Disagreements on Union between Management and Workers in Chinese establishments.

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Abstract

This paper uses employer-employee matched data and their different perspectives as to union existence in each establishment to investigate what unions do in Chinese establishments. Our basic findings are as follows: (1) there are widespread disagreements as to the existence of unions between management and workers, and workers' recognition of union is a good indicator for union strength/effectiveness in Chinese establishments; (2) at worker level, unions have some distributive effects towards workers in terms of higher income, better benefits, which leads to lower turnover probability but no significant effects on promotion; (3)at establishment level, recognized union have growth effect on revenue, and no significant effect on profits; (4)there are more between establishments variations than within establishment variations in workers' recognition of union existence, and unions that participate more in workplace activities will increase workers' recognition of union in an establishment; (5)good management-workers relations can be one of the mechanism through which recognized unions have real effects.

I Introduction

The All-China Federation of Trade Unions (ACFTU) is the only legitimate union organization in China and claims the largest union membership in the world. In Contrast to the U.S. 50 Years Of Shrinking Union Membership, ACFTU has seen fast rising of union membership in the past 30 years since the economic reform and open up, from 1979, union members increased from 51.5 million to 287.9 million in 2013, with the number of grass-root unions increased from 329 000 to 2 767 000, in figure 1.

With the expansion of grass root unions and union members, the money and human resources involved in unions also increased very fast. It legally requires that 2% of payroll given as union fees to the ACFTU. We use the average monthly wage of urban employees to replace the monthly wage of union members, and we calculate estimatd yearly union fees with average wage of urban employees*union members*12. From 1995 to 2013, the estimated union fees increased from around 137 billion to 3619 billion, which increased 25 times. And the full time personnels involved in unions in China have increased from 468 000 to 1 156 000, in figure 2.

With increasingly large amounts of both financial resources and human resources involved in unions in China, it is rational to ask do unions in China have real effects.

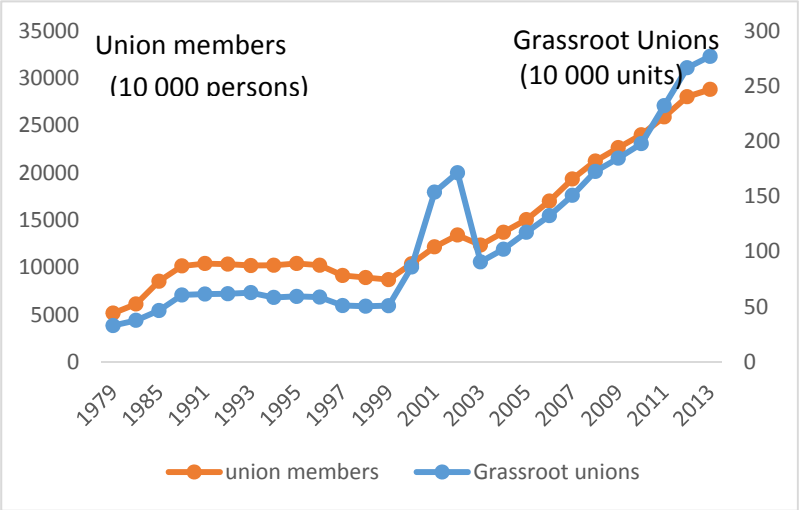


Figure1: union members and grassroot unions in China

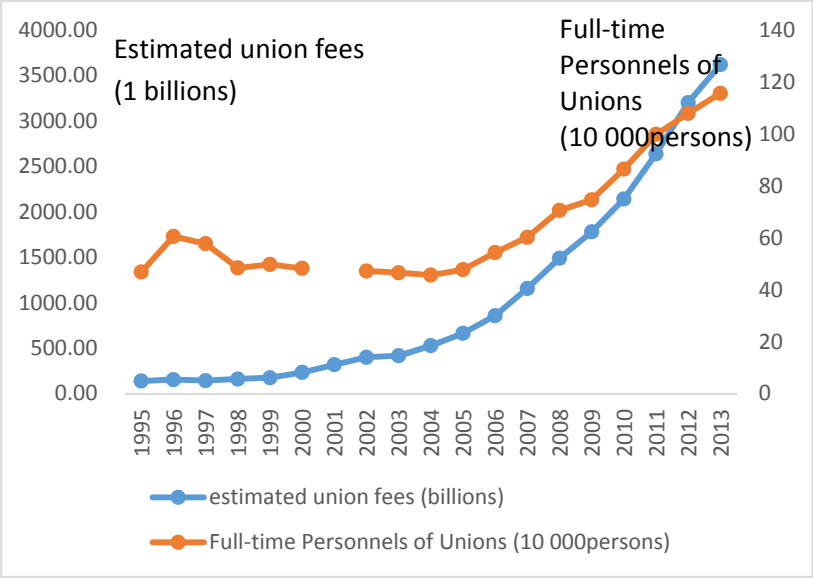


Figure2: estimated union fees and full time personnels of unions in China

Unions in China are quite different from unions in the west. Unions in the west are organized by workers to represent their interests. Freeman and Medoff (1984) summarize the "two faces" of unions in developed countries: the "monopoly face" has the effect of increasing union members'wages and welfare, but might simultaneously have some negative effects on wages of non-union workers, and the employment of workers as a whole; "collective voice face" will facilitate information exchange between employer and employees and improve employment relations, thereby further increasing workers' loyalty, efforts and productivity, and enhancing employment stability.

The All-China Federation of Trade Unions (ACFTU) is the only official trade union in China, with a pyramidal, top-down structure consisting of three tiers, i.e., the national, regional, and establishment levels. Unions in China play a dual role, i.e.,

acting on behalf of the nation's collective good (Li, 2011) while protecting workers' rights and interests (Trade Unions Law, 2001)[1];.

There are great debates and controversies as to whether Chinese unions have real effects in China.

Scholars mainly summarize two reasons why Chinese unions have no incentives to represent workers as unions in the west do. First, Chinese unions are politically dependent, as union leaders are not selected by the workers but appointed by the upper level officials, and most often the positions are held by the employer or relatives of the employer (Taylor et al. 2003; Chan, 2000); Second, Chinese unions are financially dependently: union fees are not collected from the workers directly but by the business (Ge, 2004; Ge, 2007; Liu, 2011; Zhu, 2010);

Some argue that unions in China are transmission belts from the government to the workers, transmitting from the top to the bottom, not from the bottom to the top (Chan, 2000; Taylor et al., 2003; Metcalf&Li, 2006). The reasons for this non-representativeness of workers are as follows: first, unions leaders are not selected by the workers but appointed by upper level officials, and most often the positions are held by the employer or relatives of the employer (Taylor et al. 2003； Chan， 2000); second, the union fees are not collected from the workers directly but by the firm, thus giving no incentive to the unions to represent workers (Metcalf and Li， 2006). Clarke et al. (2004) argue that unions in China are only used for propaganda purposes, by which the government attempts to persuade the general public that it cares for workers. The most extreme and fundamental criticism is that the ACFTU is not a union (Taylor and Li, 2007).

Empirical findings about unions' effect on workers are inconsistent.

Some qualitative studies also show that domination by employers in employment relations, and the lack of bottom-up elections, lead to minimal efforts by unions in China to protect workers' rights (Chen, 2009; Liu, 2009). Chen (2003) provided several case studies to show that the representation role of unions has been highly restricted because their influence stems not from organized labor but from their official institutional status. Metcalf and Li (2006) investigated three unionized non-state enterprises in the Hainan province and found that the workplace unions are weak in collective bargaining and dispute resolution, and just play a welfare role. They concluded that Chinese unions cannot impose costs on the enterprises, and neither can they improve the efficiency of enterprises.

Quantitative studies find inconsistent results too. Some find that the union's presence is positively related to higher wages (Ge, 2004; Yao et al. 2008; Yao and Zhong, 2008); some do not find a significant wage premium effect (Ge, 2004; Lu et al., 2010). As to the effects on productivity, some research finds a positive relationship between the union's presence and productivity (Ge, 2004; Lu et al. 2010). Yao (2009) emphasizes the union's effects on labor relations. Yao and Zhong (2011) find that unions have positive effects on wages and fringe benefits through collective wage negotiation and the signing of labor contracts. In private firms, Lu et al. (2011) finds

[1] Trade Unions Law, article 6.

that unions continue to play the role of harmonizing labor relations, while more recently strengthening a new role of protecting workers' rights. They also find that unions have positive on productivity, wages, and fringe benefits.

To reconcile existing findings, we have the following two arguments: first, dependence of unionism does not necessarily equal to uselessness of unions in protection workers; second, Chinese unions are not homogeneous and some of them can have real effects on both workers and firms, and there might be both "paper union" and "real union" at establishment level.

Previous studies about union's effect on workers' and firms' outcomes obtain union information mostly from management which ignore workers' perspectives towards unions. This article uses a unique employer-employee matched dataset from Chinese establishments, which contains different perspectives on union from management and workers to do three things: First, we use disagreements on unions from management and workers to distinguish "paper union" from "real union", and find out what do real unions do in Chinese establishments. Second, we look at what affects union strength at establishment level. Third, we will figure out potential mechanisms through which real unions affect workers' outcomes.

Existing literatures in strategic management and human management use disagreements/census to study its effects on workers' and firms' performance. In Strategic management, the studies focus on top management team disagreements/census, and they find both positive and negative relations between top management team census and firm performance (Bourgeois,1980; Dess,1987; Dess and Keats,1987; Grinyer and Norburn, 1975), and the underlining logic is that there might be a U shape between TMT census and firm performance. Extreme TMT disagreements will cause obstacles for implementation of policy within the firm, which will cause inefficiency, which extreme TMT census might be a sign of dictatorship and thus will lose the benefits of democracy (Priem, 1990). In human management, Liao et al. (2009) find employees' idiosyncratic experiences of the work system, directly influence their level of human capital, psychological empowerment, perceived organizational support, and service performance.

Our main findings about unions in China are as follows: (1)workers' recognition of union is a good indicator for union strength/effectiveness in Chinese establishments; (2)At worker level, Unions have some distributive effects towards workers in terms of higher income, better benefits, which leads to lower turnover probability but no significant effects on promotion; (3)At establishment level, recognized union have growth effect on revenue, and no significant effect on profits; (4)There are more between establishments variations than within establishment variations in workers' recognition of union existence, and unions that participate more in workplace activities will increase workers' recognition of union in an establishment; (5) improving management-worker relations could be potential mechanism through which unions have real effects on workers in Chinese establishments.

The remainders of the article are arranged as follows. Part two introduce the data and variables we use in the article also shows summary statistics. Part three mainly figures out unions' effects on workers. Part four focuses on unions' effects on the

performance of establishments. Part five looks at what determines union strength. Part six will try to figure out potential mechanism through which union have real effects on workers. Part seven concludes.

II Data, disagreements on unions, and summary statistics of relevant variables

(1)Data

The data we use is the 2013 employer-employee survey data, implemented by Renmin University.

was conducted in 12 cities, with 444 enterprises and 4532 employees.

The geographical distribution of sample enterprises is by the four large regions, i.e. East, Middle, West and Northeast, in each region drawing a capital city and a prefecture-level city in general, with Beijing representing municipality cities. In addition a southern provincial capital city was added. With 50 enterprises from Beijing, 40 enterprises from Capital cities of Fuzhou, Jinan, Chengdu, Changchun Zhengzhou, 25 enterprises from prefecture cities of Qiqihaer, Xianyang, Suzhou, Xiangyang, and with 44 newly added enterprises from Taiyang, and 50 newly added enterprises from Guangzhou.

The sample is based on the 2008 national economic census data sample frame (removal of the small enterprises with less than 20 employees). Stratified two-stage sampling method is used. In first stage, all enterprises are sorted according to the size of employees, and 3000 enterprises were selected by equivalent distance for the sorted enterprises. In the second stage, the selected 3000 enterprise in each city will be divided into random sample groups by random numbers according to the sample size (50, 40 or 25) and survey was started from any random groups. If there is rejection, or delay or losing contact etc., replacement of similar enterprise should be found (according to size of employees and industrial standards) until we get required sample sizes.

Employees sample is drawn after entering the enterprise. With the required proportion 6:2:2 of grass rooted employees, technicians, and managerial personnels (not include top level CEO), and with old age, median age and young employees all covered, the surveyed workers are designated by enterprises. Sample size of employees per enterprises is 10 in general, with adjustment of size according to the employee size of the enterprises, with the minimum of 5 and the maximum of 20.

The survey was conducted between August and December, 2013. A total of 444 completed the questionnaire and 4532 employees of the sampled enterprises completed the questionnaires. **After computer cleanup work, 444 of the enterprise questionnaires and 4532** of the questionnaire all effective questionnaires, some sensitive questions contain a few missing information (such as in corporate revenues, profits and total assets research project), with total missing data rate less than 1%.

By comparison, our sample show similarity with the 2008 national census data, in the distribution of industry, firm size composition, business registration types, and several other types of dimensions, indicating that this sample of companies surveyed

having some nationally representatives.

(2)Disagreements on unions

In both survey of employer and employee, same questions were asked as to union existence and union activities. As to union existence, it is asked "1 is there a union in your establishment?" to both management and surveyed workers.

Based on the employer-employee matched survey, we can create the variables with three tiers structures: we can get variables directly at worker level; i.e. recognized union by a worker; we can use the mean of workers response to get variables at establishment level; i.e. average recognized union from all workers of an establishment; We can also get variables directly at establishment level. i.e. union existence by the employer.

As to unions participation in workplace activities, the following questions are asked "2 Does the union help with workers' signing labor contracts"; "3 Does the union help with workers signing collective contracts"; "4 Does the union help with meditate labor disputes"; "5 does the union help with protect workers' rights"; "6 Does the union help with listen and reflect workers' opinions and demands"; "7 Does the union provide economic help to workers who face difficulties"; "8 does the union organize cultural and entertainment activities?"

As to union coverage in Chinese establishments, we get different answers from workers and managements. According to workers, 37% of establishments in China have unions, while according to management 51% of establishments in China have unions and there is a gap of 14% between management and workers in terms of union coverage in Chinese establishments. Which one is more reliable depends on how you define union existence.

Conditioned on workers or management reporting union existence, questions about unions' participation in workplace activities were asked. Seven categories of activities were asked. Generally management report higher percentages than workers. The activity that both workers and management report very high union participations are the "cultural and entertainment activities". This is reasonable, because in China unions' organizing cultural and entertainment activities is a safe choice, as this kind of activities will bring no conflicts between business and workers, and will bring no harm to social stability. There are large disagreements as to whether unions help with labor disputes consultation or protect workers' rights, table 1.

In the following analysis, we will mainly focus on the disagreements on union existence as it is the disagreements of a clear facts which will be affected little by one's preference or value.

Table 1: Disagreements on unions and unions' activities between management and workers

Union coverage or participation in workplace activities	A: Workers	B: management	C: (B-A) Difference
1.union existence	**37%**	**51%**	**14%**
2.union helps with labor contract	39%	77%	38%
3.union helps with collective contract	29%	55%	26%

4.union helps with labor disputes consultations	41%	86%	45%
5.union protects workers' rights	43%	85%	42%
6. union listens and reflects workers' opinions and demands	56%	93%	37%
7. union provides economic help when workers face difficulties	60%	93%	33%
8. union organizes cultural and entertainment activities	70%	94%	24%

Notes: same questions were asked both to management and workers. Questions in 2-8 are conditioned on either workers or management agree there is a union. The questions asked are as follows: "1 Is there a union in your establishment?"; "2 Does the union help with workers' signing labor contracts"; "3 Does the union help with workers signing collective contracts"; "4 Does the union help with meditate labor disputes"; "5 does the union help with protect workers' rights"; "6 Does the union help with listen and reflect workers' opinions and demands"; "7 Does the union provide economic help to workers who face difficulties"; "8 does the union organize cultural and entertainment activities?"

To get more details as to disagreements about union existence between workers and managements, we will show the matrix and distribution of workers' recognition of union existence under managements' different responses about union statuses.

In table 2, we divide the establishments by management's answer about union existence. 224 establishments have employers report having unions, which we will call unionized establishments, and 156 establishments have employers report have no unions, which we will call un-unionized establishments.

Disagreement mainly happens in unionized establishments.

In the unionized establishments, 71 establishments (32%) have all the workers recognize union existence, 18 establishments (8%) have no workers recognize union existence, and 135 establishments (60%) have some proportion of workers recognize union existence.

In non-unionized establishments, 177 establishments (75%) have no worker report union existence, and 38 establishments (24%) have some proportion workers report union existence, and few establishments (1%) have all workers report union existence.

Table 2: matrix of disagreements on unions

Union existence		workers' statement		
		All say with unions	In between	All say no unions
Management	With union (224, 100%)	71 (32%)	135 (60%)	18 (8%)
	No union (156, 100%)	1 (1%)	38 (24%)	177 (75%)

We also have the histogram for the average of workers' recognition of unions in both unionized and un-unionized establishments. Each histogram show the percentage of establishments which have the proportion of workers who recognized there is a union falls into a particular range. i.e. for the first histogram in the left figure, 6.88 means that 6.88% of the unionized establishments have 0 to 0.1 proportion of workers report union existence.

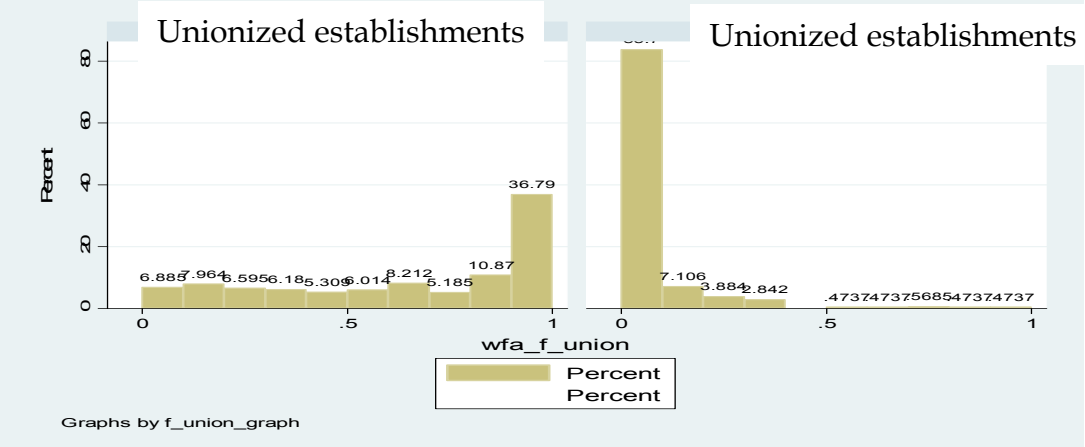


Figure 3: distribution of workers' average recognition of union at establishment

(3) Union, recognized union by workers, and summary statistics

In table 3, we have the statistics of main variables of interests both at worker level and establishment level. For all variables, we first look at the means by unionized establishments or un-unionized establishments for all observations, in columns (1) and (2), and compare their means in column (3); second we keep workers from unionized establishments only, and look at the means by whether a worker from unionized establishments recognize the union in column (4) and (5) and compare their means in column (6).

Generally speaking, there are workers from unionized establishments have better outcomes than workers from un-unionized establishments, i.e. average monthly income, the chance of getting benefits, promotion opportunities. Unionized establishments do not always have higher performance than non-unionized establishments.

For workers from unionized establishments, those who recognize union existence have higher average monthly income, better chance of getting benefits, and lower turnover rates, than workers who do not recognize union existence. Unionized establishments with workers recognizing union existence see higher log (revenue/employee) and log (profit/employee).

Table 3: means for variables of interest, by union and by recognized union

	(1)No union	(2)With union	(3) =(2)-(1)	(4)Un-recongized union	(5)recognized union	(6) (5)-(4)
	mean	mean	Diff	mean	mean	Diff
Worker level variables						

Log (monthly average income)	7.8	7.85	0.05***	7.74	7.9	0.16***
Benefit dummy	0.24	0.36	0.12***	0.23	0.42	0.19***
Promotion dummy	0.28	0.28	0.00	0.28	0.28	0.00
Change job dummy	0.25	0.21	-0.04***	0.25	0.18	-0.07***
Year of education	12.53	13.15	0.62***	12.52	13.51	0.99***
age	33.17	34.68	1.51***	33.48	35.31	1.83***
Seniority	4.48	7.57	3.09***	4.98	8.97	3.99***
Female dummy	0.54	0.55	0.01	0.57	0.55	-0.02
Party member dummy	0.1	0.17	0.07***	0.08	0.21	0.13***
Rural hukou dummy	0.49	0.29	-0.20***	0.42	0.22	-0.20***
Establishment level variables						
log (revenue/employee)	3.24	3.15	-0.09*	2.97	3.25	0.28***
log (profit/employee)	1.12	0.95	-0.17***	0.76	1.06	0.30***
log(firmwage/employee)	1.28	1.3	0.02	1.31	1.3	-0.01
log(valueadd/employee)	0.92	0.86	-0.06	0.79	0.9	0.11
log(size of employees)	4.17	5.14	0.97***	4.77	5.34	0.57***
Obs.	2,112	2,413		847	1,573	

*** p<0.01, ** p<0.05, * p<0.1

(4) Official union, recognized union by workers, and workers outcomes

We look into the relations between union, and the variables of workers outcomes, i.e. average monthly income, the chance of getting benefits, promotion opportunities, and job change probabilities and official union existence in details on the left figures of A1, A2, A3, A4. Where 0 means workers come from unionized establishments, while 1 means workers come from un-unionized establishments.

We keep observations from unionized establishments and look at the relation between workers outcomes with workers recognition of union existence, and they are reflected on the right hand side figures of A1, A2, A3, and A4, where 0 means the worker does not recognize union existence in the unionized establishments, and 1means the worker recognize union existence in the unionized establishments.

There is obvious difference for workers benefits and job changes between workers from unionized and non-unionized establishments. There difference between monthly average income and promotion opportunities are less obvious between workers from unionized and un-unionized establishments.

In the unionized establishments, workers who experience recognized union enjoy higher monthly average income, better chance of benefits, higher probability of promotion, and lower chance of job changes, than those who experience unrecognized union.

Figure A1: log monthly average income

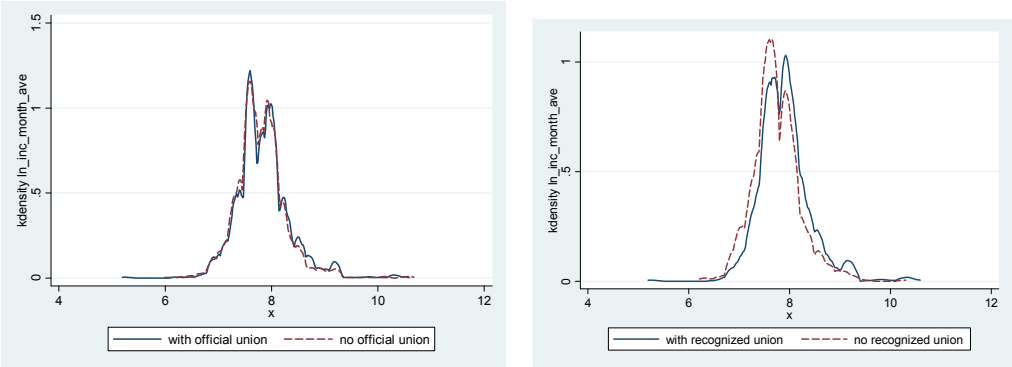


Figure A2: benefits dummy

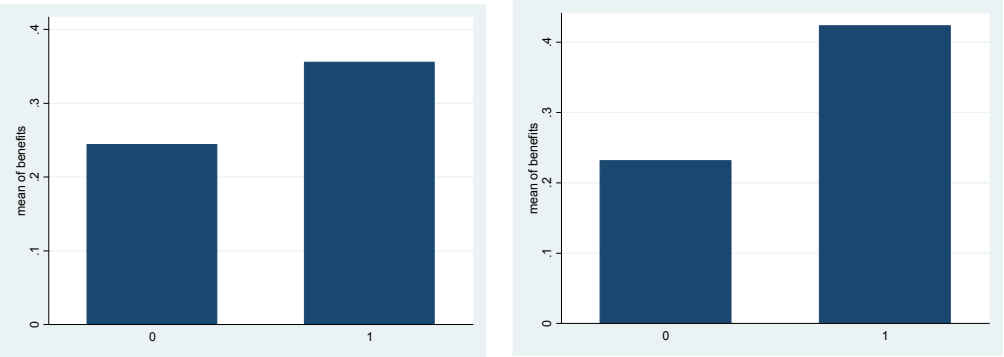


Figure A3: promotion opportunities dummy

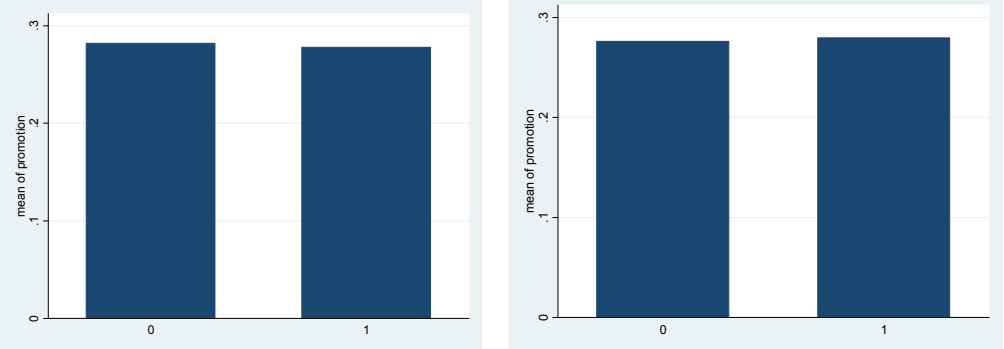
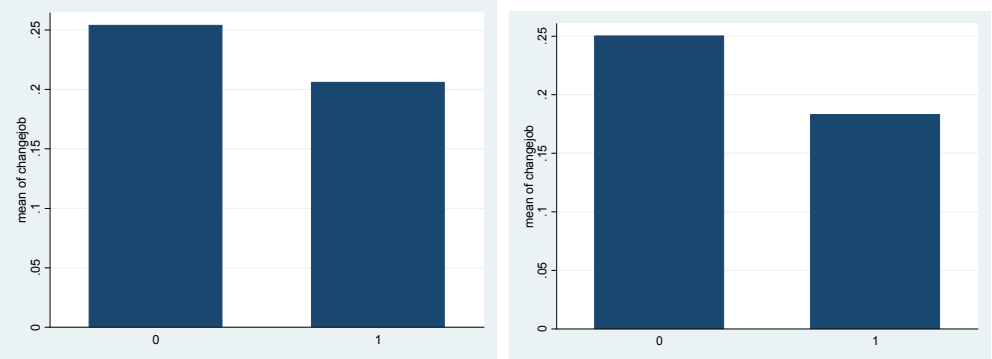


Figure A4: change jobs dummy



Notes: figures on the left hand side of A1, A2, A3, and A4 show the relationship between average monthly income, the chance of getting benefits, promotion opportunities, and job change probabilities and official union existence and official union existence, where 0 means workers come from establishments with official unions,

while 1 means workers come from establishments with official unions. The right hand figures of A1, A2, A3, and A4 show the relation between workers outcomes with workers recognition of union existence. The samples only include workers from establishments with official unions, where 0 means the worker does not recognize union existence in the unionized establishment, and 1means the worker recognize union existence in the unionized establishment.

(5) Official union, recognized union by workers, and establishment outcomes

We also look at the relationship between the performance of establishments and official union existence, and workers average recognition of union existence at establishment level.

On the left hand side of figures B1, B2, B3 and B4, we look at the relation between revenue per employee, profit per employee, average wage per employee, and value added per employee and official union existence.

On the right hand side figures of B1, B2, B3 and B4, we look at the relations between revenue per employee, profit per employee, average wage per employee, and value added per employee and the average recognition of union existence from workers. And the sample only include those with official unions.

At establishment level, the relationship between official union existence and performance of establishments are uncertain, except unionized establishments seem to enjoy higher revenue per employee than un-unionized establishments.

Meanwhile, in the unionized establishment, there is no clear trend between higher recognition of union existence and the establishments' outcome.

Figure B1: log revenue per employee

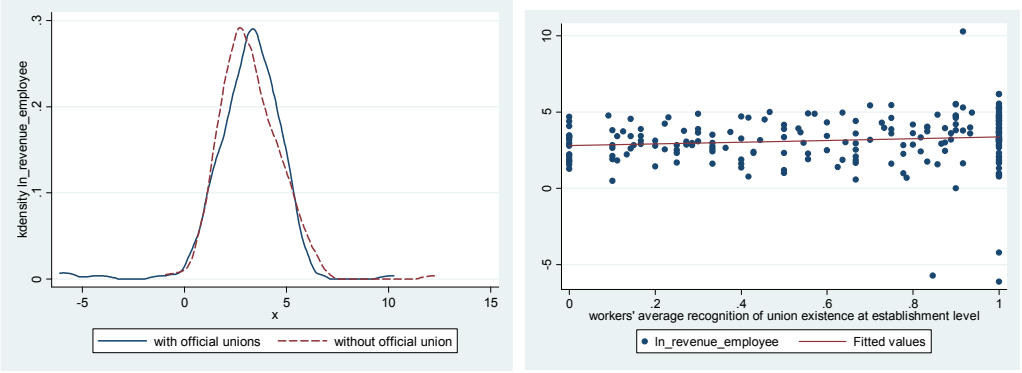


Figure B2: log profit per employee

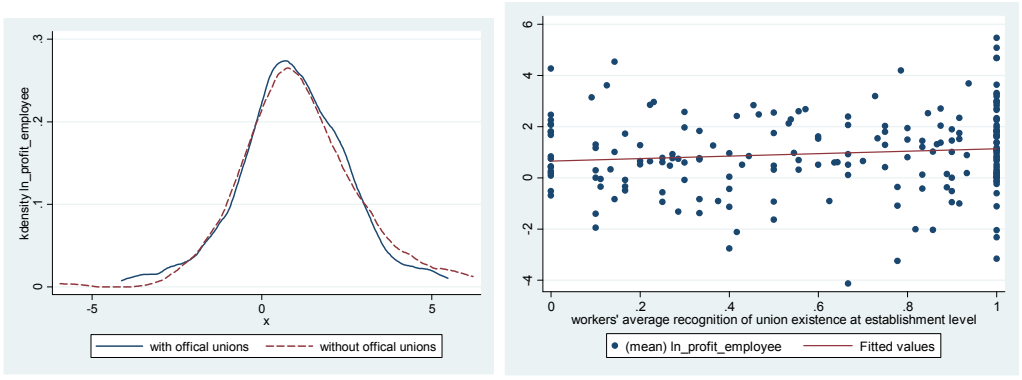


Figure B3: log average wage per employee

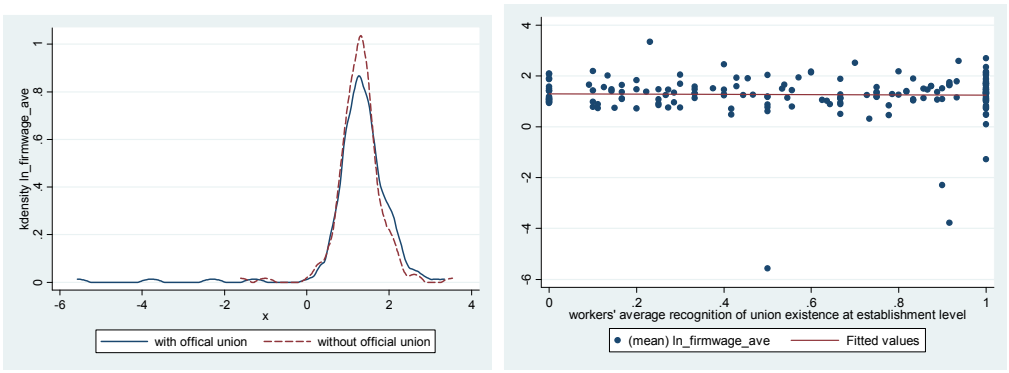
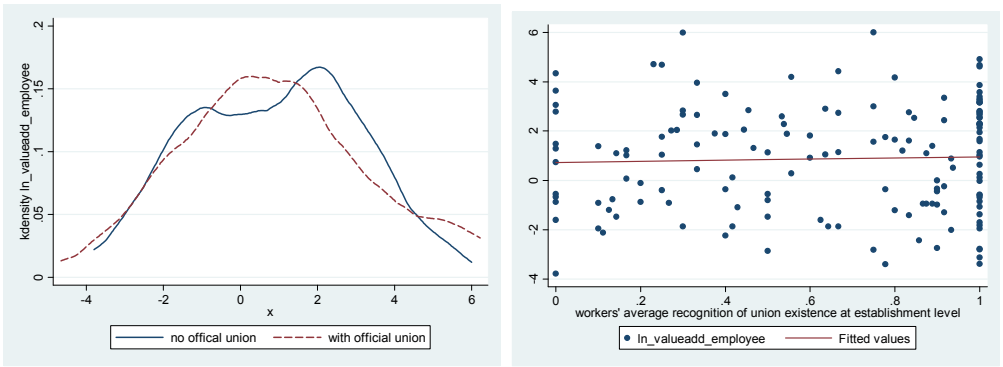


Figure B4: log value added per employee



Notes: On the left hand side of figures B1, B2, B3 and B4, we look at the relation between revenue per employee, profit per employee, average wage per employee, and value added per employee and official union existence. On the right hand side figures of B1, B2, B3 and B4, we look at the relations between revenue per employee, profit per employee, average wage per employee, and value added per employee and the average recognition of union existence from workers. And the sample only include those with official unions.

III. Does union affect the workers' income, benefits, promotion opportunities, and turnover?

What are the effects of union existence and union strength on workers? In previous

union studies, there is no consensus as to unions' effects on workers. By the unique design of this datasets, we can diagnose union's effects on workers in two steps. The following is the econometric specification to look at union's effect on workers outcome

In Step one, we will look at the general effects by official union existence on workers outcomes, which is exactly what existing studies usually do. In specification (1.1), our observations include workers from all establishments, and α_1 refelcts the effect of official union existence .

(1.1) $y_{ij} = \alpha_1 * union\ dummy_j + \beta * X_{ij} + \varepsilon_{ij}$

In step two, we try to figure out how union strength in unionized establishments, in terms of union recognition by workers, affect workers outcomes, such as income benefits, promotion opportunities, as well as turnover probability. High recognition of union existence by workers reflects unions might have done something effective which let more workers know about its existence. Thus we predict that union strength will increase workers loyalty, as well as income, benefits. In specifications (1.2) and (1.3), our observations include workers from all establishments.

(1.2) $y_{ij} = \alpha_2 * union\ dummy_j + \alpha_3 * recognized\ union\ dummy_j + \beta * X_{ij} + \varepsilon_{ij}$

(1.3) $y_{ij} = \alpha_4 * union\ dummy_j + \alpha_5 * average\ recognized\ union_j + \beta * X_{ij} + \varepsilon_{ij}$

We have three categories of workers:

For category one: workers from un-unionized establishments, who agree there is no unions, and the outcome can be expressed in the following equation:

$$y_{ij} = \alpha_2 * 0 + \alpha_3 * 0 + \beta * X_{ij} + \varepsilon_{ij}$$

For category two: workers from unionized establishments, but who do not recognize union existence, and the outcome can be expressed in the following equation:

$$y_{ij} = \alpha_2 * 1 + \alpha_3 * 0 + \beta * X_{ij} + \varepsilon_{ij}$$

For category three: workers from unionized establishments and who recognize union existence, and the outcome can be expressed in the following equation:

$$y_{ij} = \alpha_2 * 1 + \alpha_3 * 1 + \beta * X_{ij} + \varepsilon_{ij}$$

In specification (1.4) and (1.5), we keep workers in unionized establishments as our samples, and look at within unionized establishments, what the effects of workers' recognition of union on workers' outcomes.

(1.4) $y_{ij} = \alpha_6 * average\ recognized\ union_j + \beta * X_{ij} + \varepsilon_{ij}$

(1.5) $y_{ij} = \alpha_7 * recognized\ union\ dummy_{ij} + \beta * X_{ij} + establishment\ fixed\ effect + \varepsilon_{ij}$

α_6 relfects how the average recognition of a unionized establishments affect the workers' outcomes, and α_7 shows how within a unionized establishments workers difference about union existence affect worker's outcomes.

Table 4 look at the effect of official union existence according to specification (1.1) on workers monthly average income, benefits, the chance of being promoted, and the probability of change jobs. Regression results show that after controlling individual characteristics and establishment characteristics, official union existence at establishment level is positively related to workers income, benefits and promotion,

these results seem to be against the opinion of “paper” unions.

The regressions also show that education is positively related to workers monthly income, the chance of getting benefits, but have no significant effects on promotion or workers likelihood of changing jobs. Age has inverse U shape on income, benefits and promotion opportunities, and have negative effects on job changes.

Staying in the establishments for longer period will have significantly positive effects on benefits and negative effects on job changes, but have no significantly positive effects on monthly income or promotion chance.

Communist party member have no significant effects on income, benefits, promotion or job changes, rural hukou is negatively related to income, but positively related to promotion opportunities, and job changes. This makes sense if rural hukou will have workers with lower starting posts with the comparable urban hukou counterparts.

Table 4: the effect of official union existence, OLS

VARIABLES	(1)log(average monthly income)	(2) benefits	(3) promotion	(4) Change job
Union dummy	0.0549***	0.104***	0.0435***	-0.00532
	(0.0148)	(0.0163)	(0.0157)	(0.0147)
Year of education	0.0255***	0.00646**	-0.00331	-0.00150
	(0.00294)	(0.00325)	(0.00311)	(0.00291)
age	0.0351***	0.0111**	0.00800	-0.0124**
	(0.00506)	(0.00552)	(0.00533)	(0.00499)
Age squared	-0.000476***	-0.000157**	-0.000163**	0.000102
	(6.49e-05)	(7.12e-05)	(6.88e-05)	(6.44e-05)
seniority	0.000827	0.00557***	0.00142	-0.00737***
	(0.00140)	(0.00156)	(0.00151)	(0.00141)
Female dummy	-0.163***	-0.0288*	-0.0266*	-0.0435***
	(0.0141)	(0.0156)	(0.0150)	(0.0141)
CPC party member	0.00624	0.0132	0.0321	0.0160
	(0.0213)	(0.0237)	(0.0227)	(0.0212)
Rural hukou dummy	-0.0276*	0.00230	0.0636***	0.0307**
	(0.0156)	(0.0171)	(0.0165)	(0.0155)
Controls: occupation, ownership, industry, size, constant	yes	yes	yes	yes
Observations	3,580	3,762	3,774	3,777
R-squared	0.269	0.047	0.064	0.052

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Although we find positive effects of official union existence on workers outcomes, we can't conclude all unions are effective in Chinese firms. The average positive effects of union existence might only captures that some unions play positive roles. Therefore, the next question is whether we can distinguish real unions from paper unions in Chinese establishments.

If we control both workers' recognition about union existence and official union existence reported by employer as in specification (1.2), we find that, it is the workers' recognition of union existence or union strength that matters for wages, benefits and promotions, not official union's existence, table 5.

In table 6 we use the average recognition of union existence in an establishment to reflect the average recognition of union existence at establishment level as in specification (1.3) and run similar regressions. The results are almost the same. Union strength reflected by workers recognition of union existence is positively related to workers income, benefits, while official union existence's effect become insignificant.

In table 7, we keep workers who come from unionized establishments as in specification (1.4), and run the same regressions. For those with official unions reported by employers, the average recognition of union existence by employers have positive effects on wages, benefits, promotions and job changes.

Previous significant effects of union strength on workers outcomes can result from endogeneity, which means that establishments with so called strong unions have unobservable characteristics that affect both official union existence and workers wage, benefits and promotions.

To solve the endogeneity caused by unobserved variables of establishment, we control the establishments fixed effects and run the same regressions as before as in specification (1.5). The results show in table 8.

After controlling establishment fixed effects, we see that workers' recognition of union existence is still important for workers wage, benefits, which means workers' individual recognition of union existence do reflect union's real effects.

Table 5: the effect of official union existence, OLS

VARIABLES	(1) log(average monthly income)	(2) benefits	(3) promotion	(4) change job
Recognized union dummy	0.0615***	0.159***	0.0471**	-0.0158
	(0.0187)	(0.0205)	(0.0199)	(0.0186)
Union dummy	0.0231	0.0253	0.0205	0.00229
	(0.0176)	(0.0191)	(0.0186)	(0.0174)
Controls	yes	yes	yes	yes
Observations	3,577	3,758	3,771	3,774
R-squared	0.272	0.062	0.065	0.052

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table 6: the effect of official union existence, OLS

VARIABLES	(1) log(average monthly income)	(2) benefits	(3) promotion	(4) change job
Average recognized union	0.0514*	0.165***	0.0287	-0.0249
	(0.0266)	(0.0294)	(0.0284)	(0.0265)
Union dummy	0.0281	0.0195	0.0288	0.00746
	(0.0202)	(0.0221)	(0.0214)	(0.0200)
Controls	yes	yes	yes	yes
Observations	3,580	3,762	3,774	3,777
R-squared	0.270	0.055	0.064	0.052

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table 7: the effect of official union existence, OLS

VARIABLES	(1) log(average monthly income)	(2) benefits	(3) promotion	(4) change job
Average recognized union	0.0711**	0.174***	0.0331	-0.0548*
	(0.0310)	(0.0338)	(0.0312)	(0.0282)
Controls	yes	yes	yes	yes
Observations	1,907	1,980	1,987	1,990
R-squared	0.257	0.059	0.070	0.060

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table 8: the effect of official union existence, OLS

VARIABLES	(1) log(average monthly income)	(2) benefits	(3) promotion	(4) change job
Recognized union	0.0502**	0.150***	0.0475	-0.0166
	(0.0223)	(0.0255)	(0.0364)	(0.0243)
Establishment fixed effects	yes	yes	yes	yes
Observations	2,199	2,285	2,295	2,295
R-squared	0.600	0.417	0.277	0.236

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

According to the previous results about union's effect on workers outcomes, we see that: (1)workers' recognition of union existence is important for workers wage, benefits, which means workers' individual recognition of union reflect union's real

effects. When both official union dummy and workers recognition of union (either in individual or establishment average terms), the effect of workers recognition of union dominate. (2)Workers' recognition of union is a good indicator for union strength/effectiveness in Chinese establishments. (3)Unions have some distributive effects towards workers in terms of higher income, better benefits, which leads to lower turnover probability but no significant effects on promotion.

IV. Does union affect the outcomes of establishments?

Union existence might have both positive effects as well as negative effects on performance of establishments. At establishment level, ineffective union might have side effects, as union fees (it legally requires that 2% of payroll given as union fees to the ACFTU) will increase labor costs or reduce workers' wages or both, if union has no positive effects on employment relations. Effective union might decrease conflicts and friction between workers and managerial personnels, and reduces communication costs and might improve efficiency, and further improves its revenue and productivity. Whether unions will improve profits depends on the relative effects of growth effects and distributional effects between employer and employees.

The following is the Econometric specifications to look at union's effect on establishment outcomes.

(2.1) $y_j = \beta_1 * union\ dummy_j + \beta * X_j + \varepsilon_j$

(2.2) $y_j = \beta_2 * union\ dummy_j + \beta_3 * average\ recognized\ union_j + \beta * X_j + \varepsilon_j$

For unionized establishments, we look at recognition of union according to the following specification:

(2.3) $y_j = \beta_4 * average\ recognized\ union_j + \beta * X_j + \varepsilon_j$

In table 9, as in specification (2.1) we regress log of revenue per employee, log of profit per employee, log of average wage, on official union existence, with ownership, log size, firm age, log asset per labor, new machine proportion as control variables, no significant effect of official union existence appears.

In table 10, as in specification (2.2), when we include both union dummy and average recognition of union existence, there are three categories of establishments, unionized, unionized but with low average recognition, unionized but with high average recognition, β_2 represents unionized but with low average recognition, $\beta_2 + \beta_3$corresponds to unionized but with high average recognition, $\beta_3$reflects the effects of high recognition of unionized establishments, and the effect of official union will be weighted sum of β_2 and β_3. From table 10, we can conclude that establishment with higher average recognition of union existence enjoy higher revenue as well as higher profits.

In table 11, as in specification (2.3), we see that for establishments with official union reported by employers, those with high recognition of union existence by employees will have positive effects on revenue per employee, but have no significant effects on profits per employee, average wage, value added per employee(productivity).

Table 9: the effect of union on establishment, OLS

VARIABLES	(1)log(revenue /employee)	(2)log(profit /employee)	(3)log(firm wage /employee)	(4)log(valueadd /employee)
Union dummy	0.0314	-0.226	0.0721	-0.0898
	(0.162)	(0.185)	(0.0707)	(0.308)
Controls: ownership, industry, constant	yes	yes	yes	yes
Observations	371	343	345	273
R-squared	0.161	0.151	0.046	0.147

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table 10: the effect of union on establishment, OLS

VARIABLES	(1)log(revenue /employee)	(2)log(profit /employee)	(3)log(firmwage /employee)	(4)log(valueadd /employee)
Union dummy	-0.401**	-0.463**	0.0491	-0.203
	(0.204)	(0.232)	(0.0915)	(0.400)
Average recognized union	0.965***	0.668**	0.0206	0.282
	(0.267)	(0.303)	(0.121)	(0.526)
Observations	368	340	342	270
R-squared	0.186	0.169	0.036	0.152

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Table 11: the effect of recognized union on unionized establishment, OLS

VARIABLES	(1)log(revenue /employee)	(2)log(profit /employee)	(3)log(firmwage /employee)	(4)log(valueadd /employee)
Average recognized union	0.852***	0.417	0.0115	-0.206
	(0.296)	(0.332)	(0.143)	(0.543)
Observations	186	171	174	132
R-squared	0.096	0.186	0.018	0.176

Standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

The previous results show the main findings of unions' effect on establishments' outcome: (1) establishments with high average recognition of union by employees will have higher revenue per employee, but have no significant difference on profits per employee, average wage, value added per employee(productivity).

(2) workers' recognition of is a good indicator for union strength/effectiveness in Chinese establishments than official union existence reported by management; (3) Recognized union have growth effect on revenue, as well as distributive effects toward

workers, and no significant effect on profits.

V. What determine workers' recognition of union existence?

What variables are correlated with workers recognition of union existence? How much of the variations come from variations within establishments? How much of the variations come from variations among establishments? We use HLM (Hierarchical Linear Model) to diagnose the effects from both individual level and establishment level. We will do it in two steps:

In step one, we regress the dummy for recognized unions on workers' characteristics as well as establishment dummy variables as in (3.1), and save the coefficients for establishment dummies, γ_2.

(3.1) $Recognized\ union_{ij} = \gamma_1 * X_{ij} + \gamma_2 * establishment\ dummies + \varepsilon_{ij}$

In step two, we use the coefficients for establishment dummies γ_2 as dependent variable and regress on the characteristics of establishments (Z_j) and unions participation of workplace activities (U_j).

(3.2) $\gamma_{2j} = \gamma_3 * Z_j + \gamma_4 * U_j + e_j$

In table 12 regressions (1), we regression the dummy variables of whether a worker recognize union existence on workers' characteristics of the unionized establishments as in specification (3.1). Workers' education seniority (the years staying in the same establishments) positively related to workers recognition of union existence. Being a communist party member is positively related to recognition of union existence. Having rural hukou is negatively related to the recognition of union existence. For workers of different occupations, we see that compared to managerial personnel, employees in professional and secretary occupations are more likely to recognize union existence, while workers (either skilled or unskilled) are less likely to recognize union existence.

In regression (2) we add establishment fixed effects to control variables. When establishments fixed effects are added into the regression, R square rises from less than 0.156 to more than 0.845. Establishment fixed effects have four times more power in explaining the difference in union recognition of workers. It means that there are more between-establishments variations than within-establishment variations in workers' recognition of union existence.

Table 12: what determines recognized union in unionized establishments

	Recognized union in unionized establishments	
VARIABLES	(1)	(2)
Year of education	0.0266***	0.0113***
age	0.0382***	0.0288***
Age squared	-0.000508***	-0.000370***
seniority	0.0168***	0.00606***
Female dummy	-0.0180	-0.00256
Party member	0.0963***	0.00624

Rural hukou	-0.0889***	-0.0264
Occupation:professional technical person	-0.0152	-0.0724***
Occupation:Administrative and secretarial	0.0493	-0.0297
Occupation:skilled workers	-0.0924**	-0.134***
Occupation:Unskilled workers	-0.0803***	-0.111***
Occupation:Other	0.0475	-0.209**
establishment fixed effects	no	yes
Constant	-0.437***	-
	(0.161)	-
Observations	2,301	2,301
R-squared	0.156	0.845

Notes: The reference group for occupation dummies is managerial personnels, standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

To further understand what factors is related to the establishment fixed effects for workers' recognition of union existence. We regress the fixed effects coefficients on two categories of variables, one category contains the characteristics of establishments, i.e. ownership, size and the other category contains unions' activities at establishment level, as in specification (3.2).

There are seven union activities altogether, we try two methodologies to reduce dimensions of these variables and get one comprehensive variable to reflect unions' participation in the workplace as in table 13.

For the first methodology, we just add together the seven dummies which indicates whether unions help with labor contract, help with collective contract, help with labor disputes consultation, help with protect workers' rights, listen and reflect workers' opinion and demands, unions provide economic help when workers face difficulties, unions organize entertainment activities, and we get Union activities: add up as in table 13.

For the second methodology, we use principle component analysis (Hotelling, 1933) to get the comprehensive variables (Union activities: principle component analysis) for unions' activities. Union activities from two different methodologies are highly correlated.

Table 13: unions' participation in workplace activities

Variable	Obs	Mean	Std.Dev.	Min	Max
Union activities: add up	258	3.16	1.76	0	7

Union activities: principle component analysis	258	0.00	2.07	-3.64	4.55

In table 14 we first regress coefficients of establishments fixed effects on the characteristics of the establishments for establishments with official unions and get the results in column (1), and then we add unions' activities to the independent variables and get the results in column (2) and (3), as in specification (3.2).

From regression (1) of table 14, we find that compared to State owned establishments, foreign owned (i.e. U.S. Europe, Japan) establishments do not have significantly differently lower likelihood on workers' recognition of union existence, while collectively owned, privately owned and Hong Kong, Macao and Taiwan owned establishments have significantly negative effects on workers' recognition of union existence. Also, establishments with more employees have positive effects on workers' recognition of union existence.

In (2) and (3), we add variables of union's activities from simple sum up of union activities and also principle component analysis. Both coefficients are significantly positive, and which show that unions that participate more in workplace activities will increase workers' recognition of union existence.

Table 14: what determines recognized union in unionized establishments

	Coefficients of establishment fixed effect dummies		
VARIABLES	(1)	(2)	(3)
Ownership:collective owned	-0.138*	-0.127**	-0.126*
	(0.0708)	(0.0644)	(0.0646)
3.ownership:private owned	-0.219***	-0.204***	-0.206***
	(0.0527)	(0.0475)	(0.0476)
4.ownership:HK, Macao or Taiwan owned	-0.266*	-0.234*	-0.239*
	(0.146)	(0.128)	(0.128)
5.ownership:foreign owned	-0.107	-0.0295	-0.0307
	(0.113)	(0.103)	(0.103)
Log(size)	0.0447**	0.0203	0.0209
	(0.0173)	(0.0158)	(0.0158)
Union activities: add up		0.0350***	
		(0.0119)	
Union activities: principle component analysis			0.0277***
			(0.0101)
Industry, Constant	yes	yes	yes
Observations	224	204	204

R-squared	0.130	0.170	0.166

Notes: the reference group for ownership dummies is State owned, standard errors in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Previous results show the main findings of what determines recognized union: (1) there are more between establishments variations than within establishment variations in workers' recognition of union existence; (2)unions that participate more in workplace activities will increase workers' recognition of union in an establishment.

VI Is good management worker relationship a mechanism for effective unions?

How does union affect workers' outcomes: income, benefits, promotion and turnovers? One potential mechanism would be better management – worker relations, which means union existence/union strength will promote better management – worker relations, thus indirectly affect outcomes.

According to figure 7, there is positive relations between recognition of union and management – worker relations. In the figure, 1 is very bad relations, 2 is not so bad relations, 3 is ordinary/just so so relations, 4 is good relations, 5 is very good relations. We see that the average recognition is higher in categories with better management-worker relations.

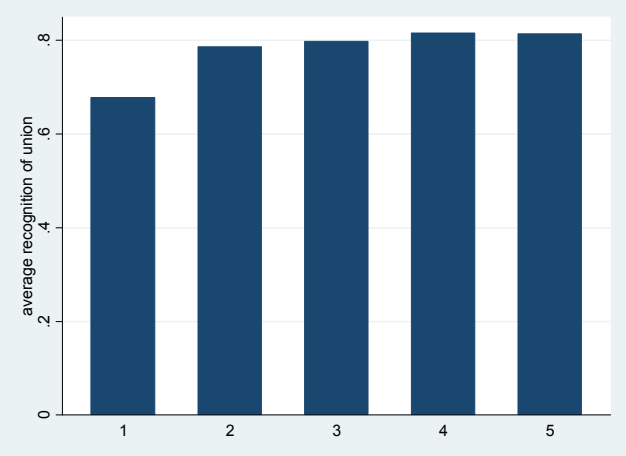


Figure 7: average recognition of union, by management-worker relations

Notes: 1 is very bad, 2 is not so bad, 3 is just so so, 4 is good, 5 is very good.

When we control the variables which indicates there are good relations between management and workers, workers' average recognition of union in unionized establishments (table 15) or workers' recognition of union (table 16) becomes insignificant. So one of the mechanism through which union affect workers is through better management-worker relations, and better management – worker relations have significant effects on increasing monthly income and reducing turnover rates.

Table 15: management-worker relations and workers outcomes

VARIABLES	(1)log(average monthly income)	(2) benefits	(3) promotion	(4) Change job
Average recognized union	0.0115	-0.0300	-0.0271	-0.0223
	(0.0610)	(0.0676)	(0.0599)	(0.0505)
Relation: not so bad	0.172	0.0861	0.0628	-0.181
	(0.174)	(0.181)	(0.161)	(0.136)
Relation: just so so	0.247*	0.0128	0.0399	-0.321***
	(0.149)	(0.151)	(0.135)	(0.114)
Relation: good	0.256*	0.141	0.0809	-0.409***
	(0.149)	(0.151)	(0.135)	(0.114)
Relation: very good	0.306**	0.0780	0.0764	-0.427***
	(0.155)	(0.158)	(0.141)	(0.119)
Observations	1,148	1,169	1,174	1,177
R-squared	0.233	0.050	0.086	0.100

Notes: the reference group for management-worker relation dummy is very bad management-worker relations. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 16: management-worker relations and workers outcomes

VARIABLES	(1)log(average monthly income)	(2) benefits	(3) promotion	(4) Change job
Recognized union	0.0775	0.228	0.160	0.107
	(0.180)	(0.176)	(0.157)	(0.132)
Relation: not so bad	0.174	0.0832	0.0601	-0.183
	(0.174)	(0.181)	(0.161)	(0.136)
Relation: just so so	0.250*	0.0117	0.0380	-0.323***
	(0.149)	(0.151)	(0.135)	(0.113)
Relation: good	0.259*	0.137	0.0771	-0.413***
	(0.149)	(0.151)	(0.135)	(0.114)
Relation: very good	0.309**	0.0733	0.0721	-0.430***
	(0.154)	(0.157)	(0.140)	(0.118)
Observations	1,147	1,168	1,173	1,176
R-squared	0.234	0.051	0.086	0.100

Notes: the reference group for management-worker relation dummy is very bad management-worker relations. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Our main findings about good management-worker relations as a mechanism are as follows: (1) there are positive relations between management-workers relations and recognized union; (2) after adding controls for management-workers relations variables, the coefficients of recognized union (both individual level, or average at establishment level) becomes insignificant; (3) good management-workers relations can be one of the mechanism through which effective unions have effects on workers outcomes.

VII Conclusions

There has long been controversial arguments as to union's effect in China as union is not organized by labors. Some think the official union is controlled by government thus have no real effects. However, others think even though Chinese unions are not completely independent there are still some space unions can pay their roles, and some find that unions in China have some real effects.

To reconcile existing findings, we have two arguments: first, dependence of unionism does not necessarily equal to uselessness of unions in protection workers; second, Chinese unions are not homogeneous and some of them can have real effects on and there might be both "paper union" and "real union" at establishment level.

With only official union existence, it is hard to distinguish the paper unions from real unions. This article uses workers recognition of union existence which is different from what management report as additional information of value, and empirical results support that workers' recognition of union is a good indicator for union strength/effectiveness in Chinese establishments.

At worker level, unions have some distributive effects towards workers in terms of higher income, better benefits, which leads to lower turnover probability but no significant effects on promotion.

At establishment level, recognized union have growth effect on revenue, and no significant effect on profits.

As to what determines union effectiveness (in terms of workers' recognition of union existence) in the unionized establishments, there are more between establishments variations than within establishment variations, and unions that participate more in workplace activities will increase workers' recognition of union in an establishment, or union effectiveness.

As to the mechanism of union's effects on workers' outcomes, good management-workers relations can be one of the mechanism through which recognized unions have real effects.

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