, 43-86.

Belman, Dale (1992), "Unions, the Quality of Labor Relations, and Firm Performance", in Lawrence Mishel and Paula B. Voos, eds. *Unions and Economic Competitiveness*, Armonk, NY: M.E. Sharpe, 41-107.

James T. Bennett and Bruce E. Kaufman (2007), *What Do Unions Do? A Twenty-Year Perspective*, New Brunswick, NJ: Transaction Publishers.

Booth, Alison L. (1995), *The Economics of the Trade Union*, Cambridge: Cambridge University Press.

Brown, Charles and James Medoff (1978), "Trade Unions in the Production Process", *Journal of Political Economy* 86, 355-378.

Budd, John W. (2004), "Non-Wage Forms of Compensation", *Journal of Labor Research* 25, 597-622.

Budd, John W. and Devasheesh Bhave (2008), "The Employment Relationship", in Adrian Wilkinson, Tom Redman, Scott Snell, and Nick Bacon, eds. *Sage Handbook of Human Resource Management*, chapter 6.

Budd, John W. and Brian P. McCall (1997), "The Effect of Unions on the Receipt of Unemployment Insurance Benefits", *Industrial and Labor Relations Review* 50, 478-492.

Budd, John W. and Brian P. McCall (2004), "Unions and Unemployment Insurance Benefits Receipt: Evidence from Current Population Survey", *Industrial Relations* 43, 339-355.

Buchmueller, Thomas C., John DiNardo, and Robert G. Valletta (2002), "Union Effects on Health Insurance Provision and Coverage in the United States", *Industrial and labor Relations Review* 55, 610-627.

CAI JING Magazine (2007), *An Analysis Report of China's Non-state Economic Development* (2006), online version.

Clarke, Simon (2005), "Post-socialist Trade Unions: China and Russia", *Industrial Relations Journal* 36, 2-18.

Doucouliagos, Christos and Patrice Laroche (2003), "What do Unions do to Productivity? A Meta-Analysis", *Industrial Relations* 42, 650-691.

Du, Julan, Yi Lu, and Zhigang Tao (2008), "Property Rights Protection and Firm Diversification: Evidence from China", working paper.

Ford, Peter (2008), "Unions in China Still Feeble, but Gaining Foothold", *Christian Science Monitor* September 29, 2008.

Fosu, Angustin Kwasi (1993), "Nonwage Benefits as a Limited-Dependent Variable: Implications for the Impact of Unions", *Journal of Labor Research* 14, 29-43.

Freeman, Richard B. (1981), "The Effect of Unionism on Fringe Benefits", *Industrial and Labor Relations Review* 34, 489-509.

Freeman, Richard B. (1984), "Longitudinal Analyses of the Effects of Trade Unions", *Journal of Labor Economics* 2, 1-26.

Freeman, Richard B. (1985), "Unions, Pensions, and Union Pension Funds", in David A. Wise, ed., *Pensions, Labor, and Individual Choice*, Chicago: University of Chicago Press, 89-121.

Freeman, Richard B. (1992), "Is Declining Unionization in U.S. Good, Bad, or Irrelevant?", in Lawrence Mishel and Paula B. Voos, eds. *Unions and Economic Competitiveness*, Armonk, NY: M.E. Sharpe, 41-107.

Freeman, Richard B. and James L. Medoff (1979), "The Two Faces of Unionism", *Public Interest*, 69-93.

Freeman, Richard B. and James L. Medoff (1984), *What Do Unions Do?* New York: Basic Books.

Fuchs, Victor R., Alan B. Krueger, and James M. Poterba (1998), "Economists' Views about Parameters, Values, and Policies: Survey Results in Labor and Public Economists", *Journal of Economic Literature* 36, 1387-1425.

Guthrie, Doug, and Louise Marie Roth (1999), "The State, Courts, and Maternity Policies in U.S. Organizations: Specifying Institutional Mechanisms", *American Sociological Review* 64, 41–63.

Hirsch, Barry T. (1997), "Unionization and Economic Performance: Evidence on Productivity, Profits, Investment, and Growth", in Fazil Mihlar, eds. *Unions and Right-to-Work Laws*, Vancouver, B.C.: The Fraser Institute, 35-70.

Hirsch, Barry T. (2004a), "What Do Unions Do for Economic Performance?", *Journal of Labor Research* 25, 415-455.

Hirsch, Barry T. (2004b), "Reconsidering Union Wage Effects: Surveying New Evidence on an Old Topic," *Journal of Labor Research* 25, 233-266.

Kelly, Erin, and Frank Dobbin (1999), "Civil Rights Law at Work: Sex Discrimination and the Rise of Maternity Leave Policies", *American Journal of Sociology* 105, 455–492.

Kornfeld, Robert (1993), "The Effects of Union Membership on Wages and Employee Benefits: The Case of Australia", *Industrial and Labor Relations Review* 47, 114-128.

Kuhn, Peter (1998), "Unions and the Economy: What We Know; What We Should Know", *Canadian Journal of Economics* 31, 1033-1056.

Lewis, H. Gregg (1963), *Unionism and Relative Wages in the United States: An Empirical Inquiry*, Chicago: University of Chicago Press.

Lewis, H. Gregg (1986), *Union Relative Wage Effects: A Survey*, Chicago: University

of Chicago Press.

Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-an Zhou (2008), "Political Connections, Financing and Firm Performance: Evidence from Chinese Private Entrepreneurs", *Journal of Development Economics*, forthcoming.

Lucio, Miguel Martinez (1990), "Trade Unions and Communism in Spain: The Role of the CCOO in the Political Projects of the Left", *Journal of Communist Studies and Transition Politics* 6, 80 – 99.

Menezes-filho, Naercio and John van Reenen (2003), "Unions and Innovation: A Survey of the Theory and Empirical Evidence", *CEPR Discussion Paper 3792*.

Metcalf, David. (2003), "Unions and Productivity, Financial Performance and Investment: International Evidence", in John Addison and Claus Schnabel, eds. *International Handbook of Trade Unions*, Northampton, Mass.: Edward Elgar, 118-171.

Metcalf, David and Jianwei Li(2006), "Chinese Unions: an Alice in Wonderland Dream World", *Advances in Industrial and Labor Relations* 15, 213-268.

Meyerson, Harold (2004), "Wal-Mart Loves Unions (in China)", *Washington Post* December 1, 2004, A25.

Montgomery, Edward (1989), "Employment and Unemployment Effects of Unions", *Journal of Labor Economics* 7, 170-190.

Montgomery, Edward and Kathrym Shaw (1997), "Pensions and Wage Premia", *Economic Inquiry* 35, 510-522.

Ng, Sek Hong and Malcolm Warner (1998), *China Trade Unions and Management* London: Macmillan.

Renaud, Stephane (1998), "Unions, Wages, and Total Compensation in Canada: An Empirical Study", *Relations Industrielles* 53, 710-729.

Swidinsky, R. and M. Kupferschmidt (1991), "Longitudinal Estimates of the Union Effects on Wages, Wage Dispersion and Pension Fringe Benefits", *Relations Industrielles* 46, 819-838.

White, Gordon (1996), "Chinese Trade Unions in the Transition From Socialism: Towards Corporatism or Civil Society?", *British Journal of Industrial Relations* 34, 433-457.

Wunnava, Phanindra V. and Bradley T. Ewing (1999), "Union-Nonunion Differentials and Establishment Size: Evidence from the NLSY", *Journal of Labor Research* 20, 177-183.

Table 1: Summary statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Union | 3,239 | 0.533 | 0.499 | 0 | 1 |
| **Enterprise Performance** | | | | | |
| Labor Productivity | 3,035 | 2.538 | 1.497 | -4.094 | 10.304 |
| Profitability | 2,192 | 0.456 | 6.197 | -99.7 | 252.826 |
| Labor Productivity in the Previous year | 2,623 | 1.671 | 1.619 | -4.564 | 7.234 |
| **Employment Relations** | | | | | |
| Wages and Bonuses | 3,172 | 1.619 | 11.036 | 0.003 | 611.111 |
| Medical Insurance | 2,490 | 0.266 | 0.362 | 0 | 1 |
| Pension | 2,589 | 0.296 | 0.359 | 0 | 1 |
| Unemployment Insurance | 2,330 | 0.185 | 0.328 | 0 | 1 |
| Work-related Injury Insurance | 2,408 | 0.257 | 0.373 | 0 | 1 |
| Maternity Insurance | 2,242 | 0.107 | 0.259 | 0 | 1 |
| Housing Subsidy | 2,354 | 0.076 | 0.264 | 0 | 1 |
| Employment | 3,573 | 3.853 | 1.575 | 0 | 9.350 |
| Individual Contract | 2,984 | 0.709 | 0.367 | 0 | 1 |
| Group Contract | 1,790 | 0.244 | 0.392 | 0 | 1 |
| **Enterprise Characteristics** | | | | | |
| Enterprise Size | 3,573 | 3.853 | 1.575 | 0 | 9.350 |
| Enterprise Age | 3,689 | 1.926 | 0.587 | 0.693 | 3.091 |
| **Entrepreneurial Characteristics** | | | | | |
| Age | 3,807 | 45.403 | 8.336 | 18 | 81 |
| Education | 3,814 | 13.304 | 2.705 | 5 | 19 |
| Managerial Experience | 2,400 | 0.355 | 0.479 | 0 | 1 |
| Party Membership | 3,445 | 0.405 | 0.491 | 0 | 1 |
| Government Cadre | 3,836 | 0.178 | 0.383 | 0 | 1 |
| CPC Membership | 3,836 | 0.190 | 0.393 | 0 | 1 |
| CPPCC Membership | 3,836 | 0.262 | 0.440 | 0 | 1 |

Table 2: Union effects on performance

| Dependent Variable | 1<br>Labor Productivity | 2<br>Profitability | 3 | 4 | 5<br>Labor Productivity | 6 |
|---|---|---|---|---|---|---|
| Union | 0.201*** | -0.026 | 0.258*** | 0.222*** | 0.391*** | 0.429*** |
| | (0.056) | (0.359) | (0.062) | (0.068) | (0.076) | (0.097) |
| F-statistic for Industrial Dummies | | | [122.61]*** | [165.22]*** | [98.39]*** | [164.80]*** |
| F-statistic for Regional Dummies | | | | [76185.00]*** | [2304.14]*** | [12903.52]*** |
| **Enterprise Characteristics** | | | | | | |
| Enterprise Size | | | | | -0.200*** | -0.247*** |
| | | | | | (0.034) | (0.038) |
| Enterprise Age | | | | | 0.178** | 0.188** |
| | | | | | (0.075) | (0.081) |
| **Entrepreneurial Characteristics** | | | | | | |
| Age | | | | | | 0.004 |
| | | | | | | (0.005) |
| Education | | | | | | 0.094*** |
| | | | | | | (0.015) |
| Managerial Experience | | | | | | 0.266** |
| | | | | | | (0.100) |
| Party Membership | | | | | | 0.115 |
| | | | | | | (0.089) |
| Government Cadre | | | | | | -0.003 |
| | | | | | | (0.110) |
| CPC Membership | | | | | | 0.148 |
| | | | | | | (0.105) |
| CPPCC Membership | | | | | | 0.028 |
| | | | | | | (0.111) |
| No of Observations | 2,628 | 1,932 | 2,628 | 2,628 | 2,556 | 1,521 |
| R-squared | 0.0045 | 0.0000 | 0.0611 | 0.1127 | 0.1404 | 0.1963 |
| *p*-value for F-statistic | 0.0012 | 0.9434 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Standard error, clustered at the region-level, is reported in the parenthesis. *, **, and *** represent significance at 10%, 5%, and 1% respectively.

Table 3: Union effects on performance, reverse causality and endogeneity

| Dependent Variable | 1 Union | 2 Labor Productivity |
|---|---|---|
| Estimation Specification | Probit | IV |
| Labor Productivity in the previous year | 0.010 | |
| | (0.026) | |
| Union | | 1.445*** |
| | | (0.492) |
| F-statistic for Industrial Dummies | [55.58]*** | [102.69]*** |
| F-statistic for Regional Dummies | [3.7e+05]*** | [109.58]*** |
| **Enterprise Characteristics** | | |
| Enterprise Size | 0.352*** | -0.346*** |
| | (0.033) | (0.064) |
| Enterprise Age | 0.176* | 0.101 |
| | (0.093) | (0.091) |
| **Entrepreneurial Characteristics** | | |
| Age | 0.009 | 0.002 |
| | (0.006) | (0.006) |
| Education | 0.033 | 0.089*** |
| | (0.025) | (0.017) |
| Managerial Experience | -0.044 | 0.263*** |
| | (0.088) | (0.0798) |
| Party Membership | 0.343*** | |
| | (0.117) | |
| Government Cadre | -0.265** | |
| | (0.126) | |
| CPC Membership | 0.330*** | |
| | (0.100) | |
| CPPCC Membership | 0.139 | |
| | (0.104) | |
| **First Stage Results** | | |
| Party Membership | | 0.115*** |
| | | (0.025) |
| Government Cadre | | -0.052 |
| | | (0.035) |
| CPC Membership | | 0.081*** |
| | | (0.027) |
| CPPCC Membership | | 0.085*** |
| | | (0.026) |
| Shea Partial R-squared | | 0.0270 |
| Anderson Canonical Correlation LR Statistic | | [41.66]*** |
| Hansen J Statistic | | [1.269] |
| No of Observations | 1,308 | 1,521 |
| Pseudo R2 | 0.2324 | - |

Standard error, clustered at the region-level, is reported in the parenthesis. *, **, and *** represent significance at 10%, 5%, and 1% respectively.

## Table 4: Union effects on performance, robustness checks

| Dependent Variable | 1 | 2 | 3 |
| --- | --- | --- | --- |
| | Labor Productivity | | |
| Estimation Specification | Median Regression | Private Firms from Scratch | Private Firms Majorly-owned by the Entrepreneurs |
| Union | 0.291*** | 0.198** | 0.350*** |
| | (0.057) | (0.097) | (0.110) |
| F-statistic for Industrial Dummies | [17.96]*** | [356.69]*** | [175.30]*** |
| F-statistic for Regional Dummies | [9.35]*** | [3311.80]*** | [96126.53]*** |
| **Enterprise Characteristics** | | | |
| Enterprise Size | -0.190*** | -0.227*** | -0.258*** |
| | (0.021) | (0.052) | (0.054) |
| Enterprise Age | 0.181*** | 0.209** | 0.199* |
| | (0.048) | (0.089) | (0.103) |
| **Entrepreneurial Characteristics** | | | |
| Age | 0.006 | 0.001 | 0.004 |
| | (0.004) | (0.006) | (0.007) |
| Education | 0.102*** | 0.087*** | 0.088*** |
| | (0.011) | (0.020) | (0.022) |
| Managerial Experience | 0.191*** | 0.184 | 0.222* |
| | (0.055) | (0.109) | (0.121) |
| Party Membership | 0.053 | 0.141 | 0.132 |
| | (0.055) | (0.104) | (0.112) |
| Government Cadre | -0.036 | 0.148 | 0.183 |
| | (0.072) | (0.127) | (0.137) |
| CPC Membership | 0.285*** | 0.104 | 0.219** |
| | (0.061) | (0.140) | (0.105) |
| CPPCC Membership | -0.078 | 0.024 | 0.080 |
| | (0.059) | (0.134) | (0.154) |
| No of Observations | 1,521 | 1,049 | 992 |
| R-squared/Pseudo R2 | 0.1227 | 0.1968 | 0.2203 |

Standard error, clustered at the region-level, is reported in the parenthesis. *, **, and *** represent significance at 10%, 5%, and 1% respectively. In Column 2 we use the subsample of the enterprises that started as private enterprises, while in Column 3 we use the subsample of the enterprises whose majority shareholder has more than 50% equity shares

Table 5: Union effects on employment relations, wages and benefits

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Dependent Variable | Wages and Bonuses | Medical Insurance | Pension | Unemployment Insurance | Work-related Injury Insurance | Maternity Insurance | Housing Subsidy |
| Estimation Specification | | | | OLS | | | Probit |
| Union | -0.081 | 0.103*** | 0.124*** | 0.095*** | 0.118*** | 0.075*** | 0.548*** |
| | (0.551) | (0.023) | (0.021) | (0.023) | (0.031) | (0.025) | (0.141) |
| Industrial Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Regional Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Enterprise Characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Entrepreneurial Characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| No of Observations | 1,550 | 1,270 | 1,325 | 1,217 | 1,251 | 1,159 | 1,054 |
| R-squared/Pseudo R2 | 0.0332 | 0.1510 | 0.2099 | 0.1791 | 0.1442 | 0.1645 | 0.1984 |

Standard error, clustered at the region-level, is reported in the parenthesis. *, **, and *** represent significance at 10%, 5%, and 1% respectively. *Wages and Bonuses* is constructed as the total wages and bonuses divided by total employment, *Medical Insurance* is measured by the percentage of employees having medical insurance, *Pension* is measured by the percentage of employees having pension, *Unemployment Insurance* is measured by the percentage of employees having unemployment insurance, *Work-related Injury Insurance* is measured by the percentage of employees having work-related injury insurance, *Maternity Insurance* is measured by the percentage of employees having maternity insurance, and *Housing Subsidy* is a dummy variable taking value one if the enterprise offers housing subsidy and zero otherwise.

Table 6: Union effects on employment relations, employment and contract

| Dependent Variable | 1 Employment | 2 Individual Contract | 3 Group Contract |
|---|---|---|---|
| Estimation Specification | OLS | | |
| Union | 0.763*** | 0.119** | 0.188* |
| | (0.070) | (0.014) | (0.051) |
| Industrial Dummies | Yes | Yes | Yes |
| Regional Dummies | Yes | Yes | Yes |
| Enterprise Characteristics | Yes | Yes | Yes |
| Entrepreneurial Characteristics | Yes | Yes | Yes |
| No of Observations | 1,727 | 1,482 | 942 |
| Pseudo R2 | 0.4470 | 0.1047 | 0.2217 |

Standard error, clustered at the region-level, is reported in the parenthesis. *, **, and *** represent significance at 10%, 5%, and 1% respectively. *Employment* is measured by the logarithm of the number of employees by the end of 2005, *Individual Contract* is measured by the percentage of employees having individual contracts with the employer, and *Collective Contract* is measured by the percentage of employees having collective contracts with the employer.