Trade Unions and the Welfare of Rural-Urban Migrant Workers in China[a]

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Abstract

Using a panel survey, we investigate how the welfare of rural-urban migrant workers in China is affected by trade union presence at the workplace. Controlling for individual fixed-effects, we find the following. Relative to workers from workplaces without union presence or with inactive unions, both union-covered non-members and union members in workplaces with active unions earn higher monthly income, are more likely to have a written contract, be covered by social insurances, receive fringe benefits, express work-related grievances through official channels, feel more satisfied with their lives, and are less likely to have mental health problems.

Keywords: trade union, rural-urban migration, China

JEL Classification Code: J5, O53, P21, P30

[a] **Acknowledgement**: We acknowledge financial support from the Australian Research Council on RUMiC data collection (LP066972 and LP140100514). We also thank the editor and two anonymous referees for helpful comments on an earlier draft.

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1. Introduction

The All-China Federation of Trade Unions (ACFTU) is, and has been for many years, controlled by the Chinese Communist Party (CCP).[1] Since 1978 China has gone through an economic reform period gradually shifting the economy from a centrally-planned to a more decentralised market-orientated system. Non-state-collective owned enterprises increased from less than 1% of all Chinese firms at the beginning of the economic reform to more than 93% in 2012 (National Bureau of Statistics 2009, 2013a). It is interesting to understand how the institutional features of the Chinese union affect workers' welfare in a largely privately owned economy.

This shift to a market-orientated system has been accompanied by dramatic industrialisation fuelled by a strong supply of cheap labour from rural areas. But in this large-scale rural-urban migration, the rights of migrants have not kept pace with those of urban workers due to China's special institutional setting. During the 1990s and 2000s, issues related to violation of workers basic rights became increasingly prevalent (Meng 2012; Gallagher, Giles, Park and Wang 2013; Li and Freeman 2015; Meng 2017). Consequently, the demand for collective bargaining began to grow. Although in 2008 the new Labor Contract Law (LCL) established formal legal channels to protect workers' rights, unfortunately the legal system in China is still weak, and laws and regulations are often not enforced, particularly if they relate to marginalised workers.

Owing to the lack of formal complaint channels, more and more migrant workers take extreme action in response to their poor working conditions. Examples are spontaneous strikes and protests expressing conflict between labour and capital (Traub-Merz 2011). Consequently there is growing pressure - from both government and society at large - on the ACFTU to fulfil its roles of protecting workers (particularly migrant workers) and institutionalising conflict-resolution. In the following years, ACFTU requested firms and workplaces to set up unions, gradually incorporated more independent grass-roots unions into the its system, and learned to work with these grass-roots unions. Some firms/workplaces actively responded to the ACFTU's request, while others passively followed orders to form the union but did not organize any activities. The latter case is

[1] The ACFTU established in the 1920s as part of the communist movement, was made illegal by the Nationalist government in 1927. After the Chinese Communist Party (CCP) came to power in 1949, the state became the owner of all property, and trade unions' collective-bargaining function was deemed redundant. The ACFTU's role was reduced to providing day-to-day welfare, such as distributing movie tickets in workunits.

commonly referred to as "paper unions".[2]

Against this background, our paper explores how migrants' working conditions and welfare are affected by the diverse forms of unionisation that China's once relatively homogeneous system now exhibits. In particular, we investigate if active (or 'real) unions and 'paper' unions had a differential effect on protecting migrant workers --- the major Chinese industrial workforce. Most existing studies use firm-level or provincial-level data while some use cross-sectional individual level data and their findings are mixed with regard to union influence.[3] Ours is the first to use an unique longitudinal representative survey of migrants (Rural-Urban Migration Survey, RUMiC) with a remarkably rich set of covariates to address the important issues raised above.

2. Background

2.1 Migrants' position in China's industrialisation and industrial relations

Industrialisation is invariably accompanied by large scale rural-to-urban migrations.[4] Since the early 1990s, Chinese cheap exports have dominated the world market, while over 170 million rural workers have migrated to cities (Frijters, Gregory, and Meng 2015; National Bureau of Statistics 2017). Despite the substantial contribution of migrant workers to China's economic growth (see, for example, Bosworth and Collins 2008; Meng 2012; Hao, Sun, Tombe, and Zhu 2020), they have always been treated as guest-workers in cities (see, for example, Zhao 1999; Meng 2000, 2012). While urban dwellers (individuals with non-agriculture hokou) are generally covered by social insurance, rural-urban migrants were initially denied social services and social insurance coverage. Their children were not entitled to attend city schools, and neither they or their families were entitled to work-injury, unemployment, and health insurances or pension. Although

[2] The earliest report of "paper unions" is here: http://news.sina.com.cn/c/2003-09-04/0905688243s.shtml. Since then, many papers discuss the existence of "paper unions" and contrast their role in the Chinese labour market relative to that of real unions' (see, for example, Liu 2010; Liu and Li 2014; Chan, Snape, Luo, and Zhai 2017). "Paper unions" are those existing only in name. They do not actively help workers by mitigating conflicts, representing workers in industrial relations negotiations or by providing direct welfare to workers. In this sense "paper unions" can be regarded as "failed unions". However, the difference between Chinese "paper unions" and "failed unions" in the west is likely related to how Chinese unions were set up. Chinese unions were often formed at the ACFTU's request. Firms themselves had no incentive to set up the unions. "Failed unions" have the undertone that the union organisers wanted to succeed but were unable to. This certainly is not the situation for most "paper unions". We will discuss this further later.

[3] Relevent studies include Ge 2007, 2014; Lu, Tao, and Wang 2010; Yao and Zhong 2013; Budd, Chi, Wang, and Xie 2014; Anwar and Sun 2015; Gunderson, Lee and Wang, 2016; Song, Yang, and Yang, 2016; Wang and Lien, 2018; Kuruvilla, 2018; Hu, Zhang, Shan, Zhang, and Yue, 2018, and Newman, Cooper, Holland, Miao, and Teicher, 2019.

[4] At the height of the Industrial Revolution in Britain, the large influx of rural workers into factories helped provide large gains in profits, at the expense of less than ideal working conditions – extremely long hours, with very limited compensation. As a result, labour unions arose (Booth 1995; Boyer and Hatton 1997).

the 2008 introduction of Labour Contract Law attempted to change the situation, the law's enforcement has been very weak for migrant workers. In addition, migrants are discriminated against with regard to type of job, working hours, and hourly earnings (Meng and Zhang 2001; Frijters, Meng, and Resosudarmo 2011) simply because they were born in rural areas. Thus, China's rural-urban policy divide has put migrant workers into a particularly weak position.

2.2 Trade Union in China

The 1995 Labour Law stipulated that the ACFTU is the only legal trade union in China (see Baker and McKenzie 2013). All unions in China need to register with and follow the ACFTU's leadership. The ACFTU employs a hierarchical system to manage its sub-branches. At the top of the hierarchy is the national headquarters following the CCP's leadership. Below national headquarters, there are 31 provincial unions and 10 industry unions. At the bottom are the firm- or workplace-level unions.

Unlike the other levels of unions, which are formed and act like government branches, the firm/workplace-level unions are more diverse and their decision-making is less controlled by local ACFTU. In the majority of cases, unions at firm/workplace level are established by the firm/workplace managements in response to the local ACFTU's request. Some firms actively responded to the ACFTU's request to set up unions, as they clearly saw the benefit of it, while others passively followed orders. In the latter case where firm/workplace management does not care about good labour relations and do not promote any union activities, firm-/workplace-level unions exist only on paper. As noted in footnote 2, these are commonly referred to as "paper unions". They normally do not organize activities and may even intentionally hide themselves from workers to avoid putting in effort. However, if the higher-level ACFTU wants to promote collective-contracts or perform labour-protection inspection, firms/workplaces with "paper unions" are likely to cooperate, as the ACFTU local branch is backed up by government administrative power. In 2008 China issued the new Labor Law, which allows any group of workers to establish a union themselves if they register with the ACFTU. In practice, there are some successful self-established grass-roots unions, but they are very limited.[5] There are also examples where attempts by workers to establish their own unions were

[5] For example, the ACFTU mobilised workers at a Walmart store to establish the first store-level union in Walmart. But after its establishment, the Walmart management took control of the union. This battle between Walmart and ACFTU has been widely covered by media: https://www.theguardian.com/business/2006/aug/11/china.supermarkets

rejected by the ACFTU.[6] Firm/workplace-level unions are more heterogeneous than unions ranked higher in the hierarchy because of diversity in the ways unions are established, variations in grass-roots union decision making, and weaker connections with the party and the government.

The existence of "paper unions" is a unique feature of Chinese trade unions, albeit as a union suppression strategy it exists elsewhere (see for example, Riddell 2001). The inactive "paper unions" should be less effective in improving workers' welfare. Further, we expect that union members are more likely to be found in active unions. Because in many cases "paper unions" try to avoid being known and do not actively organise activities to attract workers into the "union", they are likely to have fewer members.

2.2.1 The Role of Firm- or Workplace-Unions

Firm/workplace-level unions are supposed to engage in collective contract negotiation, labour dispute mediation/arbitration, supervision and inspection of labour protection, legal supervision and help, skills training and skill competition, and financial support to employees with difficulties (Ge 2007; Zhang 2009; Liu 2010; Metcalf and Li 2006; Lee 2009). However, the extent and performance of these activities is unclear. For example, although firm-level unions do represent workers in the negotiation of collective contracts, it is reported that conditions in collective contracts are copied from minimum legal requirements (Liu 2010; Metcalf and Li 2006).[7]

These activities at workplace/firm-level unions are expected to help migrant workers improve their welfare. They not only provide grievance channels for illegally- treated workers but also raise workers' awareness of their rights. These factors will certainly increase the cost of labour exploitation and reduce the chance of migrant workers being illegally treated relative to their nonunion counterparts.

Some aspects of migrant working life that unions can improve include reducing working hours, increasing hourly pay, and providing social insurance protections. Union activities could be effective in these aspects, both in the sense of achieving minimum legal requirements and improving migrant welfare above the ceiling of legal requirements. In this paper, we focus on earnings, hours, and social insurance protections but also look at other benefits and the workers' ultimate welfare: happiness.

[6] In one case, a group of Beijing construction workers unsuccessfully attempted to establish their own union because the ACFTU rejected their request. See: http://www.ilabour.net/html/xsdytd/lgrd/2618.html.

[7] In addition to the above activities, the organisation of entertainment events is often observed, but has been interpreted as evidence for firm-unions nonfeasance in worker protection (Feng 2006)

2.2.2 Union Members and Covered Non-Members

Although official ACFTU data claim 92% of workers in unionised workplaces are union members, the proportion in our sample is 34% (NBS 2009). This suggest that two thirds of unionised migrant workers are covered non-members. Such a large share of covered non-members makes it important to explore the impact of firm/workplace-level unions on this group of workers. At the same time, it warrants a brief discussion of the 'free-rider' problem. If a large proportion of workers 'free ride' on union membership, unions cannot exist as successful entities. In the west, such a 'free-rider' problem is often mitigated by providing excludable goods to union members such as reputation (Booth 1985), physical working conditions, promotion and/or grievance channels (Booth 1995; Freeman and Medoff 1984). In China, this is mitigated by the union funding system. There are three sources of funding that ACFTU firm/workplace branches may receive. These are 0.5% union dues owed by union members, the 2% payroll tax owed by firms (Ge 2007; Yao and Zhao 2013), and government funding. Government funding is rarely provided to firm/workplace unions. Besides, although there are 0.5% union dues, they are only payable by union members, the amount is small and the collection of dues is imperfectly executed (Metcalf and Li 2006). Hence the major source of funding for firm-level unions is the targeted 2% payroll tax paid by unionised firms (Ge 2007). As the tax base of 2% payroll tax is for all workers in a unionised firm, it is equivalent to a coerced union charge for all union-covered workers. Operating in this funding system, firm-level unions can exist even without union members.

Therefore, firm-level unions in China are not expected to be concerned about eliminating free riders. Consequently, firm-level unions should have little incentive to make any of their services exclusive to union members, nor do firm-level unions have incentives to discriminate against covered non-members. Thus we expect little or no welfare differences between covered non-members and union members.

However, we might still observe a union member welfare premium for following reasons. First, although firm-level unions may not intend to exclude covered non-members from union activities, such activities may be semi-exclusive to union members, who are more likely to be informed about them. As already noted, these activities may help migrant workers accumulate skills and thus improve their welfare. Second, union members might be more likely to be found in active unions because active unions attract workers to join. At the same time, active unions do a better job in improving workers' welfare. Therefore, observed welfare differences between covered non-member and

union members may reflect a higher likelihood that observed members are covered by active unions. Third, union members may be more active within the firm and have more opportunities to be promoted. To the extent that promotions affect remuneration packages, union members would be better off than unionised non-members. Finally, although union funding does not depend on membership, union leaders may have non-financial considerations to treat members differentially. For example, unions with more members may be more powerful.

3. Data, Sample, and Summary Statistics

3.1 RUMiC Survey and Sample

Our data are from the Rural-Urban Migrant sample of the 2012 to 2016 waves of the Rural-to-Urban Migration in China (RUMiC) survey, as the trade union questions were added only from 2012. RUMiC is a panel survey, conducted by the Australian National University, that aims to collect data to better understand internal migration in China. There were initially three different samples: the Urban Household sample (UHS), the Rural Household sample (RHS), and the Rural-Urban Migrant sample (MHS), but due to funding limitation from 2011 onwards, only the MHS remained. The MHS lasted until 2016, with the initial wave comprising 5000 randomly selected migrant households from 15 cities in 9 provinces. The provinces were chosen to include both sending and receiving regions. Within each city, the sample was randomly selected from migrant workplaces to avoid the potential bias of residential based sample selection. Because a large proportion of migrant workers live in factory dormitories or other workplaces (construction sites, restaurant backrooms), residential-based sampling often omit these migrant workers.[8]

In each subsequent year from 2008, efforts were made to track households surveyed in previous years. Those households successfully tracked form the longitudinal part of RUMiC data. RUMiC added a random sample of new households in each wave to bring the final sample of each wave back to the original number of around 5000 households. Because migrants are mobile, the attrition rate is high for the RUMIC project. The positive side of a high attrition rate is that the new households added in each wave effectively form the representative sample of Chinese migrant households in that year. Thus, in addition to the longitudinal part of the data, RUMiC also has a repeated cross-sectional component.

To focus on individuals most likely to be affected by unionisition, we limit our sample

[8] Online Appendix A provides further details about RUMiC Survey. For discussion of the RUMiC sampling frame, see Meng Manning, Shi, Effendi. (2010).

to working-aged (16-60) wage-earners from the 2012 to 2016 waves. Detailed information on our sample selection is in Appendix Table A. Our final sample comprises 5,003, 4,485, 4,449, 4,707, and 4,733 observations in each of the five waves, respectively and the total pooled individual-year observations is 23,377. Around 64% of this sample has more than one year of observations and these constitute the panel sample (total of 15,034 individual-year observations).

3.2 Union-coverage, Membership and "Paper Union"

From 2012, the RUMiC survey added a set of questions investigating the impact of trade union on migrant workers' economic position. Respondents were asked whether their workplace has a trade union and, for those answering 'yes', they were further asked 'Are you a union member?'. Based on these two questions, we divide our sample into three groups: those in non-unionised workplaces; those in unionised workplace but not a union member; and union members in unionised workplaces.

Panel A of Table 1 shows the union-coverage rate. Around 18% of our sample of wage-earners are in workplaces with trade unions, although only 7% are actually union members. It is difficult to compare these proportions with other studies due to inconsistency in measurement across surveys. The literature reporting union-coverage normally uses firm-level data. For example, Ge (2007) uses the First Economic Census data conducted by the National Bureau of Statistics (NBS) in 2004, and reports that 17% firms and 13% workers in mining-manufacturing-utility industries are unionised.[9] However, as the data used in Ge's study are not at the individual level, the coverage rate of workers reported is likely to be based on the assumption that all workers in unionised firms are union members, which would be an over-estimate of the actual union membership. Yao and Zhong (2013) use a survey of 1,268 large firms (firms with total annual sales exceed 5 million Chinese yuan) from 12 cities, conducted for International Finance Corporation together with NBS in 2006, and finds that 69% of the firms in their sample are unionised. If we use the China Trade Union Statistical Yearbook information (National Bureau of Statistics 2013b), the proportion of workers working in unionised firms in 2012 is around 37.5%.

Our percentages are lower than previous reported union-coverage. This could be due to the following. First, previous studies did not use individual-level survey data reporting

[9] The reporting in (Ge 2007) is unclear. In his Table 2 he reports the proportion of union members in mining-manufacturing-utility industries being 35.1%, whereas in Table 3 the proportion of union members in firm employees is reported to be 13%.

personal union membership information. Information based on firm-level coverage is likely to overestimate the coverage rate.[10] Second, our sample is limited to migrant workers. The concentration of migrant workers in the private sector and in small workplaces may make union-coverage lower in our data (76.6% of our migrant workers are in private-sector workplaces and 50.28% are in workplaces with fewer than 50 employees). To put this into perspective, based on Ge (2007), in 2004, the proportion of union members in firm employees for the state sector is around 62% while for the private sector it was around 8%. Finally, our figures should not be compared to Yao and Zhong (2013), who include only large firms that are more likely to be the target of ACFTU for establishing firm-level unions.

A more difficult issue is how to identify a union as being a real or a "paper union". In the RUMiC survey, of respondents answering yes to the question of whether the work unit has a union, we asked the following questions: 1. Does the union in your workplace provide any help to workers? (Yes or No), 2. Do you participate in any union organised activities? (Yes or No), and 3. Who makes the decision on union leadership in your work-unit? (1. leaders from above; 2. workplace leaders; 3. workplace leader together with workers; 4. workers make the decision collectively; 5. Do not know). Panels B, C, and D in Table 1 report the distributions of the answers to the three questions, respectively, by year and by union covered non-members or members. 87% of union members suggest that unions in their workplace help workers, while the ratio for union covered non-members is 66%. Over time, the proportions are increasing, from 79% to 91% for union members, and from 60% to 71% for union-covered non-members. The proportion of union members participating in union activities has been stable. The participation rate for covered non-members, however, increased significantly between 2012 and 2015 and then declined slightly. The general picture is that union members are more likely to participate in union activities than union-covered non-members by a large margin. Finally, in Panel D we find that more than 50% of the unions have their leader either appointed by the leaders from above or by their workplace leaders. But the proportion which involve workplace leaders is increasing while the ratio for being appointed from above is decreasing.

Defining a "paper union" requires some objective choices. Of the three questions, the

[10] Some case studies suggest workers may not know their workplace is unionised in firms or workplaces covered by inactive unions (Metcalf and Li 2006; Liu 2010).

one on whether individuals participate in union activities depends too much on individuals' self-selection and hence is unsuitable for our purpose. The decision on union leadership, while objective, does not seem to be directly related to whether unions only exist on paper or not. However, those respondents with union leaders being appointed from above or those who do not know how their leaders were appointed may be more likely to be "paper unions". The most likely variable to capture if a union in the workplace is "paper union" is whether the union provides any help to workers. In our main analysis below, we define "paper unions" as those not providing help to workers. In our robustness checks examining the sensitivity of our results to this definition, we also use a definition combining information on whether or not unions provide help to workers and how union leaders were appointed.

The last panel (Panel E) of Table 1 presents the distribution of our sample between "paper unions" and real unions among unionised members and non-members. Based on our definition, we calculated for the full sample (see the last two columns of Panel E) that among all workers in unionised workplaces (total of 4307 individuals) , around 26% are in "paper unions" and the remainder (74%) are in real unions. Of these, 56% are non-members and 44% are members. Also, of all workers in workplaces with "paper unions", the vast majority are non-members (81%).

3.3 Summary Statistics

Table 2 presents summary statistics of the variables used.[11] The first 3 columns report means for workers in non-unionised workplaces, those in unionised workplaces but not union members, and those who are union members, The next four columns compare between non-unionised workers and unionised non-member (columns 4); unionised non-members and unionised members (columns 5); then, within unionised non-members and members groups we also compare those from paper unions with those from real unions (columns 6 and 7, respectively).

Panel A of Table 2 reports all outcome variables, including: earnings; hours worked; social insurance participation, meals and accommodation subsidies provided by the workplace (labeled fringe benefits); whether individuals have a written contract; when they face unfair treatment at work whether they have a formal channel to complain; their mental health scores (the higher the score, the worse the mental health); and whether workers regard themselves as being very happy or not.

[11] Online Appendix A (Table A1) defines the variables used in this paper.

From Panel A of Table 2 we observe that: (1) Union members and non-members in unionised workplaces are doing much better than workers in non-unionised workplaces for almost all outcome variables; (2) Unionised members are doing better still than unionised non-members; and further, (3) among unionised workplaces, both members and non-members in workplaces with real unions are doing better than workers in workplaces that only have "paper unions".

Workers in unionised workplaces earn significantly more real wages per month than their counterparts in non-unionised workplaces, despite the fact that workers in unionised workplaces work fewer hours than those in non-unionised workplaces. Further, the earnings differentials between workers in workplaces with "paper unions" and real unions are just as large as between non-unionised and unionised workplaces, if not larger.

In terms of social-insurance participation, the table shows that in all five categories of social insurance, workers in non-union workplaces have the lowest coverage rate, followed by those in unionised workplaces who are non-union members, and then, the union members. Among non-unionised workers (accounting for more than 80% of the total migrant workers), 56% have not been provided with a written contract, whereas in unionised workplaces the ratio of written contract coverage is 89% for non-members and 92% for members.

At the bottom of Panel A, we compare three subjective outcomes: (1) proportion of people who, when facing unfair treatment at work, would find formal channel to complain; (2) the mental health scores based on individuals' own answer to the GHQ12 questions; and (3) proportion of people judging themselves very happy. Regarding formal complaint channels, we find consistent differences with the highest proportion of people reporting formal complaint channels among union members in real unions. This is followed, in descending order, by non-union members in workplaces with real unions, members in "paper" unions, non-members in "paper" unions, and workers in non-unionised workplaces. In terms of metal health score and happiness, workers in "paper" unions are doing worse than workers in non-unionised workplaces, but workers in real unions are doing much better.

Panel B of Table 2 compares individual characteristics across the five groups of workers. While by-and-large they are around the same age, workers in union-covered workplaces have 1 to 2 years longer city-work and current-job work experience. Among members, not many differences are observed on their characteristics. However among unionised non-members, people in "paper" unions are older, have longer work

experiences, are more likely to be married, and are less likely to have performed well at school. Migrants in unionised workplaces (both members and non-members) are also more likely to be males relative to their non-unionised counterparts. They are better educated and with better school performance. At the bottom of Table 2 we also present two normally unavailable measures, namely risk-loving and trust. For these two measures we do not find meaningful differences across any comparison groups.

With regard to firm characteristics, we show (see Panel C of Table 2) that unionised workplaces are much larger, more likely to be foreign-owned or state-owned, and more likely to be in manufacturing. However, relative to workplaces where unionised non-members work, union members in smaller workplaces are less likely to be in foreign-owned firms, and less likely to be in manufacturing rather than retail or services firms. In fact, more than one third (34%) of union members are in retail-service workplaces.

In Online Appendix B Figure B1, we present unconditional age-earnings and year-of-migration-earnings profiles. These show that workers in unionized workplaces and those who are union members earn more at all ages and regardless of time since moving to a city.[12]

4. Model and Estimating Strategy

To investigate if trade unions are able to protect the welfare of rural-urban migrants, we estimate the following equation:

$$Y_i = U_i\theta + X_i\beta + W_i\gamma + Job_i\sigma + \tau_c + \tau_t + \alpha_i + \nu_i \qquad (1)$$

where Y_i is a vector of outcome variables measuring migrants' welfare including earnings, working hours, fringe benefits, and social insurance coverage. U_i is a vector of union status dummy variables. We estimate two versions of the model, one with two dummy variables comparing union covered non-members and members relative to non-unionised workers. In the other version, we further separate unionised members and non-members into whether they are in a "paper" union or not. Thus, we have four dummy variables in this version of the model, unionised non-members in "paper" unions, unionised non-members in real unions, unionised members in "paper" unions and unionised members in real unions. X_i is a vector of variables capturing individual characteristics, Job_i is a group of variables indicating job characteristics, whereas W_i is

[12] We also estimated a multinomial regression to examine the observable factors which affect individuals' participation into unionised firms, being union members, and the types of unions in their firms (whether real unions or paper unions). The results are presented in the Online Appendix C Table C1, where there is also some brief discussions.

a vector of workplace characteristics (as reported by respondents). τ_c and τ_t are fixed city and time effects, α_i is unobserved time-invariant individual characteristics, and ν_i is the residual term.

OLS estimation of equation 1 omits estimation of α_i, and hence fails to identify θ due mainly to potential selection bias, i.e. the correlation between α_i and ν_i and U_i . Those who join unionised firms (or firms with real rather than "paper" unions) and those who decide to become a union member could be individuals possessing different unobservable characteristics, which, in turn, could be correlated with the level of income and welfare they receive. In general, one would assume that if a unionised workplace offers a more attractive remuneration package to workers, those with outstanding ability and strong motivation will wish to work there and are more likely to be hired. Thus, unionisation will be positively correlated with unobservable characteristics. If so, OLS estimation of equation (1) will overestimate welfare benefits for members and non-members in unionised firms.

In addition, there is potential for negative selection. If the ACFTU's unionisation strategy focuses mainly on firms treating workers badly, it is likely that unionised firms for migrant workers are lower-end firms, which hire less qualified (in terms of both observables and unobservables) workers. This could happen because workers in this type of firm exert more pressure on ACFTU by threatening to organise strikes or establish unauthorised unions. In this situation it is possible that union status is negatively associated with unobservable characteristics of workers. Considering the case of "paper" unions formed simply to respond to the request of ACFTU, the firms- and or workplaces-managements have no incentive or need to establish good industrial relations. In fact, firms treating workers poorly may be more likely to establish a "paper union" if they are compelled to set up a union. This type of firm and its workers could be negatively selected. If so, then OLS estimation of θ without considering whether the unions are "paper" unions or not should be an underestimate of the true welfare benefit for unionised firms. Where we separately control for "paper" or real unions, the OLS coefficients on "paper" unions could be under-estimated (negative selection) while for real unions they could be over-estimated (positive selection).

The literature usually handles the potential endogeneity of union status using either IV approach or Fixed-effects model (FE). Existing studies of Chinese union effects (all of which use either provincial-level or firm-level data) used as instruments political links

between party, union, and firms (Lu et.al. 2010; Ge 2014) or the neighbouring province union density (Budd et.al. 2014). (How well these instruments meet the exclusion restrictions is debatable amd beyond the scope of this paper.) Our study is the first to examine union benefits using individual-level data for China and for rural-urban migrants. Unfortunately, exogenous variations affecting unionisation at the individual level, but not directly affecting benefits received, is hard to come by. We therefore try several different ways to gauge the degree to which our OLS estimates of θ may be biased due to potential endogeneity.

First, to limit the potential for unobservable characteristics to drive our results on union status premium (θ), we utilise an advantage of the RUMiC survey: the very rich set of individual, job, and workplace-level information. We follow the literature to include age, its squared term, education, gender, marital status as controls for individual characteristics. In addition, we control for individuals' year since first migrating to cities, their own ranking of their school performance and their self-rated health status. For job characteristics we include individuals' current job tenure and a vector of 26 occupation dummies. Workplace-level controls include 11 dummy variables for firm size, 17 dummies for firms' ownership status, and 29 industry dummies (see Online Appendix D). Finally, in the situation that some personality traits may affect union status as well as earnings, we also add individual self-assessed risk and trust. We thus estimate five models of equation (1): model 1 only controls for union status, model 2 includes individual characteristic controls, while 3 and 4 adding also job controls and firm level controls, respectively. The final model includes all controls plus risk and trust. By gradually adding additional controls, we can examine how the potential 'unobservables' may affect our estimated union premium.

Second, our data have a panel portion where households were tracked from two to five years. Using these longitudinal data, we estimate the FE model. If we assume that any unobservable characteristics affecting individuals' union status, earnings and other benefits are time invariant, then by controlling for α_{i} our FE model should allow us to obtain unbiased θ. Given that our sample period is only 5 years, during which time there were no significant macroeconomic changes or significant policy changes in China, our assumption is not unreasonable. It is unlikely that, in a steady-state situation, individuals' personality, drive, and other unobservables would change much over five years. In case

that our assumption is violated, then FE estimated θ could still be biased.[13]

It is commonly accepted, though, that FE models might underestimate the true union/nonunion wage differential (see, for example, Freeman 1984; Booth 1995; Koevoets 2007; Hirsch 2004). This is mainly due to measurement error being a greater problem in FE calculations than in cross section comparisons. The reason is that FE estimation relies on the generally small group of workers changing union status in the survey period (switchers), compared to the large number of union and nonunion workers whose status remains unchanged. As Freeman (1984) shows, since measurement error in the union variable creates "false switchers", a larger proportion of the FE sample than of the cross section sample are subject to measurement error, which produces an underestimate of the coefficient on the union variable, ceteris paribus. Selection effects are more complicated. Cross-section estimates presumably overestimate the union wage differential due to the tendency for firms with high union wages to hire more able workers. However, FE estimates are likely to underestimate the effect among union-to-nonunion switchers, since union workers will presumably move only to nonunion firms paying exceptionally high wages rather than to a random nonunion firm. Absent measurement error, and with large selection bias in cross section studies, the FE may provide a more accurate estimate of the true union effect. With measurement error, and modest selection bias, FE will underestimate the true union effect. All we know for sure from individual-level data is that FE estimates are invariably lower than cross section estimates of union effects.

5. Union Benefits

We address our main question - whether unionised workers in China are largely protected - by examining earnings, fringe benefits, social welfare, hours worked, whether to have a written contract, and self-reported happiness.

5.1 Earnings: OLS and FE

Inactive "paper" unions often only react to ACFTU's requests to do the minimum to protect workers' benefits. These 'minima' are defined by the Labor Law. Level of wages

[13] However, selection into unionized verses non-unionised firms or firms with real or "paper" unions may be a twoway issue, in that not only might workers choose which firm to work for but firms also choose which worker to hire. While our individual-level fixed-effects model can control for the supply-side of the selection bias conditional on certain assumptions (discussed above), it does not fully control for firm/workplace level unobservables. Since our survey is at the individual-level survey, we are unable to control for firm-level fixed-effects. Nevertheless, we control for all the information we have at the firm-level.

paid, as long as it is above minimum wage level, are something beyond the Labor Law's stipulation. Thus, we expect very different behaviour between "paper" and real unions for earnings outcome relative to other outcomes stipulated by the Labor Law.

Table 3 presents selected OLS estimates from equation (1) with log monthly earnings as the dependent variable. (Full results are in Online Appendix E, Table E1.) Panel A combines "paper" and real unions to estimate the union premium for unionised non-members and members, while Panel B separately estimate the premium for unionised members and non-members in workplaces with "paper" unions and with real unions.

Monthly earnings are deflated by city-level CPI with 2012 set to 100. All five models control for hours worked, year and city fixed-effects, and whether the individual belongs to that survey year's new sample or not. Our main estimates of interest in Panel A are the coefficients on the dummy variables of union-covered non-members and members. The reference group is workers in non-unionised workplaces. Since we control for hours worked, these coefficients reflect a union effect on the wage rate. Model 1 has no individual, job, or firm level controls. The observed average wage premium for unionised non-members and members relative to non-unionised workers is 4.4 and 12 percent. However, once additional controls are added, the premium for being non-members in unionised workplaces disappears. In particular, in Model 2 when we added controls for individual characteristics the coefficient on unionised non-members turned to zero, suggesting the 4.4% earnings advantage observed in Model 1 is related to the better observed characteristics of these individuals relative to those in the non-unionised workplaces (positive selection).[14] In Model 3, as occupation and firm-tenure are included in the regression, the coefficient increased to 1.8% and statistically significant. It implies that these people may have shorter job tenure and their occupations are not very well rewarded relative to those in the non-unionised workplaces. But, in Model 4 with workplace-level characteristics included the coefficient drops to a 1% and becomes again statistically insignificant. Including additional personality traits in Model 5 further reduces the coefficient to near zero. Thus, considering all observable characteristics, being a non-union-member in a unionised workplace does not provide earnings benefit. In other words, being in unionised firms do not bring additional earnings and the unconditional earnings advantages can be explained away by the individual, job and firm characteristics. The main force eliminating the unionised non-member premium is individual characteristics

[14] This positive selection can also be confirmed by the multinomial regression results on selection into different categories of unionisation (see Online Appendix C).

and the type of firms they choose to work. These results, however, could be contaminated by negative selection on unobservables of "paper" unions. Indeed, when we separately estimate unionised non-members in firms with "paper" and real unions (Panel B of Table 3) we find that, relative to workers in non-unionised workplaces, workers in workplaces with "paper" unions earn 3% less (column 5 in Panel B), while those in real unions earn 2.8% more. This is a clear sign that "paper" unions behave very differently from real unions in terms of earnings.

With regard to union members in unionised workplaces, Panel A of Table 3 shows that adding individual characteristics reduces about three quarters of the unconditional earnings advantages relative to the non-unionised workers from 12 percent to 3 percent. But as long as individual characteristics are controlled for, adding job and workplace-level characteristics or additional personality traits do not further reduce the union membership premium. If anything, it improves it slightly. Model 5 shows that union members are paid a 3.7% premium relative to workers in non-unionised workplaces. There are also differences between "paper" and real unions for members: while members in "paper" unions earn roughly the same as those in non-unionised workplaces, standardising for individual, job, and workplace-level characteristics, union members in real unions earn 4.2% more than workers in non-unionised workplaces (column 5 in Panel B).

Our results so far suggest that perhaps there is selection on observable characteristics for both unionised non-members and members. It may also indicate that, if the main selection occurs at the individual level, studies using firm-level or provincial-level data would find it hard to get rid of the selection bias. Indeed, Ge (2007) and Yao and Zhong (2013), using firm-level data, documented 10% and 12.6% average higher wage for unionised firms. This is the level of premium we observe for union members if we control only for firm characteristics.[15]

To further understand the extent of selection-bias affecting our estimates, we turn to the panel sample. Panel data allow us to estimate fixed-effect models that control for time-invariant unobserved individual characteristics. As only around two thirds of our sample are tracked over time, we estimate both OLS and FE models for this panel sample to allow for a meaningful comparison. Table 4 presents selected results from our estimation of Models 1 and 5. Panel A combines both "paper" and real union samples,

[15] Notwithstanding, their studies are about firm average wages including both urban workers and migrant workers.

while Panel B separately estimates the premia for unionised non-members and members in firms with "paper" and real unions.

For the panel sample, OLS estimates of union premia are larger than those using the full sample. Based on Panel B results, workers who are unionised non-members and members in real unions earn a 3.1% and 6.1% premium as opposed to a 2.8% and 4.2% for the total sample, respectively. Controlling for individual fixed-effects, the premia for the two groups of workers reduced to 2.4% and 4.8%, respectively, a 15% to 20% reduction, suggesting small positive selections. For non-union members in firms with "paper" unions, however, fixed-effect model estimates switched a negative 3.8% and significant premium to a near zero estimate, a clear indication of negative selection. Thus, if we do not separately estimate "paper" and real union non-member premium, we would barely obtain positive 1.6% return by controlling for the negative selection. But the separate estimation reveals that the returns to inactive "paper" union non-members is zero while to real union non-members it is a positive 2.4%.

In addition to the negative selection issue, there is also the issue of measurement error discussed in Freeman (1984). In our case, due to the existence of the inactive "paper" unions and the disadvantaged position of migrant workers in Chinese cities, it is very likely that many workers may be unaware of whether their firms have union or not. If so, there will be misreporting of union status in our data. According to a separate survey about a unionised firm, only 42% of its workers know if their firm has a firm-level union.[16] Thus, relative to a normal misreporting problem in any survey, our data may suffer from more of measurement error problem. Thus, although correcting for negative selection (separately estimating "paper" and real union premia), FE models have provided us with larger union premium for covered non-members, these estimates could still be lower bound estimates. The same goes to the covered union members, as explained in Freeman (1984).

5.2 Other Benefits: OLS and FE

We now present the results for other benefits, including hours worked, log of total fringe benefit (meal plus housing subsidies), number of firm-paid social insurances, whether the individual has a written contract, the number of hours worked in an average week, having a formal complaints-channel when unfairly treated, and whether the individual

[16] Data from a report produced by "Focus on New Generation Migrant Project" team, accessible from http://www.ilabour.net/ (in Chinese).

feels happy taking into account all aspects of his/her life. For simplicity, estimation in this subsection focuses mainly on the panel sample with separate "paper" and real union status.

Panels A and B of Table 5, respectively, present the OLS and FE estimation coefficients on the union status variable from estimating Model 5. Some of the outcomes are requirements of firms through the Labor Law, such as social insurance and written contracts. Others are not. We expect that, for outcomes not stipulated by the Labor Law, there would be larger gaps between "paper" and real unions. In contrast, we expect that for insurance and contact, which are the minimum requirement of the Law, the difference in coverage rates between "paper" and real unions should be smaller. By-and-large, this is what we find in Table 5.

Panel A shows that, standardising for all individual, job, and workplace-level characteristics, non-members or members in firms with "paper" unions are on average receiving 30% and 40% more fringe benefits relative to workers in non-unionised workplaces, whereas their counterparts in real unions receive 70-100% more fringe benefits. Also, with regard to getting access to the formal complaint channel when being unfairly treated and feeling very happy about their life, the advantage of being in the real unions are larger than being in "paper" unions. On the other hand, we observed very small gaps in the advantage of the number of social insurance coverage and having a written contract between those in the firms with real unions and those with "paper" unions. For hours worked, though, the pattern is not very clear.

The FE model (Panel B) generally reduced the magnitude of coefficients for most outcome variables, but the general pattern observed from OLS estimation remains. That is, for the legally-required provision of benefits, "paper" and real unions provide similar level of benefits. However, for outcomes beyond legal requirements, active real unions provide higher levels of benefits. After controlling for individual fixed-effects, the difference in hours worked between non-unionised workers and unionised members and non-members largelydisappeared.

Another striking result when comparing OLS and FE estimation is the coefficient on happiness. For union members in active real unions, the coefficient has almost doubled in size. Thus, relative to workers in firms without union-coverage (and everybody else for that matter), union members in real unions are 7% more likely to be very happy when considering all aspects of their life. One interesting finding from comparing OLS and FE results is how

FE estimation reduces the advantages of the union covered members over non-members in every aspect except for happiness. Relative to other outcome variables, happiness is a comprehensive measure regarding how the individual feels about all aspects of life. It may be related to personality. It is possible that union membership is negatively selected on some personalities which are associated with happiness. For example, a recent psychological study found that extroversion is negatively associated with happiness (Pishva, Ghalehban, Moradi, and Hoseini. 2011). Controlling for these personality measures, we observe a positive boost in the effect of union on individuals' happiness. Possibly extroverted people are more likely to join unions and more likely to receive higher earnings. Thus, controlling for personality (FE model) reduces the union earnings premium, but increases the union effect on happiness.

An interesting question is what is it about the union that make its members happier? We examined the degree to which each of above-examined union benefits may wash away happiness of members in real unions. To do so, we add each benefit variable into the FE happiness equation one at a time and observe how this changes the coefficient of real union membership on happiness. The results are in Online Appendix F, Table F1. Of the six examined outcome variables, log real earnings, the number of insurances paid by the firm, and the written contract are the three benefits positively and significantly associated with happiness. However, none of them managed to wash away the positive significant effect. Once mental health score (GH12 excluding happiness score) is included, the statistically significant real-union membership effect dropped in magnitude, though it is still quite large and statistically significant. We next add all six benefit variables in the regression in addition to the Model 5 specification. This 'explains' away 0.7 percentage points of the real union membership effect on happiness. Adding mental health score further 'explains' away 0.2 percentage points. Among the 7 potential channels, number of insurance, written contract and mental health are still individually statistically significant. Finally, given that mental health is such an important variable relating to happiness, we relate all the other 6 benefit variables (in addition to model 5 specification) to mental health. It turns out that, in addition to earnings, the next variable which affect mental health the most is whether individuals have an official channel to complain about being unfairly treated at workplaces. This likely reflects the importance of having a voice in the employment relationship.

5.3 Sensitivity test

Our definition of "paper" union so far is based on whether individuals stated that the union in their workplace does not provide help to workers. This may not fully reflect if the workplace union is active. In this subsection, we test our results' sensitivity by expanding our definition of "paper" union to incorporate how union leadership is appointed.

Our first alternative definition includes as real union, in addition to workplaces whose unions provide help to workers (our original definition), all workplaces whose union leaders were appointed by (1) workplace leaders; (2) workplace leader together with workers, or (3) by workers themselves, even though they may not be regarded as providing help to workers. In other words, the real union is defined here as unions either whose leaders were appointed by people within the workplaces (leader alone, leader and workers jointly, or workers alone) or are regarded as providing help to workers. The reason for including this additional group is that they may not be the unions which set up only in response to ACFTU's request.

The second alternative definition excludes all unions whose leaders were appointed by people from above the workplace, including those whose unions are regarded as providing help to workers. In other words, the real union is defined here as unions whose leaders were appointed by people within the workplaces (leader alone, leader and workers jointly, or workers alone).

The FE results for all the outcome variables, with the alternative definitions for "paper" vs. real unions, are presented in Online Appendix G, Table G1. The results using both alternative definitions are largely consistent with what we observed from using our original definition.

Our results suggest not only that workers in unionized firms receive a sizable premium in most welfare measures but also that union members are paid a premium relative to their non-member counterparts. A question naturally arises as to why we observed union members receiving premia even though unions do not have an incentive to treat members and covered-non-members differently. In the background section we hypothesised possible reasons: union activities that are exclusive to members may be welfare-improving; union members might be more prevalent in active unions; union members may have more opportunities to be promoted, etc. While some of these hypotheses cannot be tested here owing to lack of information, we can examine whether the observed membership premium is due to earnings variation across workplaces. If union members are more likely to be found in active firms, which in turn appears

in our estimation as a membership premium, within-firm estimation should allow us to eliminate this effect. To gauge this possibility, we estimate the same earnings equations using a sample of people who have not changed jobs since 2011 (a year before our panel started) and stayed in our panel for between 3-5 waves. This sample, combined with individual fixed-effects, gives us the effect of premium due entirely to people switching their union status within a firm. The results are largely consistent with our full sample findings, suggesting the difference may not be due to firm-effects. These results are in Online Appendix H, Table H1.

6. Conclusion

The past forty years have seen China becoming the world's factory. Understanding whether China's trade unions are able to protect its most vulnerable workers in this world factory is an important industrial-relations issue that previous union studies of China have been unable to address owing to data limitations.

Our results, using data from six waves of the RUMiC Survey, indicate that rural-urban migrant workers benefit from working in a union-covered workplace, but only if the union is active. Firms with inactive "paper" unions do not protect workers beyond what the Labor Law stipulates them to do.

For active real unions, union members and non-members enjoy positive premia on wages, insurances, fringe benefits and the probability of having a written contract. Given this, it is likely that workplaces with real unions may help to pre-empt spontaneous collective action and social unrest. This is because workers in workplaces with active real unions may be more likely than non-union workers, or workers in firms that only have "paper" unions, to communicate to the official organisation any dissatisfaction with working conditions. For inactive "paper" unions, union workers do have protections over the minimum legally required benefits, such as social insurance coverage and written contracts. Beyond these, workers in "paper" unions are treated almost the same as workers in non-unionised firms/workplaces. Our fixed-effect estimations suggest that these results are largely causal.

Unions in China do not have incentives to treat covered non-members and union members differently because their funding is mainly from governmental subsidy and employer-contributions. Also, funding is based on the number of workers in workplaces/firms rather than the number of union members. Yet we observe consistently larger premia for union members on wages, insurances, and fringe benefits when comparing union members and union-covered non-members. The membership premium is particularly remarkable for wages, where the advantage for the members is twice as

large as for the non-members. Finally, consider happiness and mental health: migrant union members are not only better-paid and get better fringe benefits and other social insurance coverages, but they are happier than migrant workers in non-unionised firms. Moreover, many union-membership benefits contribute to union members being happier than their counterparts in non-unionised firms. Further, having a formal complaint channel is important to workers' mental health.

Several questions remain. First, might our findings for rural-urban migrant workers apply to all Chinese workers? Clearly our data do not allow us to address this. However, studies using data at firm level from firms employing urban and migrant workers have found similar effects to ours when estimating the impact of unions on earnings, hours worked, and social insurance participation (Yao and Zhong, 2013; and Ge, 2014). Second, are our findings likely to replicated beyond 2016, the last date for which we have information? The only study we found using more recent data, from 2017, reached the same conclusion as ours: that unions seem to play a positive role in protect workers' benefits (Zeng and Chen 2020). We are unable to gauge the union situation beyond 2017. Howell and Pringle (2019) compare Chinese industrial relations before and after 2013 and concluded that there is no fundamental change in the policy of urging ACFTU to represent workers' interests, despite a study indicating that the situation for ***labour scholars*** is probably becoming less friendly in recent years (Kuruvilla, 2018). We hope that future research will address these interesting questions.

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Tables and Graphs

Table 1: Union-coverage, Union Membership, and Paper-Unions

	2012		2013		2014		2015		2016		Combined	
	obs	%	obs	%	obs	%	obs	%	obs	%	obs	%
Panel A: Unionised firms and union members												
Non-unionised	41820	0.84	3510	0.78	3751	0.84	3857	0.82	3819	0.81	19119	0.82
Workers in unionised firms	824	0.16	977	0.22	698	0.16	861	0.18	918	0.19	4278	0.18
Of which: Covered non-member	540	0.11	611	0.14	496	0.11	524	0.11	514	0.11	2685	0.11
Union members	284	0.06	366	0.08	202	0.05	337	0.07	404	0.09	1593	0.07
	5006		4487		4449		4718		4737		23397	
Panel B: Union in workplace provide help to workers												
Union covered non-members	0.60		0.60		0.66		0.74		0.71		0.66	
Union members	0.79		0.88		0.84		0.88		0.91		0.87	
Panel C: % of individuals participating in union activities												
Union covered non-members	0.09		0.17		0.21		0.25		0.22		0.19	
Union members	0.82		0.83		0.81		0.85		0.82		0.83	
Panel D: Who makes the decisions on union leadership?												
	2012		2013		2014		2015		2016		Combined	
	Union N-Memb	Union Memb	Union N-Memb	Union Memb	Union N-Memb	Union Memb	Union N-Memb	Union Memb	Union N-Memb	Union Memb	Union N-Memb	Union Memb
Leaders from above	0.29	0.34	0.34	0.31	0.21	0.34	0.19	0.21	0.24	0.23	0.26	0.28
W/place leaders	0.23	0.32	0.31	0.27	0.40	0.26	0.36	0.35	0.27	0.35	0.31	0.31
W/place leaders with workers	0.20	0.12	0.09	0.16	0.08	0.05	0.10	0.16	0.16	0.18	0.12	0.14
Workers	0.03	0.10	0.04	0.10	0.07	0.15	0.10	0.08	0.05	0.02	0.06	0.08
Do not know	0.25	0.12	0.22	0.16	0.24	0.20	0.25	0.21	0.28	0.22	0.25	0.18
Panel E: Union member non-member and paper union and real union distribution												
	obs	%	obs	%	obs	%	obs	%	obs	%	obs	%
Union non-memb in paper union	220	0.27	243	0.25	169	0.24	136	0.16	150	0.16	918	0.21
Union non-mamb in real union	323	0.39	368	0.38	330	0.47	390	0.45	370	0.40	1781	0.41
Union memb in paper union	59	0.07	43	0.04	33	0.05	44	0.05	35	0.04	214	0.05
Union memb in real union	227	0.27	327	0.33	172	0.24	296	0.34	372	0.40	1394	0.32

Notes: Authors' own calculation from the RUMiC survey data.

Table 2: Summary Statistics

	Non-Union	Unionised: non-memb	Unionised: membs	Difference between: Non-U/ U N-M	Difference between: U N-M/ U memb	Difference between: U N-M: paper/real	Difference between: U memb: paper/real
A: Outcome variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Monthly real wage	2973.39	3106.06	3423.89	-132.68***	-317.83***	-323.11***	-319.68***
monthly working hours	242.54	232.99	219.38	9.54***	13.62***	0.91	12.46***
Fringe benefit:							
Net value: meal	243.46	275.92	283.35	-32.46***	-7.42	-57.82***	-49.23***
Net value: accom.	122.28	127.23	145.62	-4.95	-18.38***	-16.83*	-13.32
Insurances:							
Unemployment	0.27	0.69	0.78	-0.42***	-0.10***	-0.05***	-0.09***
Housing fund	0.32	0.78	0.87	-0.46***	-0.09***	-0.05***	0.01
Health	0.28	0.72	0.82	-0.44***	-0.10***	-0.07***	-0.05**
Work injury	0.11	0.32	0.54	-0.21***	-0.23***	-0.05***	-0.07**
Pension	0.32	0.77	0.85	-0.46***	-0.08***	-0.06***	-0.048**
No. of insurances	1.30	3.28	3.87	-1.98***	-0.59***	-0.28***	-0.26**
Written contract	0.44	0.89	0.92	-0.45***	-0.04***	-0.04***	0.00
Workers paid<min wage	0.03	0.01	0.01	-0.02***	-0.00	-0.007	-0.01**
Formal compl. channel	0.41	0.61	0.69	-0.20***	-0.08***	-0.16***	-0.17***
Mental health score	17.83	17.58	17.38	0.25**	0.20	0.71***	0.48
Happiness	0.24	0.25	0.25	-0.01	-0.00	-0.05**	-0.06*
B: Personal variables							
Age	33.38	33.84	34.16	-0.46**	-0.31	1.87***	1.13
Males	0.55	0.63	0.68	-0.08***	-0.047***	0.03	0.05
Year since 1st mig (year)	8.66	10.25	11.08	-1.58***	-0.83***	1.17***	0.88
Current job tenue (year)	3.94	5.38	6.92	-1.45***	-1.54***	1.03***	0.50
Married	0.65	0.71	0.75	-0.06***	-0.04***	0.05***	0.03
Good health	0.85	0.84	0.87	0.01	-0.03***	-0.06***	-0.07***
Good Sch perform.	0.18	0.23	0.26	-0.05***	-0.03**	-0.04**	-0.02
Education:							
Illiteratre	0.02	0.01	0.01	0.01***	0.00	0.01*	0.00
Primary school	0.12	0.07	0.04	0.04***	0.03***	0.00	0.02
Junior high	0.47	0.45	0.39	0.02**	0.05***	0.04***	0.05
High school	0.18	0.21	0.24	-0.03***	-0.03***	-0.02	-0.03
Vocational	0.10	0.14	0.15	-0.04***	-0.00	-0.01	-0.01
Uni and above	0.11	0.11	0.16	-0.00	-0.05***	-0.02	-0.03
C: Firm variables:							
Firm >50 employees	0.41	0.87	0.82	-0.46***	0.05***	-0.01	0.01
Ownership:							
Private Sector	0.84	0.46	0.43	0.38***	0.03*	0.04***	-0.06*
State Sector	0.09	0.27	0.32	-0.18***	-0.05***	-0.01	0.09***
Foreign Sector	0.04	0.25	0.22	-0.20***	0.03**	-0.03*	-0.02
Industry:							
Manufacturing	0.15	0.51	0.46	-0.36***	0.05***	-0.03*	0.07**
Retail and services	0.62	0.29	0.34	0.32***	-0.05***	0.05**	-0.05
High-end services	0.10	0.11	0.10	0.005	0.011	-0.02**	0.02
D: Additional variabls:							
Risk	6.28	5.83	5.63	0.45	0.20	-0.03	-0.39
Trust	2.37	2.14	2.15	0.23	-0.01	0.05	0.02

Notes: 1) Authors own calculation using RUMiC survey data. Column (4)=(1)-(2) compares mean difference between worker in non-unionised firms and those non-members in unionised firms. Column (5)=(2)-(3) compares within unionised firms the mean difference between non-union members and union members. Column (6) compares between paper and real unions among unionised non-members, and column (7) between paper and real unions among unionised members. 2) *** p<0.01, ** p<0.05, * p<0.1

Table 3: Selected Results from OLS Estimation of Union Earnings Premium

Panel A: Combine paper/real union	Model 1	Model 2	Model 3	Model 4	Model 5
Covered non-union member	0.044***	-0.007	0.018***	0.010	0.008
	[0.008]	[0.007]	[0.007]	[0.007]	[0.007]
Covered union member	0.117***	0.030***	0.040***	0.037***	0.037***
	[0.010]	[0.009]	[0.009]	[0.009]	[0.009]
Observations	23,397	23,397	23,397	23,397	23,397
R-squared	0.175	0.334	0.410	0.434	0.437
Panel B: separate paper/real unions	Model 1	Model 2	Model 3	Model 4	Model 5
Non-union member in paper union	-0.004	-0.046***	-0.020*	-0.029**	-0.030***
	[0.013]	[0.012]	[0.011]	[0.011]	[0.011]
Union member in paper union	0.055**	-0.025	-0.002	0.003	0.004
	[0.027]	[0.024]	[0.023]	[0.022]	[0.022]
Non-member in real union	0.069***	0.012	0.038***	0.030***	0.028***
	[0.010]	[0.009]	[0.008]	[0.009]	[0.009]
Union members in real union	0.126***	0.038***	0.047***	0.043***	0.042***
	[0.011]	[0.010]	[0.010]	[0.010]	[0.010]
Observations	23,397	23,397	23,397	23,397	23,397
R-squared	0.176	0.335	0.411	0.435	0.437

Notes: (1) Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1. (2) Control variables included for Model 1 are hours worked, city and year fixed-effects and a dummy indicating panel sample; Model 2 adds personal characteristics (age and its squared term, year since migration, gender, dummy for married, education level, school performance, self-assessed health); Model 3 adds current job experience and occupation category controls; Model 4 adds firm level controls (firm size, ownership and industry); Model 5 adds self-assessed risk and trust.

Table 4: Panel Sample: Selected Results from OLS and FE Wages Equations

	OLS		Fixed-Effect	
	Model 1	Model 5	Model 1	Model 5
Panel A: Combined "paper"/real unions	(1)	(2)	(3)	(4)
Covered non-union member	0.035***	0.006	0.021**	0.016*
	[0.010]	[0.009]	[0.009]	[0.009]
Covered union member	0.125***	0.051***	0.044***	0.037***
	[0.012]	[0.011]	[0.012]	[0.012]
Observations	15,652	15,652	15,652	15,652
R-squared	0.184	0.456	0.232	0.256
Number of id			5,436	5,436
	Model 1	Model 5	Model 1	Model 5
Panel B: Separate "paper" /real unions	(1)	(2)	(3)	(4)
Non-union member in paper union	-0.021	-0.038***	0.012	0.005
	[0.015]	[0.013]	[0.012]	[0.012]
Union member in paper union	0.023	-0.014	-0.023	-0.032
	[0.032]	[0.027]	[0.025]	[0.025]
Non-member in real union	0.065***	0.031***	0.027***	0.024**
	[0.012]	[0.010]	[0.010]	[0.010]
Union members in real union	0.140***	0.061***	0.055***	0.048***
	[0.013]	[0.012]	[0.012]	[0.012]
Observations	15,652	15,652	15,652	15,652
R-squared	0.186	0.457	0.233	0.257
Number of id			5,436	5,436

Notes: (1) Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1. (2) The estimations are based on models (1) and (5) excluding time-invariant individual characteristics.

Table 5: Selected Results from FE Estimations for Other Benefits

Panel A: OLS Results	(1) Hours	(2) Log Fringe Benef	(3) No. of Insurances	(4) Contract	(5) Formal Channel	(6) Happy
Non-union member in paper union	-4.931**	0.283**	0.632***	0.134***	0.017	-0.032
	[2.503]	[0.111]	[0.066]	[0.016]	[0.019]	[0.020]
Union member in paper union	-8.834*	0.437*	0.985***	0.145***	0.092**	-0.033
	[5.140]	[0.228]	[0.135]	[0.034]	[0.038]	[0.040]
Non-member in real union	-0.369	0.566***	0.770***	0.159***	0.128***	0.029*
	[1.977]	[0.088]	[0.052]	[0.013]	[0.015]	[0.016]
Union members in real union	-9.492***	1.036***	1.119***	0.145***	0.201***	0.037**
	[2.213]	[0.098]	[0.058]	[0.015]	[0.016]	[0.018]
Observations	15,652	15,652	15,652	15,652	15,633	10,802
R-squared	0.163	0.266	0.433	0.377	0.199	0.068
Panel B: FE Results	(1) Hours	(2) Log Fringe Benef	(3) No. of Insurances	(4) Contract	(5) Formal Channel	(6) Happy
Non-union member in paper union	2.325	0.215**	0.246***	0.053***	0.001	-0.028
	[2.639]	[0.109]	[0.062]	[0.017]	[0.024]	[0.027]
Union member in paper union	-4.126	0.113	0.468***	0.056	0.028	0.008
	[5.565]	[0.230]	[0.131]	[0.036]	[0.050]	[0.055]
Non-member in real union	-2.862	0.453***	0.228***	0.099***	0.122***	0.017
	[2.259]	[0.093]	[0.053]	[0.015]	[0.020]	[0.023]
Union members in real union	0.775	0.546***	0.461***	0.090***	0.169***	0.063**
	[2.725]	[0.113]	[0.064]	[0.018]	[0.024]	[0.028]
Observations	15,652	15,652	15,652	15,652	15,633	10,802
R-squared	0.025	0.041	0.052	0.044	0.039	0.035
Number of id	5,436	5,436	5,436	5,436	5,436	3,924

Notes: (1) Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1. (2) The estimations are based on model (5) specification. The happiness question was only answered by people who were present at the time of the survey. Hence the sample is smaller than our normal panel sample

Appendix Tables

Table A: Sample Elimination and Sample Distribution

	2012		2013		2014		2015		2016		Combined	
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Initial sample	10394		10619		11074		10998		11141		54226	
Not in working age	1696	0.16	2198	0.21	2528	0.23	1973	0.18	2070	0.19	10465	0.19
Remaining observations	8698		8421		8546		9025		9071		43761	
Subjects are not working	1127	0.13	1054	0.13	1051	0.12	1029	0.11	1070	0.12	5331	0.12
Remaining observations	7571		7367		7495		7996		8001		38430	
Subjects are self-employed	2530	0.33	2738	0.37	2919	0.39	3126	0.39	3114	0.39	14427	0.38
Remaining observations	5041		4629		4576		4870		4887		24003	
Others	5	0.00	92	0.02	78	0.02	107	0.02	104	0.02	386	0.02
Monthly wage <500 or >20000	30	0.006	50	0.010	49	0.011	45	0.009	46	0.010	220	0.010
Final working sample	5006		4487		4449		4718		4737		23397	
Representative	1929	0.38	1573	0.35	1623	0.37	1796	0.38	1568	0.33	84789	0.36
Panel	3077	0.62	2914	0.65	2826	0.63	2922	0.62	3169	0.67	14908	0.64

Notes: Authors' own calculation from the RUMiC survey data

Online Appendices

Appendix A: RUMiC Survey and Definition of Variables

RUMiC Survey:

RUMiC survey is a panel survey, conducted by the Australian National University and funded mainly by the Australian Research Council Grants (LP066972 and LP140100514)[22] The survey was aimed to collect data to better understand internal migration in China. RUMiC started with three different samples: the Urban Household sample (UHS), the Rural Household sample (RHS), and the Rural-Urban Migrant sample (MHS). The initial wave was conducted in 2008 with all three samples but soon in 2011 due to funding limitation, the team decided to drop the UHS and RHS, and only focus on MHS. Thus, from 2011 onwards, RUMiC only comprises the MHS. The survey lasted until 2016.

The initially survey of the MHS comprises 5000 randomly selected migrant households from 15 cities in 9 provinces. The selected cities were Guangdong, Dongguan, Shenzhen, Luoyang, Hefei, Bengbu, Chongqing, Shang- hai, Nanjing, Wuxi, Hangzhou, Ningbo, Wuhan and Chengdu.

[22] Other funding agencies include the AusAID (Australia then aid agency), Ford Foundation, IZA, Beijing Lochain Express Services Ltd, Rio Tinto Services Limited and the World Bank.

Table A1 Definiation of Variables Reported in Summary Statistics

Variable Name	Question	Definition
Monthly real wage[1]	For this job, how much is the average monthly salary? (Yuan/Month)	CPI adjusted Answers
Monthly working hours	How many days per week on average do you work at current primary job? How many hours per day on average do you work at current primary job?	Days × Hours
Net value: meal	How much is the estimated value of the meal provided by your work unit per month? (Yuan) How much is your allowance for meal per month? (Yuan) How much is deducted from your salary for catering per month? (Yuan)	Value of Meals +Allowances -Deductions
Net value: accommodation.	How much is the value of accommodation provided by your work unit per month in your estimation? (Yuan) How much are you subsidized for accommodation per month? (Yuan) How much is deducted from your salary for accommodation per month? (Yuan)	Value of Accom provided +Subsidies -Deductions
Unemployment insurance	Do you have unemployment insurance? ①Paid by employer ②Paid by yourself ③Paid by both employer and yourself ④Yes, but not sure paid by whom ⑤None ⑥Don't know ⑦Not applicable	Equals one if answering ① & ③ Equals zero if answering ②, ④, ⑤
Housing fund	Do you have house accumulation fund? ①Paid by employer ②Paid by yourself ③Paid by both employer and yourself ④Yes, but not sure paid by whom ⑤None ⑥Don't know ⑦Not applicable	Equals one if answering ① & ③ Equals zero if answering ②, ④, ⑤
Health insurance	Do you have any medical insurance in cities? ①Paid by employer ②Paid by yourself ③Paid by both employer and yourself ④Yes but not sure paid by whom ⑤None ⑥Do not know ⑦Not applicable	Equals one if answering ① & ③ Equals zero if answering ②, ④, ⑤
Work Injury insurance	Do you have employment injury insurance? ①Paid by employer ②Paid by yourself ③Paid by both employer and yourself ④Yes, but not sure paid by whom ⑤None ⑥Don't know ⑦Not applicable	Equals one if answering ① & ③ Equals zero if answering ②, ④, ⑤
Pension	Do you have pension insurance? ①Paid by employer ②Paid by yourself ③Paid by both employer and yourself ④Yes, but not sure paid by whom ⑤None ⑥Do not know ⑦Not applicable	Equals one if answering ① & ③ Equals zero if answering ②, ④, ⑤
Number of insurances	N/A	Sum of the last 5 variables
Written contract	Q1: Type of your current primary job ① Fixed term contract ② Flexible term contract ③ Fixed duty contract ④ Non-contract casual ⑤ Casual housekeeping without pay ⑥ Self-employed ⑦ Temporary job ⑧ Others Q2: Have you signed the contract? ①Yes ②No	Equal one if (Q1=① or ② or ③) &(Q2=①) Equal Zero if (Q1=④ or ⑦) or (Q2=②)
Workers paid<min wage	N/A	Equals one if Raw monthly wage < year-city minimum wage Otherwise, zero
Formal complaint channel	Who will you be most likely to ask for help in your unit if you are treated unfair? ①Family or friends ②Hometown association ③Workmates ④Labour union ⑤ Manager/Supervisor ⑥Party ⑦Lawyer or Arbitration ⑧None ⑨Unknown ⑩Endured ⑪Quit ⑫Others (Please specify)	Equals one if answering ④–⑦ Otherwise, zero
Mental health score	GHQ12[2](See Online Appendix Table A2 for the full list of questions)	The Sum of participant's answers to the 12 questions
Happiness[3]	You were happy with a view to each part of your life ①Very ②Fairly ③Not so much ④ Not at all	Equals one if answering ① Otherwise, zero

Note: 1. We use reported monthly wages as the measure for workers' earnings instead of hourly earnings due mainly to the measurement error in hours worked. The monthly working hours observed in our data are subject to a heaping problem. In our regression analysis we do control for hours worked; 2. GHQ12 is widely used to screen for mental health problems in psychological and medical studies. It consists of 12 questions, focusing on "two main classes of phenomena: inability to carry out one's normal 'healthy' functions, and emergence of new phenomena that are distressing" The answer to each question has a 4-point score, rating from not stressed ①, slightly stressed ②, fairly stressed ③to highly stressed ④. The RUMiC survey asked respondents, who were 16 years or older and present at the time of the survey to answer these questions.; 3. The happiness question is at the end of 12 mental health questions (GH12). This question was only asked individuals who at the time of survey was present. Hence, the sample for both mental health and happiness questions are smaller. If we define happiness to include those answering ② together, the results are similar

Table A1 Definition of Variables Reported in Summary Statistics (Continue)

Variable Name	Question	Definition
Age	Age (Full Year)	N/A
Males	Gender ① Male ② Female	Equal one if answering ①
Year since 1st migration	When did you start your first job in urban area? (Year)	Survey year minus answer to this question
Current job tenue	When did you start this job? (Year)	Survey year minus answer to this question
Married	Marital Status: ① Married ② Remarried ③De Facto ④ Divorced ⑤ Widowed ⑥ Never Married	Equals one if answering ①–③ Otherwise, zero
Good health	Current health status (compare with same age group) ①Very good ②Good ③Just so so ④ Not good ⑤ Very bad	Equal one if answering ①, ② Otherwise, zero
Good Sch perform.	How about your academic performance in your class just before you left school? ① Very good ② Good ③ Average ④ Poor ⑤ Very poor ⑥ Don't know	Equal one if answering ①, ② Equal zero if answering ③–⑤
Firm >50 employees	Including yourself, how many employees are there in your work unit? ①1 ②2-5③6-7 ④8-20 ⑤21-49 ⑥50-99 ⑦100-999 ⑧1000 and above ⑨Not sure, less than 50 people in estimation ⑩Not sure, more than 50 people in estimation	Equals one if answering⑥– ⑧, ⑩ Otherwise, zero
Risk	Generally, some people prefer to take risk, while others try to avoid any risk. If it is to rank the risk from low to high as 0 to 10 (as shown by the following chart), 0 is "never take risk", 10 is "most likely to take risk", which level do you belong to? (choose a number from 0 to 10)	N/A
Trust	Generally, do you think that most people are trustworthy? Or do you think you had better be careful when dealing with other people? ① Most people are trustworthy ② The more careful, the better ③ Don't know	Equal one if answering ① Equal zero if answering ②
Education Level:	Highest level of education you completed? ①never attend any school②complete 5-year primary education ③attend 5-year primary education without completion④complete 6-year primary education ⑤attend 6-year primary education without completion ⑥complete 2-year junior high school⑦ attend 2-year junior high school without completion ⑧complete 3-year junior high school ⑨attend 3-year junior high school without completion ⑩ Complete 2-year high school ⑪ attend 2-year high school without completion ⑫Complete 3-year high school ⑬attend 3-year high school without ⑭Complete vocational High School ⑮ Attend vocational high school without completion ⑯Complete secondary-high skill education ⑰ attend secondary-high skill education without completion ⑱Complete post secondary vocational education⑲ Attend post secondary vocational education without completion ⑳Complete vocational college education ㉑ Attend vocational college education without completion ㉒ Bachelor through tele-education ㉓ Complete Bachelor degree ㉔ attend bachelor-level education without completion ㉕ Complete post-graduate education ㉖ Complete Ph,D. ㉗ Don't know	
Illiterate		Equal One if answering ①,
Primary school		Equal One if answering ②-⑤,
Junior high		Equal one if answering⑥-⑨
High school		Equals one if answering⑩,-⑬
Vocational		Equals one if answering ⑭- ㉑,
Uni and above		Equals one if answering ㉒ – ㉖
Ownership:	Ownership type of the work unit of your primary job? ①Public service ②Public Not-for-profit ③Private not-for-profit ④ State owned ⑤State-holding corporations ⑥Collective owned ⑦ Collective-holding corporations ⑧Privately owned ⑨privately-holding corporations ⑩Foreign company ⑪ Foreign-holding corporation ⑫state-holding joint venture with foreign company ⑬collectively-holding joint venture with foreign company ⑭Privately- holding joint venture with foreign company ⑮Sole Traders⑯ Other ⑰Don't know	
Private Sector		Equal one if answering ⑧, ⑨, ⑭, ⑮
State Sector		Equal one if answering ①–⑦, ⑫, ⑬
Foreign Sector		Equal one if answering ⑩ ⑪
Industry:	①Agriculture, Forestry, Animal Husbandry and Fishery ②Mining ③Manufacturing④Production and Distribution of Electricity, Gas and Water ⑤Construction ⑥Transport Storage and Post ⑦IT, Computer Service and Software ⑧Wholesale and Retail Trade ⑨Hotel and Restaurants ⑩Banking ⑪Securities Industry ⑫Insurance Industry ⑬Real Estate ⑭Law ⑮Leasing and Business Service-accounting ⑯Leasing and Business Service-Others ⑰Scientific Research, Technical Service, and Geological Prospecting ⑱Water Management of Conservancy, Environment and Public Facilities ⑲Service-Agencies ⑳Service-Touring Guide ㉑ Service-Others ㉒ Education ㉓ Health ㉔ Social Securities and Social Welfare ㉕ News Pressing ㉖ Entertainment ㉗ Public Management and Social Organization ㉘ Housekeeping	
Manufacturing		Equals one if answering ③
Retail and services		Equals one if Answering ⑧ or ⑨
High-end services		Equals one if Answering ⑲- ㉑ , ㉓ ㉖

Table A2 Full List of GHQ12 Questions

In the last few weeks, did you feel ….?	
Q1	you did anything with ①concentration, not being distracted. ②being distracted occasionally. ③being distracted at times. ④being often distracted and unable to concentrate.
Q2	you could not usually sleep well because of your worries. ①Not at all ②Slightly ③Fairly serious ④Very serious
Q3	you played a positive role in many things. ①Truly so ②To some extent ③Rarely ④Not at all
Q4	you were dealing with things ①very decisively ②quite decisively ③less decisively ④indecisively
Q5	you were mentally under pressure ①Never ②Slightly ③Considerably ④Seriously
Q6	it was impossible to overcome difficulties ①Never ②Slightly ③Considerably ④Seriously
Q7	the daily life was interesting ①Very ②Fairly ③Not quite ④Not at all
Q8	you did not escape from the difficulties at work, study and life ①Never ②Seldom ③Sometimes ④Often
Q9	you were down or depressed ①Never ②Slightly ③Considerably ④Seriously
Q10	you often did not have any confidence in yourself ①Never ②Slightly ③Considerably ④Seriously
Q11	you often could not recognize any of your own value ①Never ②Slightly ③Considerably ④Seriously
Q12	you were happy with a view to each part of your life ①Very ②Fairly ③Not so much ④ Not at all

Appendix B: Unconditional Age-Earnings and YSM-Earnings Distribution:

Figure B1: Unconditional age-earning profile by union-status

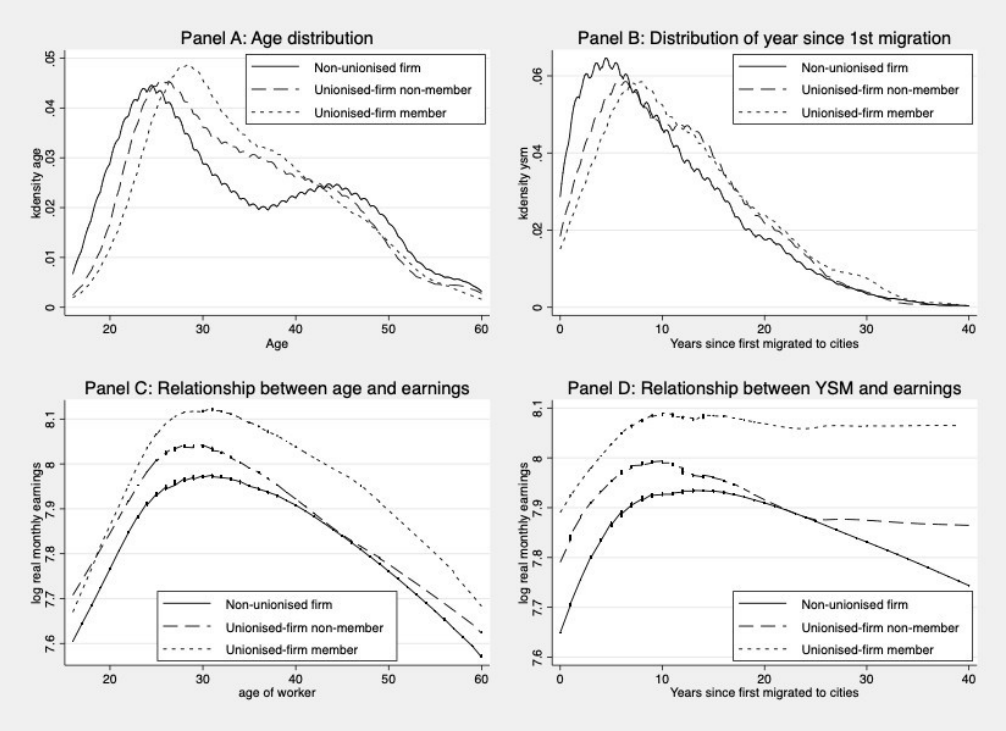

Figure B1 presents the distributions of age and years since the migrant first migrated to cities, as well as the unconditional age-earnings and year-since-migration-earnings profiles for the three groups of workers. Panel A shows that, while individuals in non-unionised firms on average are not too much younger than the other two groups of workers (see Table 2) there are differences in the shapes of age distributions. In particular, there are bimodal age distribution for workers from non-unionised firm (peaking at mid-twenties and mid-forties) and single modal distributions for the other two groups (peaking at late 20s and early 30s for non-members and members from unionised firms, respectively). Panel B indicates that the shapes of the distributions for years since the first migration[23] among the three groups are quite similar, but those from the unionised firms on average have around one year longer city work experience. Panel C of the figure shows that at all ages individuals working in unionised firms receive higher earnings than their counterparts from non-unionised firms. Thus, the earnings gap between the two types of firms is not driven by the differential age distributions. There are some differences between members and non-members from unionised firms. While the non-members earn more than their counterparts in non-unionised firms before the age of 40, union members earn more than non-members in union covered firms (and workers from non-unionised firms) at all ages, particularly for those aged 25 years or older. Similar patterns are observed when we examine the relationship between earnings and years since first migration (Panel D).

[23] This variable is defined as the survey year minus the year of first migrating to a city. In other words, it ignores circular migration experience between the two data points.

Appendix C: Selection of Union Status

To further investigate selection, we estimate a multinomial logit model of union status with workers in non-union firms/workplaces as the reference group. The model is estimated in two versions, one that does not consider "paper" vs. real unions and the second version that takes the type of union into account. Thus, in the first version, we have three groups: workers in non-unionised firms/workplaces (reference group), those who are in unionised firms/workplaces but not union members, and those who are in unionised firms/workplaces and are members. In the second version, we have five groups. Within the unionised members and non-members we separate them into 1. "paper" union non-members; 2. real union non-members; 3. "paper" union members; and 4. real union members.

Ideally we would like to follow the same specification as equation (1) in Section 4 of the main paper. However, due to the non-linear estimation method, the large number of dummy variables stops the model from converging. To avoid this problem, we use simplified occupation, ownership and industry dummy variables for the version that uses five rather than 3 categories of union status. The results from estimating the multinomial regression with all controls included are presented in Table C1 below.

The results show that, among other things, more education and performing well at school, as well as current job tenure, are positively associated with being in unionised workplaces for either members or non-members. Untrusting people are more likely to work in unionised workplaces relative to the non-unionised workers and risk-loving plays little role in the selection. When we separate union-non-members and members by whether they work in workplaces with "paper" or real unions, we find that all four groups are more educated than workers in non-unionised workplaces, but in terms of age and performance at school, those in the "paper" unions (both members and non-members) are more like workers in the non-unionised workplaces. These results suggest that there are signs of positive selection on observables. There are also signs of negative selection. For example, workers in "paper" unions are less likely to have good health relative to their non-unionised counterparts.

Note two issues here: first, the mechanisms behind selection for unionised non-members and unionised members are quite different. Being in unionised workplaces are decisions made by both individuals and workplaces, while agreeing to join a union once in the unionised workplace should mainly be an individual's own

decision. Second, the selection effect estimated is based on observables. Selection on unobservables is unable to detect and harder to mitigate.

Table C1: Multinomial logit estimation results

	Combine paper/real unions		Separate paper/real union choices			
	Union-covered		Paper Union		Real Union	
	non-memb	member	non-memb	member	non-memb	member
	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.053**	0.115***	0.000	0.083	0.078***	0.125***
	[0.021]	[0.029]	[0.031]	[0.067]	[0.025]	[0.030]
Age squared	-0.001***	-0.002***	0.000	-0.001	-0.001***	-0.002***
	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]
Year since 1st migration	0.006	0.010	0.010	0.021	0.005	0.008
	[0.005]	[0.006]	[0.007]	[0.015]	[0.006]	[0.007]
Males	-0.049	0.089	0.002	0.325*	-0.003	0.094
	[0.058]	[0.073]	[0.086]	[0.176]	[0.065]	[0.074]
Married	0.190***	0.279***	0.247**	0.333	0.161*	0.267***
	[0.072]	[0.091]	[0.110]	[0.224]	[0.082]	[0.095]
Junior high	0.304***	0.682***	0.387***	0.454	0.313***	0.819***
	[0.094]	[0.140]	[0.139]	[0.309]	[0.110]	[0.150]
Senior high	0.462***	1.028***	0.461***	0.706**	0.519***	1.218***
	[0.105]	[0.150]	[0.156]	[0.335]	[0.122]	[0.159]
Vocational	0.557***	0.899***	0.676***	0.595	0.547***	1.090***
	[0.118]	[0.165]	[0.174]	[0.373]	[0.135]	[0.174]
Uni and above	0.555***	1.295***	0.670***	1.175***	0.510***	1.463***
	[0.129]	[0.172]	[0.194]	[0.391]	[0.148]	[0.180]
Perform well at school	0.190***	0.221***	0.057	0.264	0.250***	0.215***
	[0.063]	[0.077]	[0.097]	[0.182]	[0.072]	[0.080]
Healthy	-0.047	0.080	-0.295***	-0.371*	0.100	0.174*
	[0.069]	[0.091]	[0.095]	[0.190]	[0.082]	[0.097]
Current job experience	0.031***	0.080***	0.042***	0.071***	0.023***	0.083***
	[0.006]	[0.006]	[0.008]	[0.014]	[0.007]	[0.007]
Risk loving	0.008	-0.024	0.006	-0.065*	0.008	-0.020
	[0.012]	[0.015]	[0.018]	[0.034]	[0.014]	[0.015]
Dummy for trusting	-0.228***	-0.124*	-0.127*	0.097	-0.294***	-0.158**
	[0.051]	[0.063]	[0.075]	[0.146]	[0.060]	[0.066]
Occupation control	Yes			Yes		
Firm size control	Yes			Yes		
Ownership control	Yes			Yes		
Industry control	Yes			Yes		
City FE	Yes			Yes		
Year FE	Yes			Yes		
Dummy for panel data	Yes			Yes		
Observations	23397			23,397		
Pseudo R squared	0.31			0.27		

Notes: (1) Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1. (2) In the combined "paper" and real union estimation (Columns (1) and (2)), we use detailed occupation, ownership and industry controls, whereas in the separate estimations (Columns (3) to (6)) these controls are simplified to allow the model to converge

Appendix D:

Table D1: The Detailed Categories for Occupation, Industry, Ownership, and Firm Size

Occupations		
Owner of Private Firms	Professional Technicians	Managerial Employee
Sales (Non−self-employed)	Office Staff	Unclassified self−employees
	Waiters and Waitresses	Housekeeping Worker
Hairdressers and Beauticians	Maintainers and Installers	Cleaners
Other service providers	Security Guard	Drivers and Crews
Construction workers	Workers in Logistics	Manufacturing workers
Production service provider	Other Production related workers	Chef
Kitchen hand	Missing Occupation	
Ownership		
State Sector		
Public Service	Public Not-for-Profit	Private Not-for-Profit
State Controlled Share-Holding Corporations	Collectively Controlled Share-holdings	State Owned
Sate Controlled Joint Ventures	Collectively Owned	Collectively Controlled Joint Venture
Private Sector		
Private Owned	Private Controlled Share-holding Corporation	Private Controlled Joint Venture
Sole Proprietorship		
Foreign Sector		
Foreign Owned	Foreign Controlled	
Other Types		
Missing Ownership	Others	
Industry		
Agriculture Forestry, Farming and Fishing	Mining	Manufacturing
Electricity, Gas and Water	Construction	Traffic, Transport, Storage and Post
Information Transfer, Computer Services, Software	Wholesale and Retail Trade	Accommodation and Restaurants
Banking	Insurance	Securities
Real Estate	Tenancy and Business Service-Accountant	Tenancy and Business Service-Others
Legal Service	Scientific Research and Technical Service	Water, Environment, Public Establishment
Service-Agency	Service-Tourist guide	Service-Others
Education	Sanitation	Social Security and Social Welfare
News Pressing	Entertainment	Public Management and Social Organization
Housekeeping	Missing Industry	
Firm Size (number of workers)		
1	2 to 5	6 to 7
8-20	21-49	50-99
100-999	above 1000	Less than 50 (estimated)
Less than 50 (estimated)	Missing	

Note: 1). Professional Technicians are those workers who use professional knowledge in daily work. For example: Accountant and Geographic Designers; 2). Maintainer and Installers including auto mobile technicians, installers and maintainers for home appliance and other commercial products; 3). Workers in Logistics including Loaders, Porters, Delivery person, and Drivers

Appendix E:

Table E1: Full Results of OLS Estimation of Union Earnings Premium (Table 3)

Panel A: Combine paper/real union	Model 1	Model 2	Model 3	Model 4	Model 5
Covered non-union member	0.044***	-0.007	0.018***	0.010	0.008
	[0.008]	[0.007]	[0.007]	[0.007]	[0.007]
Covered union member	0.117***	0.030***	0.040***	0.037***	0.037***
	[0.010]	[0.009]	[0.009]	[0.009]	[0.009]
Age		0.040***	0.035***	0.034***	0.033***
		[0.002]	[0.002]	[0.002]	[0.002]
Age squared		-0.001***	-0.001***	-0.001***	-0.001***
		[0.000]	[0.000]	[0.000]	[0.000]
Year since 1st migration		0.005***	0.003***	0.003***	0.003***
		[0.000]	[0.000]	[0.000]	[0.000]
Males		0.180***	0.161***	0.153***	0.148***
		[0.005]	[0.005]	[0.005]	[0.005]
Married		0.072***	0.063***	0.063***	0.067***
		[0.007]	[0.006]	[0.006]	[0.006]
Junior high		0.082***	0.071***	0.069***	0.068***
		[0.008]	[0.007]	[0.007]	[0.007]
Senior high		0.153***	0.135***	0.129***	0.126***
		[0.009]	[0.009]	[0.009]	[0.009]
Vocational		0.157***	0.134***	0.128***	0.124***
		[0.010]	[0.010]	[0.010]	[0.010]
Uni and above		0.309***	0.253***	0.237***	0.233***
		[0.011]	[0.011]	[0.011]	[0.011]
Perform well at school		0.041***	0.033***	0.032***	0.030***
		[0.006]	[0.006]	[0.006]	[0.006]
Healthy		0.031***	0.028***	0.030***	0.030***
		[0.007]	[0.006]	[0.006]	[0.006]
Current job experience			0.003***	0.004***	0.004***
			[0.001]	[0.001]	[0.001]
Risk loving					0.008***
					[0.001]
Dummy for trusting					-0.019***
					[0.004]
Hours worked	Yes	Yes	Yes	Yes	Yes
Occupation control	No	No	Yes	Yes	Yes
Firm size control	No	No	No	Yes	Yes
Ownership control	No	No	No	Yes	Yes
Industry control	No	No	No	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Dummy for panel data	Yes	Yes	Yes	Yes	Yes
Observations	23,397	23,397	23,397	23,397	23,397
R-squared	0.175	0.334	0.410	0.434	0.437
Panel B: separate paper/real unions	Model 1	Model 2	Model 3	Model 4	Model 5
Non-union member in paper union	-0.004	-0.046***	-0.020*	-0.029**	-0.030***
	[0.013]	[0.012]	[0.011]	[0.011]	[0.011]
Union member in paper union	0.055**	-0.025	-0.002	0.003	0.004
	[0.027]	[0.024]	[0.023]	[0.022]	[0.022]
Non-member in real union	0.069***	0.012	0.038***	0.030***	0.028***
	[0.010]	[0.009]	[0.008]	[0.009]	[0.009]
Union members in real union	0.126***	0.038***	0.047***	0.043***	0.042***
	[0.011]	[0.010]	[0.010]	[0.010]	[0.010]
Observations	23,397	23,397	23,397	23,397	23,397
R-squared	0.176	0.335	0.411	0.435	0.437

Notes: Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1.

Appendix F:

Table F1: What Benefit is Related to Happiness? (FE Results)

	Happiness as the Dependent Variable									Mental health
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Non-union member in paper union	-0.028	-0.028	-0.031	-0.030	-0.029	-0.029	-0.024	-0.032	-0.027	0.333
	[0.027]	[0.027]	[0.027]	[0.027]	[0.027]	[0.027]	[0.026]	[0.027]	[0.026]	[0.330]
Union member in paper union	0.012	0.009	0.005	0.007	0.009	0.009	0.005	0.011	0.002	-0.283
	[0.055]	[0.055]	[0.055]	[0.055]	[0.055]	[0.055]	[0.054]	[0.023]	[0.054]	[0.677]
Non-member in real union	0.015	0.017	0.014	0.013	0.017	0.016	0.013	0.006	0.009	-0.147
	[0.023]	[0.023]	[0.023]	[0.023]	[0.023]	[0.023]	[0.022]	[0.055]	[0.022]	[0.281]
Union members in real union	0.061**	0.063**	0.059**	0.060**	0.063**	0.062**	0.059**	0.055**	0.053*	-0.139
	[0.028]	[0.028]	[0.028]	[0.028]	[0.028]	[0.028]	[0.027]	[0.028]	[0.028]	[0.346]
Log real wages	0.057**							0.052**	0.038	-0.893***
	[0.024]							[0.024]	[0.024]	[0.298]
Log fringe benefits		-0.001						-0.001	-0.001	0.011
		[0.003]						[0.003]	[0.003]	[0.032]
No. of insurances			0.010**					0.008*	0.008*	-0.016
			[0.005]					[0.005]	[0.005]	[0.058]
Written contracts				0.040**				0.032*	0.030*	-0.169
				[0.017]				[0.017]	[0.017]	[0.211]
Hours worked					0.000			0.000	0.000	0.000
					[0.000]			[0.000]	[0.000]	[0.001]
Formal complain channels						0.005		0.004	-0.003	-0.500***
						[0.012]		[0.012]	[0.011]	[0.143]
Mental health problems							-0.015***		-0.015***	
							[0.001]		[0.001]	
Observations	10,802	10,802	10,802	10,802	10,802	10,795	10,802	10,795	10,795	10,795
R-squared	0.035	0.034	0.035	0.035	0.034	0.034	0.067	0.036	0.069	0.028
Number of id	3,924	3,924	3,924	3,924	3,924	3,923	3,924	3,923	3,923	3,923

Notes: (1) Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1. (2) The estimations are based on model (5) specification. The happiness question was only answered by people who were present at the time of the survey. Hence the sample is smaller than our normal panel sample.

Appendix G:

Table G1: Sensitivity Test of Alternative Definitions on "Paper" vs. Real Unions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Alternative definition 1	Log Real Wage	Hours	Log Fringe Benef	No. of Insurances	Contract	Formal Channel	Happy
Non-union member in paper union	0.010	4.984	0.313**	0.311***	0.060***	-0.020	0.004
	[0.014]	[3.210]	[0.133]	[0.075]	[0.021]	[0.029]	[0.032]
Union member in paper union	-0.025	-2.772	0.206	0.619***	0.090*	0.074	-0.116*
	[0.032]	[7.097]	[0.294]	[0.167]	[0.046]	[0.064]	[0.068]
Non-member in real union	0.018*	-2.895	0.376***	0.209***	0.087***	0.107***	-0.001
	[0.010]	[2.125]	[0.088]	[0.050]	[0.014]	[0.019]	[0.021]
Union members in real union	0.042***	0.048	0.505***	0.447***	0.084***	0.155***	0.070**
	[0.012]	[2.669]	[0.111]	[0.063]	[0.017]	[0.024]	[0.027]
Observations	15,652	15,652	15,652	15,652	15,652	15,633	10,802
R-squared	0.258	0.027	0.040	0.053	0.044	0.038	0.035
Number of id	5,436	5,436	5,436	5,436	5,436	5,436	3,924
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: Alternative definition 2	Log Real Wage	Hours	Log Fringe Benef	No. of Insurances	Contract	Formal Channel	Happy
Non-union member in paper union	0.011	3.170	0.452***	0.295***	0.088***	0.028	0.025
	[0.012]	[2.578]	[0.107]	[0.061]	[0.017]	[0.023]	[0.026]
Union member in paper union	0.022	-1.238	0.359**	0.344***	0.078***	0.136***	0.012
	[0.016]	[3.677]	[0.152]	[0.086]	[0.024]	[0.033]	[0.036]
Non-member in real union	0.019*	-3.785*	0.296***	0.193***	0.076***	0.108***	-0.017
	[0.010]	[2.278]	[0.094]	[0.054]	[0.015]	[0.021]	[0.023]
Union members in real union	0.044***	0.339	0.536***	0.518***	0.087***	0.155***	0.076**
	[0.013]	[2.911]	[0.121]	[0.068]	[0.019]	[0.026]	[0.030]
Observations	15,652	15,652	15,652	15,652	15,652	15,633	10,802
R-squared	0.258	0.027	0.041	0.053	0.044	0.037	0.035
Number of id	5,436	5,436	5,436	5,436	5,436	5,436	3,924

Notes: 1). Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0; **2).** Alternative definition 1 include, in addition to unions being regarded as providing help to workers, all unions whose leaders were appointed by people within the workplace (by workplace leaders alone, leader and workersjointly, or workers alone); **3)**. Alternative definition 2 excludes all unions whose leaders were appointed by people from above the workplace, including those which were regarded as providing help.

Appendix H:

Table H1: FE Results on earnings premium for a sample of workers who did not switch firms

	3 or more years	4 or more years	5 years
Non-union member in paper union	0.004	0.003	-0.001
	[0.015]	[0.018]	[0.021]
Union member in paper union	-0.027	-0.027	-0.021
	[0.030]	[0.033]	[0.036]
Non-member in real union	0.028**	0.038**	0.028
	[0.014]	[0.016]	[0.020]
Union members in real union	0.042**	0.052***	0.052**
	[0.017]	[0.020]	[0.026]
Observations	4,966	3,415	2,155
R-squared	0.31	0.342	0.401
Number of id	1,263	746	431