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Transforming informal work and livelihoods in China

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Abstract: The informal sector has long been viewed as a locus of the disadvantaged, unskilled, and inexperienced workers in under-developed and developing economies. Workers in the informal sector, however, can learn skills and gain experience that could help them switch to better-paying jobs in the formal sector. But evidence of this is limited. China constitutes an important case study because it is the most populous country and has the largest labour force, consisting of over 290 million rural-to-urban migrants whose employment is mostly informal. Using three waves of nationally representative household surveys from 2014 to 2018, we study how the livelihoods of Chinese workers change when transitioning to different work statuses within or between formal and informal sectors. Our results show that transitioning jobs from the informal to the formal sector and from the self-employed to the wage-employed increases earnings, which improves the livelihoods of Chinese workers.

Key words: China, informal sector, livelihoods, earnings

JEL classification: E26, J31, J46

Tables: at the end of the paper

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1 Introduction

The received wisdom that the informal sector is a place of residual employment for impoverished, marginalized, and vulnerable workers originates from early studies of the labour markets of low- and middle-income countries. From this traditional point of view, the informal sector has long been characterized as a hub for the poor and the vulnerable. The informal sector, however, can also be seen as a dynamic sector of budding entrepreneurs and the staging ground for the development of firms which may eventually employ a large number of workers (Alaniz et al. 2020). There has been some evidence that the informal sector may also help disadvantaged workers to become more competitive by gaining experience for accumulating human capital (Liang et al. 2016), meaning that the marked rise in informal employment globally, and particularly in China, has drawn attention to ambiguity in how informality should be conceived.

Before China began its economic reform and opening-up policies in 1978, the country viewed every sector as formal—no sector was informal under the socialist regime. During the transition from a planned economy to a market economy, informal employment has prevailed across the country. Although some studies have attempted to define informality and to examine informal employment in China (Cai and Wang 2004; Hu and Li 2006; Wan 2008), there is no generally accepted definition of the informal sector. This paper addresses the ambiguity of the informal sector and explicitly takes into account the heterogeneity in the sector by distinguishing between the self-employed and the wage-employed and by dividing the informal sector into upper and lower tiers to estimate the effects of changing jobs on workers' earnings.[1] Previous studies have often used datasets that are either cross-sections or lack information about rural–urban migrants. We use a nationally representative longitudinal dataset which covers both urban and rural areas, containing 95 per cent of the Chinese population, to estimate the change in Chinese workers' livelihoods when they transition to different work statuses within or between formal and informal sectors.

Our work makes several contributions to the existing literature. First, China constitutes an important case study as it has the world's largest population and because of the vast size of its informal economy. Second, informal employment is a phenomenon among almost all Chinese rural–urban migrant workers—estimated at 290 million people in 2019 (National Bureau of Statistics of China 2020).[2] Our study adds to the limited evidence on the formal and informal employment of rural–urban migrants in China (Li and Tang 2002; Wan 2008, 2009) and offers an important lesson for other developing countries that are experiencing rapid rural–urban migration and urbanization. Other countries may not have the same formal structure of constraints imposed on rural–urban migrants, but if their urban infrastructures cannot keep up with the influx of new people then migrant workers may be at similar risks of economic vulnerability and poor living standards. Third, women are disadvantaged in the Chinese labour market because of cultural norms and a prevailing preference for sons. From a gender perspective, we examine how job transitions can affect the earnings of female workers.

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[1] We present a method for assigning workers to such sectors in Figure A1 and Table A1 in Appendix A and show the mean earnings of a job ladder by work status in Figure B1 and Table B1 in Appendix B. Tables C1 to C3 in Appendix C present the work status dynamics in the case of China.

[2] According to our calculations using the 2014 China Family Panel Studies dataset, informal employment among migrant workers (in cities) accounts for 81–86 per cent of their total employment, depending on the definition used. The figure is 93 per cent in rural areas.

Policy makers are constrained by the lack of evidence on causes of informality and the most effective mechanism for reducing informality and strengthening decent work in the sector, especially for rural–urban migrants.[3] The paper contributes to increasing the evidence on the heterogeneity of the informal economy in China by using a nationally representative longitudinal survey of Chinese individuals, families, and communities in contemporary China. Our empirical framework allows us to control for a wide array of potential confounders to identify the causal effect of transitioning between different work statuses. We assess the magnitude of different earnings gaps within or between the informal and formal sectors using fixed-effects ordinary least squares (OLS) estimations. In particular, we separate the informal sector into upper and lower tiers. From the 38,000 observations covering the 2014–18 period, this division shows that the lower-tier informal self-employed dominate the informal economy, with almost two-thirds of people working in the informal sector. The upper-tier informal wage-employed comprise 22 per cent, the lower-tier wage-employed comprise 13 per cent, and the upper-tier self-employed comprise about 1 per cent.

The literature claims that, in China, the informal economy had a significant role in sustaining high employment and inclusive economic growth during China's transition to a market economy from the early 1990s to the 2000s. We further show that transitioning from the informal sector to the formal sector, from self-employed to wage-employed, and from the lower tier to the upper tier, helped to improve the livelihoods of Chinese workers after the country entered a ' new normal' stage of economic development.[4]

2 Literature

Approximately two billion women and men aged 15 and above—61.2 per cent of the world's employed population—earn their livelihoods in the informal economy (ILO 2018). These workers are denied decent working conditions not out of choice but because of a lack of job opportunities in the formal sector and a lack of other livelihood means and skills. The ILO (2018) estimated that 85.8 per cent of employment in Africa, 68.2 per cent in Asia and the Pacific, 68.6 per cent in the Arab States, 40 per cent in the Americas, and 25.1 per cent in Europe and Central Asia was informal.[5]

Kanbur (2017) reviewed studies from India and around the world and provided answers to questions relating to: the definition, magnitude, and trend of informality; the causes of and consequences for an increasing informal sector; and what workable and desirable policy responses to informality can be developed. He showed that over 80 per cent of Indian workers were

[3] To the best of our knowledge, Li (1999) and Liang et al. (2007) are the only two studies that examine the dynamics of movements between self-employment and wage employees, and between informal and formal employment in China. In particular, no one has examined transitions between a more nuanced definition of the informal sector which distinguishes between upper-tier and lower-tier informal sectors.

[4] The Wikipedia page 'New Normal: 2012 China's economic slowdown' indicates that since 2012, China's economy has shown a marked slowdown, with growth rates declining from double digit levels (before the 2008–09 financial crisis) to around 7 per cent in 2014. In 2014, a statement by the President of China indicated that the country was entering a 'new normal'. The term was subsequently popularized by the press and came to refer to expectations of 7 per cent growth rates in China for the foreseeable future. It was indicative of the Chinese government's anticipation of moderate but perhaps more stable economic growth in the medium to long term. Available at: https://en.wikipedia.org/wiki/New_normal#2012_China%27s_economic_slowdown (accessed 19 August 2020).

[5] When excluding agricultural jobs, informal employment drops to 50.5 per cent globally. However, non-agricultural informal employment is still high in Africa, the Arab States, and Asia and the Pacific.

employed in the informal sector despite India's high economic growth over the last 20 years, and that there was no uniform trend of decreasing informality in Africa, Latin America, and South Asia. Using a theoretical model, he showed that state regulations, higher wages through development, and the evolution of technology were the main causes of non-declining informality, the consequences of which were linked to poverty. La Porta and Shleifer (2014) presented dual models of informality and showed consistent evidence that 'informal firms stay permanently informal, they hire informal workers for cash, buy their inputs for cash, and sell their products for cash, they are extremely unproductive, and they are unlikely to benefit much from becoming formal'. They suggested that economic growth can reduce informality, and their evidence strongly supports the prediction that as the economy develops, informality declines at a slow pace.

Nordman et al. (2016) used a four-wave panel dataset from Madagascar covering the 2000–04 period to estimate the magnitude of a variety of formal–informal sector earnings gaps. They estimated standard earnings equations at various conditional quantiles over the earnings distribution and found that the sign and magnitude of the formal–informal sector earnings gaps depended on workers' employment status and their relative positions in the earnings distribution. Their results showed that in many cases, such as the relatively low wages of formal sector wage jobs, informal self-employed jobs have more or equal pay than formal wage jobs for men.

Hu and Yang (2001) and Hu and Li (2006) outlined the transition of formal and informal employment in urban areas in China from the mid-1990s to the early and mid-2000s, showing that informal employment was about 20 per cent of urban employment in 1995 and was expected to exceed 50 per cent by 2010. Xue and Gao (2012) used the 1 per cent census data to investigate the size, features, and earnings disparity of informal employment in urban China. They showed that informal employment made up as much as 59 per cent of China's urban employment and that the hourly earnings of formal workers were 1.65 times higher than those of informal workers. Cai and Wang (2004) attempted to interpret China's employment growth in the urban area from 1978 to 2003 and argued that urban informal employment was the product of China's rapidly developing labour market and was the main source of employment growth. Wu (2009) looked at the destination of China's informal employment and claimed that formalizing the labour market should not be the government's focus. He argued that the Chinese government should focus on policies that promote sustainable economic growth rather than forcing informal sector employers and employees to switch to the formal sector by signing contracts.

Li and Tang (2002) used a dataset from Beijing in 2002 to study Chinese rural–urban migrant workers in the informal sector. Their qualitative analysis suggested that the informal economy and informal employment of rural–urban migrants should not be viewed as entailing underground or illegal activities. Du and Wan (2014) used the China Urban Labor Survey in 2001, 2005, and 2010 to examine the effect of the informal employment of rural–urban migrants on poverty. Their results showed that the 5.65 per cent poverty rate of rural–urban migrants was higher than the poverty rate of local residents (4.15 per cent), and quantile regression estimations demonstrated that informal employment reduced the poverty rate for migrant workers. These findings are in line with the argument by Wu (2009) that policy makers should not plan to formalize the informal sector by understating the positive contribution of informal employment.

3 Data, descriptive statistics, and empirical strategy

3.1 Data

Our paper uses the 2014, 2016, and 2018 China Family Panel Studies (CFPS)—China's first large-scale academically oriented longitudinal survey project—obtained from the Institute of Social Science Survey at Peking University, to construct a three-year individual-level panel dataset. We empirically examine the employment transitions between and within informal and formal sectors to study how job changes affect the livelihoods of Chinese workers. The CFPS carried out its baseline survey in 2010 and four waves of full sample follow-up surveys in 2012, 2014, 2016, and 2018. Its baseline sample covers 25 out of 30 provinces, municipalities, and autonomous regions in China, which comprise 95 per cent of the Chinese population, making CFPS a nationally representative sample.[6] The 2010 baseline survey interviewed 14,960 households and 42,590 individuals (33,600 adults and 8,990 youths), covering urban and rural areas. As the survey questions that can identify formal and informal sectors are not available until 2014, we use the three waves (2014, 2016, and 2018) that consistently have this identifying information.

The CFPS surveys were carried out at three levels: the community level (villages and urban neighbourhood questionnaires), the family level (family roster and family questionnaires), and the individual level (adult and child questionnaires). We mainly use the adult questionnaire for individuals who were at least 16 years old at the time of the interviews. The job module in the adult questionnaire first asked individuals for their current employment status, i.e. whether they were employed or had been employed since the previous interview (or during the past year). Individuals were asked whether they worked for wages or were self-employed and whether they worked in agriculture or in a non-agriculture job. The interviewees were then sorted into five job categories: 1) family agricultural work; 2) individual, private business, and other self-employment; 3) agricultural work for other families; 4) employed; and 5) non-agricultural casual workers.

The survey asked individuals specific job-related questions based on these five categories. Based on the method in Danquah et al. (2019), we used this information to divide interviewees into formal and informal workers, and further distinguished between upper- and lower-tier informal jobs.

To identify formal and informal workers, we classified the workers in job classes 2) and 4) as having a job in the formal sector if the work unit provided work insurance (including retirement pensions, health insurance, unemployment insurance, work injury insurance, and maternity insurance) and housing provident funds, or if the interviewee paid for insurance premiums as an individual or private enterprise owner. Otherwise, we classified them as having an informal job. We viewed job classes 1), 3), and 5) as informal jobs and no job protection questions were asked.

To distinguish between upper- and lower-tier informal employment (wage-employed and self-employed), we made the following distinctions:

- The upper-tier informal wage-employed includes individuals working for wages in the formal sector (in government, party, people's organizations, military; state-owned and collectively owned public institutions; state-owned or state-controlled enterprises;

[6] The CFPS sample is drawn from 25 provinces, cities, and autonomous regions in mainland China (excluding Hong Kong, Macao, and Taiwan). Four autonomous regions (Xinjiang, Qinghai, Inner Mongolia, and Ningxia) and one province (Hainan) were not included in the survey.

companies in receipt of foreign capital investment or investment from Hong Kong, Macao, Taiwan; or in firms employing seven or more people) but where their employers do not provide any work insurance.

- The upper-tier informal self-employed are self-employed persons in individual and private businesses in which the size of the work unit is equal to or greater than seven people, or the self-employed in job classes 1), 3), and 5) who have college degrees or above.
- The lower-tier informal wage-employed are wage workers in the informal sector whose work units do not provide any work insurance. For example, labourers in individual and private businesses, agricultural workers, and non-agricultural casual workers are in this category.
- The lower-tier informal self-employed are the self-employed in the informal sector who have high school degrees or below. This category is mainly made up of farmers and individually owned small-scale businesses.

In summary, we define six categories of workers split by employment status (wage-employed vs. self-employed), formality status (formal vs. informal), and the tier of work in the informal sector (upper vs. lower) to estimate the effects on workers' earnings of transitions between and within different work statuses.[7]

3.2 Descriptive statistics

Table 1 shows the descriptive statistics of workers' characteristics for the years 2014, 2016, and 2018 which we use in estimating the earnings equations in Section 3.3. Column 1 of Table 1 presents the means, standard deviations, minimums, and maximums for the pooled data, which contains 63,194 observations (22,293 in 2014, 21,531 in 2016, and 19,370 in 2018). For the pooled three years, 48 per cent of workers are male, 74 per cent have agricultural hukou status,[8] 49 per cent reside in urban areas, and the average age is 43.51 years. Ninety-one per cent of workers are of Han ethnicity, the largest ethnic group in China. With regard to marital status, 86 per cent are married with a spouse present. The average number of years of schooling is eight years, which is reasonable as the CFPS covers both rural and urban residents. About 8 per cent are Chinese Communist Party (CCP) members. Having CCP membership may help workers to change jobs in the Chinese context since many studies have found wage premiums for CCP membership (Appleton et al. 2009; Bian and Logan 1996; Lam 2003; Li et al. 2007; Liu 2003; Morduch and Sicular 2000; Xie and Hannum 1996) and on the attainment of elite occupation (Li and Walder 2001; Walder 1995). Approximately one-quarter of those observed have religious beliefs (Buddhism, Taoism, Muslim, and Christianity (including Roman Catholicism, Protestantism), or worship ancestors).

Next, in Table 2, we present work status by year and by the entire sample. Our study focuses on the number and share of the wage-employed and the self-employed in the formal and informal

employed. As the numbers for each year in columns 3 to 5 of Table 2 are similar to the three-year pooled sample, we focus on the statistics from the pooled sample, which contains 63,194 observations. With regard to employment status, 1.28 per cent of workers are unemployed, 21.6

[7] Details of the work status definition and operationalization are in Appendix A. We provide transition matrices of work status by year, gender, hukou, and firm ownership in Appendix Figures D1 to D6.

[8] Note that every Chinese personal hukou status is categorized by type (agricultural vs. non-agricultural) and by location (urban vs. rural). A person inherits hukou status from parents at birth, including both hukou type and hukou location (Song 2014), and it is very difficult to change. We also divide the sample by agricultural and non-agricultural hukou status and present the summary statistics for agricultural and non-agricultural work in Appendix Table D1.

per cent are not in the labour force, and 78.12 per cent are employed. In the employed category, almost a quarter (23.3 per cent) of workers in the pooled sample are in the formal sector, while about three-quarters (76.7 per cent) are in the informal sector. Among those employed in the formal sector, 92.78 per cent are wage-employed and only 7.22 per cent are self-employed, implying that wage-earning jobs dominate the formal economy. In the informal sector, 21.73 per cent of workers are upper-tier wage-employed and 13.04 per cent are lower-tier wage-employed. Self-employed workers make up a disproportionate share (64.3 per cent) of the lower-tier informal sector, but they comprise only 0.92 per cent of the upper-tier informal sector.

Table 3 presents the summary statistics for key variables in the earnings equations by work status. The average real annual earnings are CNY20,020 over the 2014–18 period. The self-employed in the formal sector have the highest annual earnings (CNY47,470) but also the largest standard deviation. The self-employed in the upper-tier informal sector have the second-highest earnings (CNY46,210) and the wage-employed in the formal sector have the third-highest earnings (CNY43,700). The wage-employed in the upper-tier informal sector earn CNY27,070 and CNY23,360 in the lower-tier informal sector. However, self-employed workers in the lower-tier informal sector earn the least (CNY5,270) of all work statuses. Male workers make up 48 per cent of the sample and are over-represented in the formal sector and the upper-tier informal sector, but they only constitute 46 per cent of the self-employed in the lower-tier informal sector.

With regard to hukou status, in the lower-tier informal sector, 95 per cent of the self-employed and 79 per cent of the wage-employed have an agricultural hukou. On average, less than 50 per cent of formal wage-employed workers have an agricultural hukou, which is the smallest among the six work categories. Over three-quarters of workers in the formal sector have an urban hukou, whereas less than one-quarter of the lower-tier informal self-employed have an urban hukou.

Most of the workers are of Han ethnicity (over 87 per cent of all six categories) and married (over 81 per cent of all six categories). The formal sector wage-employed have an average of 12.26 years of schooling and the upper-tier informal self-employed have an average of 12.75 years of schooling. The lower-tier informal self-employed have the least number of years of schooling (5.68 years). With regard to CCP membership, 19 per cent of the formal wage-employed are CCP members, which is the highest of all categories. The upper-tier informal self-employed are next with 10 per cent being CCP members, followed by the lower-tier informal self-employed, 4–5 per cent of whom are CCP members. For religion, there is consistency across all informal worker categories where about one-quarter of informal workers have a religious belief. The formal wage-employed is the lowest category (21 per cent) with religious beliefs and the formal self-employed has the highest number (33 per cent).

In relation to firm size, 34 per cent of workers are employed in firms with 1–10 employees, 39 per cent in firms with 11–100 employees, 17 per cent in firms with 101–500 employees, and 11 per cent work for large firms employing over 500 workers. As for area of activity, 46 per cent of workers are employed in agriculture, forestry, animal husbandry, and fishery. Overall, 90 per cent of the lower-tier informal self-employed work in this area. The second-largest category is manufacturing (14 per cent) where 32 per cent are formal wage-employed and upper-tier informal wage-employed. With regard to employer type, private enterprises and individually owned businesses have the largest share of workers (58 per cent) followed by 13 per cent for state-owned, state-controlled enterprises.

3.3 Empirical model

Our empirical model estimates fixed-effect regressions for the magnitude of different informal–formal earnings gaps with workers' earnings as the dependent variable. As the earnings data for

some self-employed and the wage-employed in both the lower- and upper-tier informal sectors include non-positive values, we use the inverse hyperbolic sine (IHS or arcsinh) transformation to address the issue. This method has grown in popularity among applied econometricians because it is similar to a logarithm and allows zero-valued (and even negative valued) observations to be kept (Burbidge et al. 1988; MacKinnon and Magee 1990; Pence 2006). We compute elasticities based on the method by Bellemare and Wichman (2020). Besides the level of earnings, we transform the dependent variable by cube-root and concave log-like transformation methods, which allow non-positive values as suggested by Ravallion (2017).

We define six categories of work status using the method in Danquah et al. (2019): formal wage-employed (FW), formal self-employed (FS), upper-tier informal wage-employed (UIW), upper-tier informal self-employed (UIS), lower-tier informal wage-employed (LIW), and lower-tier informal self-employed (LIS). Taking the formal wage-employed (FW) as the reference group, the estimated equation is:

$$y_{it} = \alpha + \beta_1 FS_{it} + \beta_2 UIW_{it} + \beta_3 UIS_{it} + \beta_4 LIW_{it} + \beta_5 LIS_{it} + X'_{it}\gamma + \lambda_i + T_t + \varepsilon_{it}, \quad [1]$$

where y_{it} is the earnings for worker *i* in year *t*, and X is a vector of worker characteristics, which include age, age squared, years of schooling, dummies for sex, hukou status, urban residency, Han ethnicity, marital status, CCP membership, and religious beliefs. We include province fixed effects λ_i and year fixed effects T_t to control for unobserved heterogeneity. Industry fixed effects are included in the full set of control variables specification. ε_{it} is the error term. The estimated coefficients β_1 to β_5 are interpreted as a measure of the conditional earnings premium (or penalty) experienced by workers who change their work status between informal sector jobs and formal sector employment (or the reversal). For example, $\beta_1$is interpreted as the conditional earnings gap between the formal self-employed and the formal wage-employed—the FS–FW gap. Likewise, β_2, β_3, β_4, and β_5 are the conditional earnings gaps for UIW–FW, UIS–FW, LIW–FW, and LIS–FW. Our identification of these conditional earnings gaps compares the earnings of movers and stayers and relies on our sample workers moving between the six work statuses from one year to the next. Standard errors are clustered at the province level.

To calculate the changes in earnings by work status transitions, we compute six cases of stayers and 30 cases of movers over a two-year period. For example, the changes in earnings for the six cases of stayers are:

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, FW_{i2} = 1\right] = \Delta_1 \quad [2]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FS_{i1} = 1, FS_{i2} = 1\right] = \Delta_2 \quad [3]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid UIW_{i1} = 1, UIW_{i2} = 1\right] = \Delta_3 \quad [4]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid UIS_{i1} = 1, UIS_{i2} = 1\right] = \Delta_4 \quad [5]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid LIW_{i1} = 1, LIW_{i2} = 1\right] = \Delta_5 \quad [6]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid LIS_{i1} = 1, LIS_{i2} = 1\right] = \Delta_6 \quad [7]$$

where $\Delta = (X'_{i2} - X'_{i1})\beta$. Equations [2] to [7] allow us to calculate changes in earnings for workers who do not change their work status from period 1 to period 2. For movers, if we take the formal wage-employed (FW) in period 1, for example, the five cases of moving are:

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, FS_{i2} = 1\right] = \Delta_1 + \beta_1 \quad [8]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, UIW_{i2} = 1\right] = \Delta_1 + \beta_2 \quad [9]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, UIS_{i2} = 1\right] = \Delta_1 + \beta_3 \quad [10]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, LIW_{i2} = 1\right] = \Delta_1 + \beta_4 \quad [11]$$

$$\mathrm{E}\left[y_{i2} - y_{i1} \mid FW_{i1} = 1, LIS_{i2} = 1\right] = \Delta_1 + \beta_5 \quad [12]$$

Equations [8] to [12] show the changes in earnings for those workers coming from the formal wage-employed (FW) and moving, respectively, into the formal self-employed (FS), the upper-tier informal wage-employed (UIW), the upper-tier informal self-employed (UIS), the lower-tier informal wage-employed (LIW), and the lower-tier informal self-employed (LIS). Likewise, the transitions of movers for FS, UIW, UIS, LIW, and LIS from period 1 to period 2 can be shown accordingly. Taken together, the changes in earnings for all 36 cases (six stayers and 30 movers), for example from period 1 to period 2, can be expressed as in Table 4.

4 Earnings gaps, job transitions, and changes of livelihoods

4.1 Main results

In Table 5 we report the fixed-effects OLS results from estimating equation [1]. The results in column 1 use levels of earnings as the dependent variable. To avoid the issue of non-positive earnings, column 2 adopts IHS-transformed earnings and column 3 takes on cube-root transformation. All models in the three columns use the formal wage-employed as the base category and include a full set of worker characteristics, year, province, and industry fixed effects.

Our preferred specification is the IHS-transformed earnings in column 2, which shows that in the formal sector, holding other variables constant, the self-employed (FS) earn 142 per cent less than the wage-employed. In the upper-tier informal sector, the wage-employed (UIW) earn 57 per cent less than the formal wage-employed (FW), and the self-employed (UIS) earn 159 per cent less than the formal wage-employed (FW). In the lower-tier informal sector, the wage-employed (LIW) earn 34 per cent less than the formal wage-employed (FW), and the largest earnings gap is between the lower-tier informal self-employed (LIS) and the formal wage-employed (FW), whereas LIS earn 235 per cent less than FW.

In column 1, which uses levels of earnings as the dependent variable, we find that the formal wage-employed (FW) earn CNY6,314 less than the formal self-employed (FS) and CNY1,104 less than the upper-tier informal self-employed, but the two estimates are statistically insignificant. On the other hand, the formal wage-employed (FW) have CNY12,713 more annual earnings than the upper-tier informal wage-employed (UIW). The earnings gaps further increase to CNY13,915 for the lower-tier informal wage-employed (LIW) and to CNY14,760 for the lower-tier informal self-

employed (LIS). Column 3 presents the results using cube-root earnings. The estimated gap coefficients are all negative and statistically significant, which is in line with our preferred results in column 2, but column 3 should be interpreted with caution because of the much larger magnitudes.

The bottom part of Table 5 column 2—the IHS-transformed earnings—presents the estimated percentage change of earnings (semi-elasticities) when transitioning out of formal wage-employment (FW) to the other five work statuses, calculated using the method in Bellemare and Wichman (2020). For example, when the formal wage-employed (FW) switch to the formal self-employed (FS), earnings drop by 76 per cent. Similarly, earnings decline by 43 per cent when switching to the upper-tier informal wage-employed (UIW) and drop to 81 per cent when switching to the upper-tier informal self-employed (UIS). Finally, if the formal wage-employed (FW) switch to the lower-tier informal sector, earnings reduce by 29 per cent for the wage-employed (LIW) and by 91 per cent for the self-employed (LIS).

In short, we find a substantial decline in earnings when workers transition to a self-employed job. The largest earnings loss is for transitioning to the lower-tier informal sector, which reduces workers' annual earnings on average by 91 per cent, followed by 81 per cent for the upper-tier informal and 76 per cent for the formal sectors—a 10−15 percentage points difference. The reduction in earnings for transitioning to the lower-tier formal wage-employed is 29 per cent and increases to 43 per cent for the upper-tier formal wage-employed. Our interpretation is that, by definition, the upper-tier informal wage-employed hold jobs in the formal sector but without work insurance. The formal sector provides a better and stable working environment than those of the lower-tier informal wage-employed. The data shows that despite having lower earnings, the upper-tier informal wage-employed have higher levels of satisfaction with their jobs than the lower-tier wage-employed in relation to safety, promotion opportunities, and working environment.

Taken together, the fixed-effects OLS results show that the livelihoods of Chinese workers could be improved 1) by switching occupational position: from being self-employed to wage-employed; and 2) by changing tier: from the lower-tier informal self-employed to the upper-tier informal self-employed.

4.2 Gender

We present the estimated results by gender using the formal wage-employed as the base category and IHS-transformed earnings in columns 1 and 2 of Table 6. Compared to the formal wage-employed (FW), formal self-employed (FS) females earn 89 per cent less; upper-tier informal wage-employed (UIW) females earn 69 per cent less; upper-tier informal self-employed (UIS) females earn 195 per cent less; lower-tier informal wage-employed (LIW) females earn 59 per cent less; and lower-tier informal self-employed (LIS) females earn 208 per cent less. Likewise, for male workers, the formal wage-employed (FW) earn 189 per cent more than the formal self-employed (FS), 45 per cent more than the upper-tier informal wage-employed (UIW), 140 per cent more than the upper-tier informal self-employed (UIS), 13 per cent more than the lower-tier informal wage-employed (LIW) [9], and 260 per cent more than the lower-tier informal self-employed (LIS).

If the female formal wage-employed change job to work as self-employed in the next period, their earnings decline by 59 per cent. Their earnings also decrease by 49 per cent, 86 per cent, 45 per cent, and 88 per cent when switching jobs to UIW, UIS, LIW, and LIS, respectively. In the same

[9] Note that the coefficient for LIW (-0.13) is statistically insignificant.

way, the earnings of the male formal wage-employed decline by 85 per cent, 36 per cent, 77 per cent, 12 per cent, and 93 per cent when they move to FS, UIW, UIS, LIW, and LIS, respectively.

From a gender perspective, we find that the main results in Section 4.1 still hold—transitioning out of self-employed jobs to wage employment increases female workers' earnings by between 10 and 43 percentage points. For male workers, the difference is even larger—between 41 and 81 percentage points. With regard to the informal sector tiers, the increase in earnings for the female self-employed who move from the lower-tier to the upper-tier is only 2 percentage points; within the wage-employed category, the same change results in a 4 percentage points increase. The transitions for male workers, however, are much larger (1–24 percentage point increases). This is because having a self-employed job often means a higher risk of earnings and less job security. In the data, we find that the variance (or coefficient of variation) in earnings for men is higher than for women, implying that for male workers switching jobs will generally result in a larger change in earnings than for females.

4.3 Hukou status, by type and location

Columns 3 to 6 of Table 6 show the results of hukou status by type (agricultural vs. non-agricultural) and by location (local vs. migrant). Compared to the formal wage-employed (FW), workers who have an agricultural hukou and work as formal self-employed (FS) have 118 per cent less earnings; likewise, the upper-tier informal wage-employed (UIW) have 54 per cent less earnings, the upper-tier informal self-employed (UIS) have 141 per cent less earnings, the lower-tier informal wage-employed (LIW) have 19 per cent less earnings, and the lower-tier informal self-employed (LIS) have 246 per cent less earnings. For workers who do not have an agricultural hukou, the formal wage-employed (FW) have 171 per cent more earnings than the formal self-employed (FS), 55 per cent more than the upper-tier informal wage-employed (UIW), 181 per cent more than the upper-tier informal self-employed (UIS), 81 per cent more than the lower-tier informal wage-employed (LIW), and 191 per cent more than the lower-tier informal self-employed (LIS).

If the formal wage-employed with an agricultural hukou change jobs to work as formal self-employed in the next period, then their earnings decline by 70 per cent. Their earnings also decrease by 42 per cent, 77 per cent, 18 per cent, and 92 per cent when switching jobs to UIW, UIS, LIW, and LIS, respectively. Similarly, the earnings of the formal wage-employed without an agricultural hukou decline by 82 per cent, 42 per cent, 84 per cent, 56 per cent, and 85 per cent when changing jobs to FS, UIW, UIS, LIW, and LIS, respectively. In short, the results by hukou type show the same findings, i.e. that transitioning from being self-employed to wage workers and from being lower-tier informal self-employed to upper-tier informal self-employed increase earnings for both agricultural and non-agricultural hukou workers.

Our study is particularly interested in understanding how the livelihoods of rural–urban migrants may change when moving to different work statuses. Columns 5 and 6 of Table 6 show the results for local workers and migrant workers. For migrants who are formal wage-employed (FW), earnings are 258 per cent more than those of the formal self-employed (FS), 61 per cent more than the upper-tier informal wage-employed (UIW), 221 per cent more than the upper-tier informal self-employed (UIS), 52 per cent more than the lower-tier informal wage-employed (LIW), and 252 per cent more than the lower-tier informal self-employed (LIS). Likewise, for the local formal wage-employed, earnings are 115 per cent more than those of the formal self-employed (FS), 54 per cent more than the upper-tier informal wage-employed (UIW), 141 per cent more than the upper-tier informal self-employed (UIS), 28 per cent more than the lower-tier informal wage-employed (LIW), and 230 per cent more than the lower-tier informal self-employed (LIS).

If the migrant formal wage-employed (FW) change jobs and work as self-employed (FS) in the next period, their earnings decline by 92 per cent. Their earnings decrease by 46 per cent, 89 per cent, 41 per cent, and 92 per cent when switching to UIW, UIS, LIW, and LIS, respectively. Similarly, when the local formal wage-employed (FW) change jobs to formal self-employed (FS), their earnings decline by 68 per cent, by 41 per cent when changing to upper-tier informal wage-employed (UIW), and by 77 per cent when changing to upper-tier informal self-employed (UIS). If switching jobs to the lower-tier informal sector, earnings decline by 24 per cent when switching to wage-employed (LIW) and by 90 per cent when switching to self-employed (LIS).

In essence, the results show that, compared to local workers, migrants have larger earnings deficits between the formal wage-employed job and other five categories of work statuses. Transitioning out of the formal wage-employed to all other work statuses reduces migrants' earnings substantially more than their local counterparts, especially for self-employed jobs (formal self-employed 92 per cent, upper-tier informal self-employed 89 per cent, and lower-tier informal self-employed 92 per cent). In other words, policy makers could enhance the livelihoods of migrants by revising, if eliminating is not entirely possible, the hukou system to close the rural–urban gap. Helping migrants to transition from the self-employed to the wage-employed can substantially (more than 50 percentage points from the estimation) increase their earnings. Where migrants are working as self-employed in the informal sector, to improve their livelihoods, the government can also help them to move from the lower-tier to the upper-tier informal self-employed.

5 Conclusion and policy guidance

Since China began its economic reforms and open-door policy in 1978, the country has been experiencing remarkable economic growth, with people's living standards having increased more than tenfold in the past forty years. Meanwhile, informality in China's labour market has also grown rapidly as the economy has developed. However, how transitioning jobs from the informal sector to the formal economy, or the reverse, affects the livelihoods of Chinese workers has remained unanswered. Our study fills this gap by using the latest three waves of a nationally representative longitudinal household survey dataset to estimate the changes in earnings for wage earners and the self-employed within and between the informal and formal sectors.

Our findings show that the formal wage-employed have the highest earnings among all work statuses. We find that transitioning from the informal sector to the formal sector helps improve Chinese workers' livelihoods. In particular, switching from being self-employed to being wage-employed in either the formal or informal sector helps to increase earnings. The self-employed in the informal sector can also enhance their livelihoods by changing jobs from the lower tier to the upper tier. The results are consistent by gender (female vs. male), hukou type (agricultural vs. non-agricultural), and hukou location (local vs. migrant).

Because of China's abundant labour supply in the informal sector—over 80 per cent of the 290 million rural–urban migrants—and insufficient labour demand in the formal sector, transitioning from the informal to the formal sector is practically difficult though not impossible. In 2013, the Chinese Academy of Social Sciences proposed a blueprint for promoting urban–rural integration. It is one of the factor market integration plans (capital, labour, and information) in the government's policy guidelines for addressing the imbalanced development between rural and urban areas. First, our empirical findings are in line with the urban–rural integration plan in calling for improving factor markets, enhancing infrastructures, and creating more job opportunities in the formal sector to facilitate the movement from the informal to the formal sector and the flow from the lower-tier to the upper-tier. Second, our findings suggest that enforcement of and

compliance with the 2008 Labor Contract Law should be strengthened. Under the law, the government mandates all employers to provide work insurance and pensions to employees, but noncompliance has been an issue (Gileset al. 2013). Offering social protection to the disadvantaged informal workers and the self-employed, as required by the law, can help enhance their livelihoods. Third, our findings suggest that there should be increased investment in human capital. Governments can provide education and training programmes to self-employed workers in the informal sector and the lower-tier; human capital theory and our empirical results show that education plays a pivotal role in such workers' earnings.[10] Last, we suggest that the hukou system should be revised or abolished. This institutional barrier of the hukou system has been discussed in numerous studies and has been criticized by commentators as the major culprit responsible for the increased urban–rural gap, rising income inequality, and threatened livelihoods.

Future research could extend the study through a distributional approach. Another potential extension would be to provide evidence of the effects on livelihoods for different types of firm ownership, especially the role played by state-owned enterprises and the thriving private firms during China's unprecedented economic transition.

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[10] See Tables D2 to D4 in Appendix D for full estimation results.

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Tables

Table 1: Summary statistics of workers' characteristics

	Pooled				2014				2016				2018			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Male	0.48	0.5	0	1	0.47	0.5	0	1	0.48	0.5	0	1	0.48	0.5	0	1
Ag. hukou	0.74	0.44	0	1	0.73	0.44	0	1	0.75	0.44	0	1	0.74	0.44	0	1
Urban	0.49	0.5	0	1	0.47	0.5	0	1	0.48	0.5	0	1	0.52	0.5	0	1
Age	43.51	12.51	16	64	42.98	12.86	16	64	43.36	12.55	16	64	44.28	12	16	64
Han ethnicity	0.91	0.28	0	1	0.92	0.28	0	1	0.91	0.28	0	1	0.91	0.29	0	1
Married	0.86	0.35	0	1	0.85	0.36	0	1	0.86	0.35	0	1	0.87	0.33	0	1
Education (year)	8.07	4.73	0	23	7.84	4.62	0	20	8.13	4.66	0	22	8.27	4.91	0	23
CCP member	0.08	0.27	0	1	0.06	0.24	0	1	0.08	0.27	0	1	0.09	0.29	0	1
Has religion	0.24	0.43	0	1	0.21	0.41	0	1	0.14	0.35	0	1	0.38	0.49	0	1
N	63,194				22,293				21,531				19,370			

Note: CCP denotes the Chinese Communist Party.

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Table 2: Work status, by employment status, occupational position, formality status, and tier

	Pooled		2014		2016		2018	
	N	%	N	%	N	%	N	%
Total	63,194	100	22,293	100	21,531	100	19,370	100
Unemployed	809	1.28	314	1.41	278	1.29	217	1.12
Not in the labour force	13,016	20.60	4,875	21.87	4357	20.24	3784	19.54
Employed	49,369	78.12	17,104	76.72	16896	78.47	15369	79.34
Formal	11,501	23.30	3,568	20.86	3,694	21.86	4,239	27.58
Wage-employed	10,671	92.78	3,325	93.19	3,452	93.45	3,894	91.86
Self-employed	830	7.22	243	6.81	242	6.55	345	8.14
Informal	37,868	76.70	13,536	79.14	13,202	78.14	11130	72.42
Upper-tier informal wage-employed	8,230	21.73	2,802	20.70	2,786	21.10	2,642	23.74
Upper-tier informal self-employed	350	0.92	116	0.86	125	0.95	109	0.98
Low-tier informal wage-employed	4,938	13.04	1,463	10.81	1,787	13.54	1,688	15.17
Low-tier informal self-employed	24,350	64.30	9,155	67.63	8,504	64.41	6,691	60.12

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Table 3: Summary statistics of key variables in each work status, 2014–18

	All		Formal				Informal								Unemployed		Not in the labour force	
							Upper-tier				Lower-tier							
			Self-employed		Wage-employed		Self-employed		Wage-employed		Self-employed		Wage-employed					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Annual earnings (CNY1000)	20.02	35.83	47.47	139.65	43.70	37.43	46.21	91.12	27.07	26.63	5.27	19.19	23.36	19.92				
Male	0.48	0.5	0.56	0.5	0.61	0.49	0.65	0.48	0.58	0.49	0.46	0.5	0.63	0.48	0.48	0.5	0.27	0.44
Ag. Hukou	0.74	0.44	0.56	0.5	0.44	0.5	0.58	0.49	0.73	0.45	0.95	0.22	0.79	0.4	0.59	0.49	0.61	0.49
Urban	0.49	0.5	0.75	0.44	0.76	0.43	0.69	0.46	0.57	0.49	0.24	0.43	0.53	0.5	0.69	0.46	0.62	0.49
Age	43.51	12.51	42.9	9.12	37.44	10.09	35.99	9.56	39.6	11.66	47.46	10.84	41.05	11.28	37.44	12.18	45.1	15.07
Han ethnicity	0.91	0.28	0.95	0.22	0.95	0.22	0.88	0.32	0.95	0.23	0.87	0.34	0.93	0.26	0.93	0.26	0.94	0.24
Married	0.86	0.35	0.93	0.25	0.81	0.39	0.87	0.34	0.81	0.39	0.92	0.27	0.86	0.35	0.71	0.45	0.81	0.39
Education	8.07	4.73	9.9	3.58	12.26	3.63	12.75	3.74	9.19	3.91	5.68	4.16	7.9	3.7	9.45	4.23	8.12	4.65
CCP member	0.08	0.27	0.09	0.28	0.19	0.39	0.1	0.3	0.08	0.26	0.05	0.21	0.04	0.2	0.04	0.2	0.06	0.23
Has religion	0.24	0.43	0.33	0.47	0.21	0.41	0.26	0.44	0.22	0.41	0.25	0.43	0.25	0.43	0.23	0.42	0.25	0.44
Size of the firm																		
1–10	0.34	0.47	0.88	0.32	0.1	0.3	0.78	0.42	0.17	0.38	1	0	1	0				
11–100	0.39	0.49	0.09	0.29	0.42	0.49	0.17	0.38	0.61	0.49	0	0	0	0				
101–500	0.17	0.37	0.01	0.12	0.27	0.44	0.04	0.19	0.16	0.36	0	0	0	0				
More than 500	0.11	0.31	0.01	0.1	0.21	0.41	0.01	0.12	0.06	0.25	0	0	0	0				
Area of activity																		
1. Agriculture, forestry, animal, husbandry and fishery	0.46	0.5	0	0.06	0.01	0.1	0.01	0.08	0.02	0.13	0.9	0.3	0.09	0.29				
2. Mining	0.01	0.1	0	0.06	0.03	0.17	0.01	0.08	0.01	0.12	0	0.01	0	0.07				
3. Manufacturing	0.14	0.35	0.15	0.36	0.32	0.47	0.16	0.37	0.32	0.47	0.01	0.12	0.1	0.3				

4. Production and supply of electricity, gas and water	0.01	0.09	0.01	0.09	0.03	0.16	0	0.05	0.01	0.12	0	0.01	0	0.05		
5. Construction	0.06	0.23	0.05	0.22	0.05	0.23	0.07	0.25	0.17	0.38	0	0.06	0.13	0.33		
6. Transportation, storage, and postal service	0.03	0.16	0.05	0.21	0.06	0.23	0.06	0.24	0.04	0.2	0	0.07	0.05	0.22		
7. Information transmission, computer service and software	0.01	0.09	0.01	0.09	0.03	0.16	0.01	0.09	0.01	0.1	0	0.01	0	0.06		
8. Wholesale and retail	0.08	0.26	0.41	0.49	0.07	0.26	0.31	0.46	0.09	0.28	0.05	0.21	0.13	0.34		
9. Hotel and catering service	0.03	0.18	0.16	0.37	0.02	0.14	0.16	0.37	0.07	0.25	0.02	0.13	0.06	0.24		
10.Finance	0.01	0.11	0	0.06	0.04	0.19	0	0.05	0.02	0.13	0	0.01	0	0.05		
11.Real estate	0.01	0.1	0	0	0.02	0.15	0.01	0.12	0.03	0.16	0	0.01	0.01	0.11		
12.Rental and commercial service	0.01	0.12	0.03	0.16	0.03	0.18	0.04	0.19	0.02	0.15	0	0.04	0.02	0.13		
13.Scientific research, technical service and geological prospecting	0	0.04	0	0	0.01	0.09	0	0	0	0.04	0	0	0	0.03		
14.Water resource, environment and public facility management	0.01	0.08	0	0.03	0.02	0.13	0	0.05	0.02	0.12	0	0	0	0.06		
15.Residential and other service industry	0.02	0.14	0.08	0.26	0.02	0.14	0.05	0.21	0.04	0.19	0.01	0.1	0.04	0.2		
16.Education	0.03	0.17	0.02	0.13	0.09	0.29	0.05	0.22	0.05	0.22	0	0.02	0.02	0.14		
17.Health, social security and public welfare	0.02	0.12	0.03	0.16	0.04	0.2	0.04	0.2	0.03	0.16	0	0.03	0.01	0.1		
18.Culture, sports and recreation	0.01	0.08	0.01	0.11	0.01	0.11	0.01	0.12	0.01	0.12	0	0.04	0.01	0.09		
19.Public administration and social organization	0.03	0.17	0	0	0.1	0.29	0	0.05	0.04	0.2	0	0	0.01	0.1		
20.Other industries	0.03	0.17	0	0	0	0.03	0	0	0	0.02	0	0	0.3	0.46		

Employer type												
1. Government/ party/ people's organization	0.06	0.24		0.09	0.29		0.05	0.22		0.01	0.07	
2. State-owned/ collectively owned public institution/ research Institute	0.09	0.29		0.16	0.36		0.06	0.23		0	0.06	
3. State-owned/ state-controlled enterprise	0.13	0.34		0.22	0.42		0.08	0.27		0	0.06	
4. Private enterprise/ individually-owned business	0.58	0.49		0.43	0.49		0.76	0.43		0.58	0.49	
5. Enterprise invested by Hong Kong/ Macao/ Taiwan capital	0.03	0.18		0.06	0.24		0.01	0.12		0	0	
6. Other enterprise	0.01	0.09		0.01	0.11		0.01	0.07		0	0.04	
7. Individual/family	0.08	0.26		0	0		0	0		0.37	0.48	
8. Residential community committee/ village committee/ autonomous organization	0.02	0.13		0.02	0.13		0.02	0.14		0.02	0.14	
9. Other	0.01	0.1		0.01	0.09		0.01	0.09		0.01	0.12	

Note: CCP denotes the Chinese Communist Party.

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Table 4: Changes in earnings from period 1 to period 2

		Period 2					
		FW	FS	UIW	UIS	LIW	LIS
Period 1	FW	Δ_1	$\Delta_1 + \beta_1$	$\Delta_1 + \beta_2$	$\Delta_1 + \beta_3$	$\Delta_1 + \beta_4$	$\Delta_1 + \beta_5$
	FS	$\Delta_2 - \beta_1$	Δ_2	$\Delta_2 - \beta_1 + \beta_2$	$\Delta_2 - \beta_1 + \beta_3$	$\Delta_2 - \beta_1 + \beta_4$	$\Delta_2 - \beta_1 + \beta_5$
	UIW	$\Delta_3 - \beta_2$	$\Delta_3 - \beta_2 + \beta_1$	Δ_3	$\Delta_3 - \beta_2 + \beta_3$	$\Delta_3 - \beta_2 + \beta_4$	$\Delta_3 - \beta_2 + \beta_5$
	UIS	$\Delta_4 - \beta_3$	$\Delta_4 - \beta_3 + \beta_1$	$\Delta_4 - \beta_3 + \beta_2$	Δ_4	$\Delta_4 - \beta_3 + \beta_4$	$\Delta_4 - \beta_3 + \beta_5$
	LIW	$\Delta_5 - \beta_4$	$\Delta_5 - \beta_4 + \beta_1$	$\Delta_5 - \beta_4 + \beta_2$	$\Delta_5 - \beta_4 + \beta_3$	Δ_5	$\Delta_5 - \beta_4 + \beta_5$
	LIS	$\Delta_6 - \beta_5$	$\Delta_6 - \beta_5 + \beta_1$	$\Delta_6 - \beta_5 + \beta_2$	$\Delta_6 - \beta_5 + \beta_3$	$\Delta_6 - \beta_5 + \beta_4$	Δ_6

Note: FW denotes formal wage-employed; FS denotes formal self-employed; UIW is upper-tier informal wage-employed; UIS is upper-tier informal self-employed; LIW is lower-tier informal wage-employed; LIS is lower-tier informal self-employed.

Source: authors' construction.

Table 5: Fixed effects OLS estimates

Base category:	(1)	(2)	(3)
Formal wage-employed (FW)	Earnings (level)	Earnings (inverse hyperbolic sine)	Earnings (cube-roots)
Formal self-mployed	6,314.36	-1.423***	-3.940***
(FS)	(8,664.73)	(0.139)	(0.989)
Upper-tier informal wage-employed	-12,713.12***	-0.565***	-4.405***
(UIW)	(1,416.64)	(0.036)	(0.263)
Upper-tier informal self-employed	1,103.57	-1.592***	-4.133**
(UIS)	(5,322.00)	(0.433)	(1.596)
Lower-tier informal wage-employed	-13,915.17***	-0.338***	-4.306***
(LIW)	(1,485.06)	(0.087)	(0.383)
Lower-tier informal self-employed	-14,760.01***	-2.350***	-9.144***
(LIS)	(1,821.72)	(0.136)	(0.489)
Year fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	49,194	49,194	49,194
Adjusted R-squared	0.243	0.261	0.456
$\xi(\text{Earnings}, \text{FS})$		-0.76	
$\xi(\text{Earnings}, \text{UIW})$		-0.43	
$\xi(\text{Earnings}, \text{UIS})$		-0.81	
$\xi(\text{Earnings}, \text{LIW})$		-0.29	
$\xi(\text{Earnings}, \text{LIS})$		-0.91	

Note: clustered robust standard errors at the province level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include a full set of worker characteristics. The full set of regression results are reported in Appendix Table D2. ξ (Earnings, work status) shows the percentage change of earnings (semi-elasticity) when transitioning from the formal wage-employed to another work status using the inverse hyperbolic sine (IHS or arcsinh) transformation.

Source: authors' calculation based on CFPS data (Institute of Social Science, Peking University 2018).

Table 6: Fixed effects OLS estimates by gender, hukou type, and hukou location

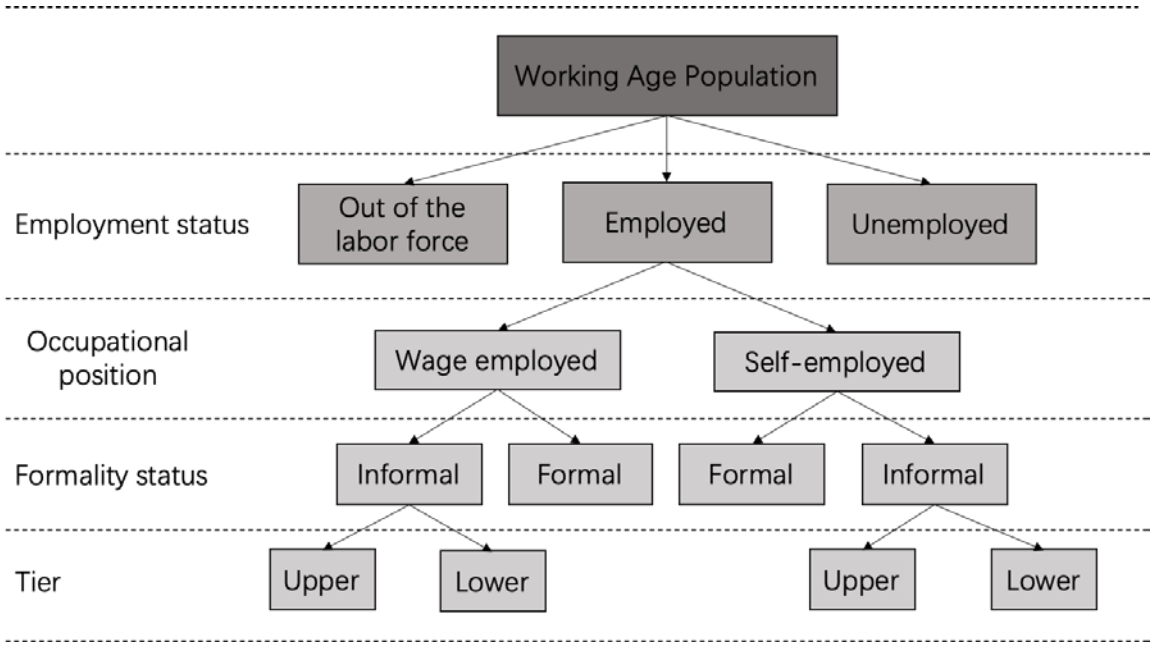
Base category:	(1)	(2)	(3)	(4)	(5)	(6)
Formal wage-employed (FW)	Female	Male	Non-ag. hukou	Ag. hukou	Local	Migrant
Formal self-mployed	-0.892***	-1.887***	-1.710***	-1.181***	-1.147***	-2.582***
(FS)	(0.160)	(0.231)	(0.231)	(0.149)	(0.146)	(0.561)
Upper-tier informal wage-employed	-0.689***	-0.447***	-0.548***	-0.543***	-0.535***	-0.614***
(UIW)	(0.069)	(0.045)	(0.040)	(0.049)	(0.036)	(0.092)
Upper-tier informal self-employed	-1.960**	-1.403***	-1.809***	-1.406***	-1.414***	-2.209***
(UIS)	(0.820)	(0.301)	(0.626)	(0.359)	(0.441)	(0.738)
Lower-tier informal wage-employed	-0.588***	-0.127	-0.814***	-0.192**	-0.275***	-0.521***
(LIW)	(0.128)	(0.085)	(0.124)	(0.086)	(0.086)	(0.170)
Lower-tier informal sefl-employed	-2.080***	-2.600***	-1.914***	-2.463***	-2.300***	-2.522***
(LIS)	(0.140)	(0.171)	(0.322)	(0.183)	(0.142)	(0.211)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,956	26,238	10,989	38,205	43,113	6,069
Adjusted R-squared	0.233	0.276	0.248	0.220	0.247	0.337
$\xi(\text{Earnings}, \text{FS})$	-0.59	-0.85	-0.82	-0.70	-0.68	-0.92
$\xi(\text{Earnings}, \text{UIW})$	-0.49	-0.36	-0.42	-0.42	-0.41	-0.46
$\xi(\text{Earnings}, \text{UIS})$	-0.86	-0.77	-0.84	-0.77	-0.77	-0.89
$\xi(\text{Earnings}, \text{LIW})$	-0.45	-0.12	-0.56	-0.18	-0.24	-0.41
$\xi(\text{Earnings}, \text{LIS})$	-0.88	-0.93	-0.85	-0.92	-0.90	-0.92

Note: dependent variable is inverse hyperbolic sine (IHS) earnings. Clustered robust standard errors at the province level in parentheses. All models include a full set of worker characteristics. The full set of regression results are reported in Appendix Tables D3 and D4. ξ (Earnings, work status) shows the percentage change (semi-elasticity) of earnings when transitioning from the formal wage-employed to another work status using the inverse hyperbolic sine (IHS or arcsinh) transformation. *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculation based on CFPS data (Institute of Social Science 2018, Peking University).

Appendix A: Defining and operationalizing the work status classification

Figure A1: Work status categorization—the case of China



Source: authors' elaboration based on CFPS data (Institute of Social Science, Peking University 2018).

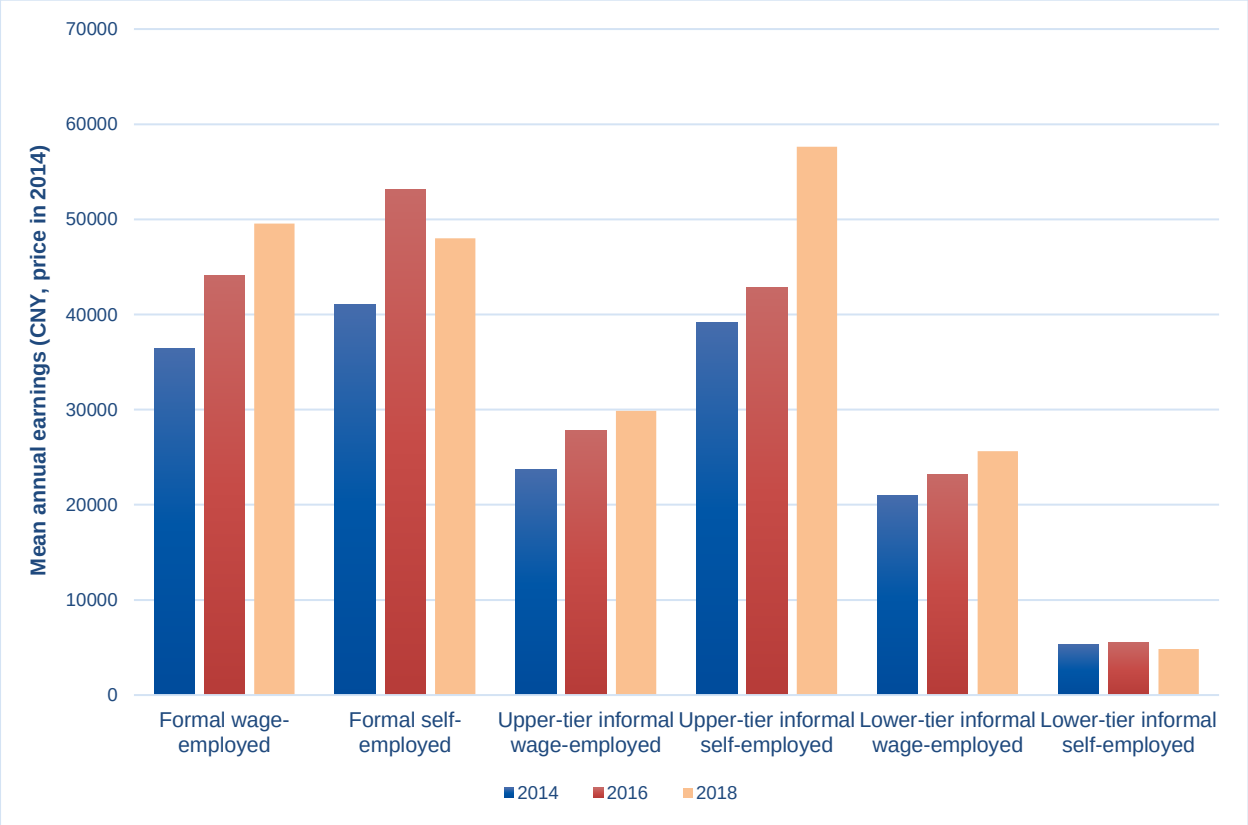
Table A1: Work status definition and operationalization—the case of China

Work status group	Definition/Operationalization
Formal self-employed	A person who is self-employed and pays work insurance (retirement pensions, medical insurance, unemployment insurance, work injury insurance, and maternity insurance) as an individual or a private business owner. Note that such work insurance belongs to work protection which has a higher protection level than New Rural Cooperative Medical Insurance and Urban Resident Basic Medical Insurance. Most Chinese residents, regardless of being employed or not, are included in the social protection system. It is, therefore, not straightforward to identify formal employment by whether they have work insurance in the case of China.
Upper-tier informal self-employed	A person who is self-employed in individual and private businesses in which the size of the work unit is equal to or greater than 7 people. Or the self-employed who have college degrees or above and in job classes 1 (family agricultural work), 3 (agricultural work for other families), and 5 (non-agricultural casual workers).
Lower-tier informal self-employed	A person who is self-employed in the informal sector and has a high school degree or below. Farmers and individually owned small-scale businesses dominate this category.
Formal wage-employed	The formal wage-employed are wage workers whose employers provide them with work insurance, such as retirement pensions, medical insurance, unemployment insurance, work injury insurance, and maternity insurance.
Upper-tier informal wage-employed	A person who works for wages in the formal sector (governments, party, people's organizations, military, state-owned and collectively owned public institutions, state-owned or state-controlled enterprises, companies with foreign capital investments or with investments from Hong Kong, Macao, Taiwan, or working in a firm employing seven or people) but where the employer does not provide work insurance.
Lower-tier informal wage-employed	An employed worker in the informal sector where the work unit does not provide any work insurance. These individuals include, for example, labourers employed by private businesses, agricultural workers, and non-agricultural casual workers.

Source: authors' elaboration based on CFPS data (Institute of Social Science, Peking University 2018).

Appendix B: Example of a job ladder in China

Figure B1: Mean earnings by work status—the case of China



Note: earnings of 2016 and 2018 are in 2014 prices.

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Table B1: Mean earnings by work status—the case of China

	Average annual earnings (CNY)		
	2014	2016	2018
Formal wage employees	36,429.4	44,109.27	49,553.82
Formal self-employed	41,032.37	53,165.38	48,003.88
Upper-tier informal wage employees	23,657.38	27,851.59	29,866.99
Upper-tier informal self-employed	39,107.29	42,837.14	57,631.67
Lower-tier informal wage employees	20,971.44	23,167.24	25,637.84
Lower informal self-employed	5,338.44	5,556.78	4,825.13

Note: mean annual earnings in the main job. Earnings of 2016 and 2018 are in 2014 prices.

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Appendix C: Work status dynamics in China

Table C1: Transition matrices across work status groups from 2014 to 2016—the case of China

				YEAR=2016						Share of stayers
				Self-employed			Wage-employed			
				Formal	Informal		Formal	Informal		
					Upper	Lower		Upper	Lower	
YEAR=2014	Self-employed	Formal		86.2	0.0	4.6	8.0	1.1	0.0	1.0
		Informal	Upper	0.0	57.9	2.6	7.9	28.9	2.6	0.3
			Lower	0.1	0.0	94.0	1.0	2.1	2.8	54.8
	Wage-employed	Formal		0.5	0.1	2.8	89.6	5.4	1.5	17.7
		Informal	Upper	0.3	1.3	13.5	7.8	68.8	8.3	9.5
			Lower	0.4	0.2	19.9	5.3	11.8	62.5	4.1
	TOTAL			1.2	0.5	58.5	19.8	12.7	7.2	87.4

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

Table C2: Transition matrices across work status groups from 2016 to 2018—the case of China

				YEAR=2018						Share of stayers
				Self-employed			Wage-employed			
				Formal	Informal		Formal	Informal		
					Upper	Lower		Upper	Lower	
YEAR=2016	Self-employed	Formal		29.0	6.5	44.1	7.5	4.3	8.6	0.4
		Informal	Upper	18.4	42.1	13.2	2.6	10.5	13.2	0.2
			Lower	2.1	0.3	88.7	1.9	3.8	3.2	51.9
	Wage-employed	Formal		0.5	0.1	2.7	79.9	13.0	3.7	15.8
		Informal	Upper	0.5	0.4	8.5	29.2	46.4	15.0	5.9
			Lower	0.9	0.2	14.4	12.9	26.0	45.6	3.3
	TOTAL			1.9	0.6	55.2	21.7	12.7	7.9	77.5

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

[1]Bucknell University, Lewisburg, USA carl.lin@bucknell.edu; [2]Nanjing University of Finance and Economics, Nanjing, China; [3]Beijing Normal University, Beijing, China

Table C3: Transition matrices across work status groups from 2014 to 2018—the case of China

				YEAR=2018						Share of stayers
				Self-employed			Wage-employed			
				Formal	Informal		Formal	Informal		
					Upper	Lower		Upper	Lower	
YEAR=2014	Self-employed	Formal		28.7	6.9	44.8	8.0	5.7	5.7	0.3
		Informal	Upper	15.8	36.8	5.3	21.1	7.9	13.2	0.2
			Lower	1.9	0.2	86.2	2.7	4.9	4.1	50.2
	Wage-employed	Formal		0.7	0.2	4.2	76.9	14.2	3.8	15.2
		Informal	Upper	1.1	0.5	17.4	27.8	38.2	15.0	5.3
			Lower	2.0	0.8	18.7	13.6	25.6	39.4	2.6
	TOTAL			1.9	0.6	55.2	21.7	12.7	7.9	73.8

Source: authors' calculations based on CFPS data (Institute of Social Science, Peking University 2018).

[1]Bucknell University, Lewisburg, USA carl.lin@bucknell.edu; [2]Nanjing University of Finance and Economics, Nanjing, China; [3]Beijing Normal University, Beijing, China

Appendix D

Table D1: Summary statistics of workers' characteristics, by hukou type

	Total		Ag. hukou				Non-ag. hukou			
			Ag. work		Non-ag. work		Ag. work		Non-ag. work	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Earnings (CNY1000)	20.02	35833	3.01	14148	30.10	31564	3.36	29097	39.98	53432
Age	43.19	11.69	48.09	10.6	38.23	11.08	50.84	10.53	40.5	10.5
Male	0.53	0.5	0.45	0.5	0.61	0.49	0.52	0.5	0.57	0.5
Urban	0.45	0.5	0.19	0.4	0.5	0.5	0.41	0.49	0.89	0.31
Han ethnicity	0.91	0.29	0.86	0.35	0.93	0.25	0.91	0.28	0.96	0.2
Married	0.87	0.33	0.92	0.27	0.83	0.37	0.96	0.2	0.84	0.37
Education	8.03	4.75	5.32	4.12	8.99	3.87	7.19	4.2	12.17	3.63
CCP member	0.08	0.28	0.05	0.21	0.07	0.25	0.1	0.3	0.19	0.39
Religious	0.24	0.42	0.24	0.43	0.24	0.43	0.24	0.43	0.21	0.41
N	49369		21516		16789		708		10356	

Note: CCP denotes the Chinese Communist Party.

Source: authors' calculation based on CFPS data.

[1]Bucknell University, Lewisburg, USA carl.lin@bucknell.edu; [2]Nanjing University of Finance and Economics, Nanjing, China; [3]Beijing Normal University, Beijing, China

Table D2: Full results of fixed effects OLS estimates

	(1) Earnings	(2) IHS earnings	(3) Cube-roots earnings
Age	398.61***	0.053**	0.267***
	(137.92)	(0.02)	(0.060)
Age2	-627.80***	-0.061**	-0.346***
	(176.35)	(0.028)	(0.080)
Male	4,768.87***	0.264***	1.839***
	(714.10)	(0.072)	(0.243)
Ag. hukou	-2,915.80*	0.0190	-0.512
	(1,561.50)	(0.067)	(0.414)
Urban	2,582.75***	-0.103	0.425
	(799.42)	(0.110)	(0.351)
Han ethnicity	1,402.32**	0.673	1.382
	(625.60)	(0.445)	(0.819)
Married	1,145.31*	0.230***	0.872***
	(624.83)	(0.050)	(0.190)
Education	593.00***	0.053***	0.242***
	(160.62)	(0.015)	(0.028)
CCP member	3,730.16**	0.108	0.731*
	(1,811.9)	(0.108)	(0.393)
Has religious beliefs	1,497.23**	0.096	0.437
	(582.20)	(0.091)	(0.258)
FS	6,314.36	-1.423***	-3.940***
	(8,664.73)	(0.139)	(0.989)
UIW	-12,713.12***	-0.565***	-4.405***
	(1,416.64)	(0.036)	(0.263)
UIS	1,103.57	-1.592***	-4.133**
	(5,322.00)	(0.433)	(1.596)
LIW	-13,915.17***	-0.338***	-4.306***
	(1,485.06)	(0.087)	(0.383)
LIS	-14,760.01***	-2.350***	-9.144***
	(1,821.72)	(0.136)	(0.489)
Constant	21,166.23***	8.243***	20.708***
	(3,787.41)	(0.630)	(1.701)
Year fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	49,194	49,194	49,194
Adjusted R-squared	0.243	0.261	0.456
$\xi(\text{Earnings}, \text{FS})$		-0.76	
$\xi(\text{Earnings}, \text{UIW})$		-0.43	
$\xi(\text{Earnings}, \text{UIS})$		-0.81	
$\xi(\text{Earnings}, \text{LIW})$		-0.29	
$\xi(\text{Earnings}, \text{LIS})$		-0.91	

Note: clustered robust standard errors at the province level in parentheses. ξ (Earnings, work status) shows the percentage change of earnings when transitioning from the formal wage-employed to another work status using the inverse hyperbolic sine (IHS or arcsinh) transformation. CCP denotes the Chinese Communist Party. *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculation based on CFPS data.

Table D3: Full results of fixed effects estimates by gender, hukou type, and hukou location

	(1) Female IHS earnings	(2) Male IHS earnings	(3) Non-ag. hukou IHS earnings	(4) Ag. hukou IHS earnings	(5) Local IHS earnings	(6) Migrant IHS earnings
FS	-0.8917***	-1.8865***	-1.7103***	-1.1811***	-1.1466***	-2.5823***
	(0.160)	(0.231)	(0.231)	(0.149)	(0.146)	(0.561)
UIW	-0.6885***	-0.4471***	-0.5480***	-0.5426***	-0.5347***	-0.6136***
	(0.069)	(0.045)	(0.040)	(0.049)	(0.036)	(0.092)
UIS	-1.9599**	-1.4027***	-1.8094***	-1.4063***	-1.4135***	-2.2093***
	(0.820)	(0.301)	(0.626)	(0.359)	(0.441)	(0.738)
LIW	-0.5881***	-0.1273	-0.8140***	-0.1920**	-0.2752***	-0.5205***
	(0.128)	(0.085)	(0.124)	(0.086)	(0.086)	(0.170)
LIS	-2.0795***	-2.5998***	-1.9137***	-2.4626***	-2.3002***	-2.5216***
	(0.140)	(0.171)	(0.322)	(0.183)	(0.142)	(0.211)
Ag. hukou	0.0409	0.0026			-0.0330	0.1805
	(0.072)	(0.086)			(0.087)	(0.107)
Male			0.3193***	0.2530***	0.2561***	0.3572***
			(0.055)	(0.089)	(0.078)	(0.121)
Age	0.0744**	0.0341	0.0947***	0.0482**	0.0525***	0.0349
	(0.031)	(0.025)	(0.032)	(0.021)	(0.018)	(0.057)
Age2	-0.0777*	-0.0443	-0.1180***	-0.0529*	-0.0615**	-0.0223
	(0.042)	(0.031)	(0.040)	(0.030)	(0.025)	(0.069)
Urban	-0.1684	-0.0607	0.0607	-0.1247	-0.0851	-0.2005
	(0.145)	(0.088)	(0.192)	(0.113)	(0.121)	(0.128)
Han ethnicity	0.5670	0.7598*	-0.0181	0.7500	0.7695	-0.1316
	(0.490)	(0.429)	(0.153)	(0.514)	(0.471)	(0.403)
Married	0.1575	0.3109***	0.2897***	0.1920***	0.2536***	0.0850
	(0.096)	(0.074)	(0.069)	(0.064)	(0.050)	(0.128)
Education	0.0668***	0.0443***	0.0349***	0.0542***	0.0511***	0.0653***
	(0.021)	(0.016)	(0.012)	(0.017)	(0.015)	(0.019)
CCP member	0.0299	0.1702	0.1858***	0.0422	0.1408	-0.0837
	(0.122)	(0.148)	(0.059)	(0.166)	(0.124)	(0.173)
Has religious beliefs	0.1412	0.0490	0.0483	0.1047	0.1120	-0.0242
	(0.115)	(0.109)	(0.074)	(0.114)	(0.093)	(0.116)
Constant	7.7191***	8.7420***	8.0246***	8.3154***	8.1926***	8.4587***

	(0.760)	(0.769)	(0.641)	(0.690)	(0.562)	(1.412)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,956	26,238	10,989	38,205	43,113	6,069
Adjusted R-squared	0.233	0.276	0.248	0.220	0.247	0.337
$\xi(\text{Earnings}, \text{FS})$	-0.59	-0.85	-0.82	-0.70	-0.68	-0.92
$\xi(\text{Earnings}, \text{UIW})$	-0.49	-0.36	-0.42	-0.42	-0.41	-0.46
$\xi(\text{Earnings}, \text{UIS})$	-0.86	-0.77	-0.84	-0.77	-0.77	-0.89
$\xi(\text{Earnings}, \text{LIW})$	-0.45	-0.12	-0.56	-0.18	-0.24	-0.41
$\xi(\text{Earnings}, \text{LIS})$	-0.88	-0.93	-0.85	-0.92	-0.90	-0.92

Note: clustered robust standard errors at the province level in parentheses. ξ (Earnings, work status) shows the percentage change of earnings when transitioning from the formal wage-employed to another work status using the inverse hyperbolic sine (IHS or arcsinh) transformation. CCP denotes the Chinese Communist Party. *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculation based on CFPS data.

Table D4: Fixed effects estimates by hukou type, agricultural, and non-agricultural work

	(1)	(2)	(3)	(4)
	Ag. hukou		Non-ag. hukou	
	Ag. work	Non-ag. work	Ag. work	Non-ag. work
LIW	5.2135***	-0.6012***	5.2499***	-0.8065***
	(0.324)	(0.078)	(0.978)	(0.116)
FS		-1.0753***		-1.5783***
		(0.175)		(0.243)
UIW		-0.4718***		-0.5378***
		(0.035)		(0.040)
UIS		-1.2282***		-1.6959***
		(0.329)		(0.615)
LIS		-1.1561***		-1.0519***
		(0.115)		(0.277)
Age	-0.0368	0.0939***	-0.0184	0.0794***
	(0.023)	(0.018)	(0.262)	(0.023)
Age squared	0.0418	-0.1150***	-0.0075	-0.0960***
	(0.031)	(0.021)	(0.273)	(0.029)
Male	0.0741	0.3975***	0.4426	0.2703***
	(0.143)	(0.032)	(0.428)	(0.037)
Urban	-0.5466**	0.1541**	-0.8036	0.0495
	(0.244)	(0.066)	(0.789)	(0.092)
Han ethnicity	1.0939	-0.0146	0.2761	-0.0994
	(0.789)	(0.093)	(1.311)	(0.076)
Married	0.1481	0.1091**	2.3469	0.2461***
	(0.136)	(0.046)	(1.575)	(0.067)
Education	0.0552*	0.0361***	-0.0467	0.0416***
	(0.027)	(0.005)	(0.064)	(0.010)
CCP member	0.2075	-0.0623	0.1367	0.1757***
	(0.319)	(0.081)	(0.962)	(0.057)
Religious	0.1130	0.0832*	-0.2080	0.0789
	(0.187)	(0.048)	(0.803)	(0.053)
Constant	4.5360***	8.0470***	3.4157	8.3250***
	(0.723)	(0.357)	(5.847)	(0.461)
Year fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Observations	21,516	16,689	708	10,281
Adjusted R-squared	0.025	0.057	0.019	0.080
$\xi(\text{Earnings}, \text{FS})$		-0.66		-0.79
$\xi(\text{Earnings}, \text{UIW})$		-0.38		-0.42
$\xi(\text{Earnings}, \text{UIS})$		-0.71		-0.82
$\xi(\text{Earnings}, \text{LIW})$		-0.45		-0.55
$\xi(\text{Earnings}, \text{LIS})$		-0.69		-0.65

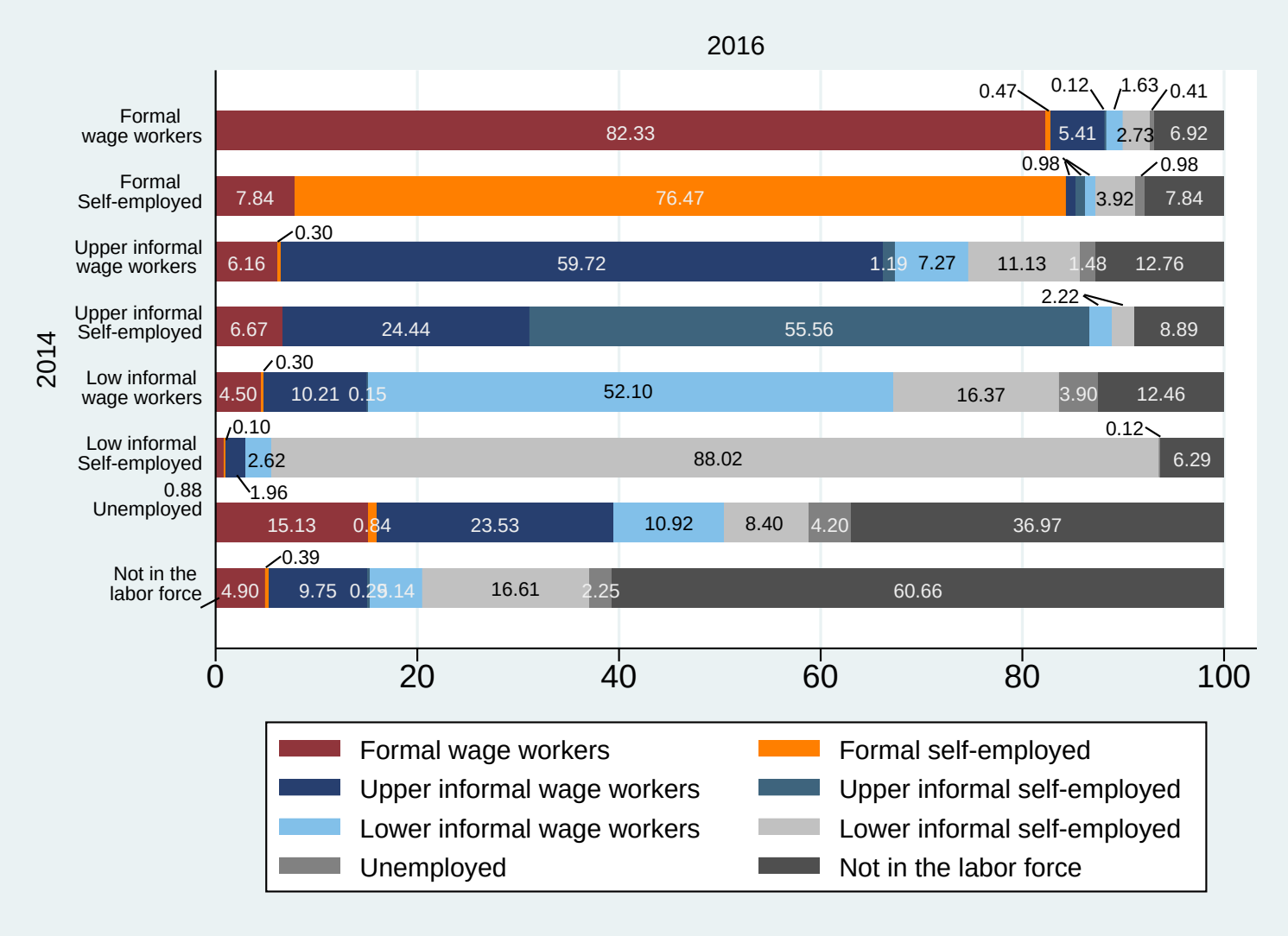
Note: clustered robust standard errors at the province level in parentheses. ξ (Earnings, work status) shows the percentage change of earnings when transitioning from the formal wage-employed to another work status using the inverse hyperbolic sine (IHS or arcsinh) transformation. CCP denotes the Chinese Communist Party. *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculation based on CFPS data.

Figure D1: Work status, by year

Source: authors' calculation based on CFPS data.

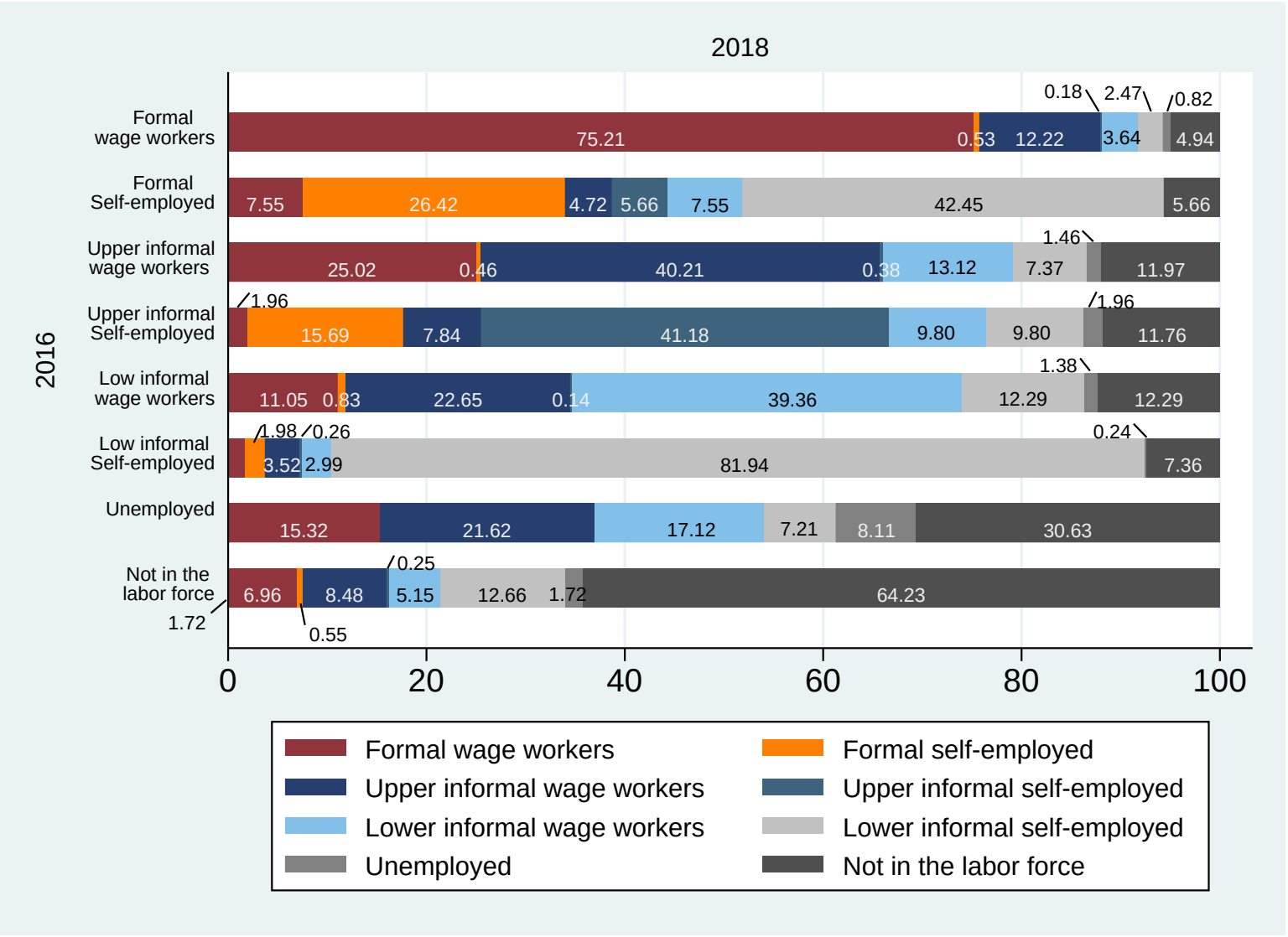
Figure D2-1: Transition matrices of work status, 2014–16



Note: N = 11033.

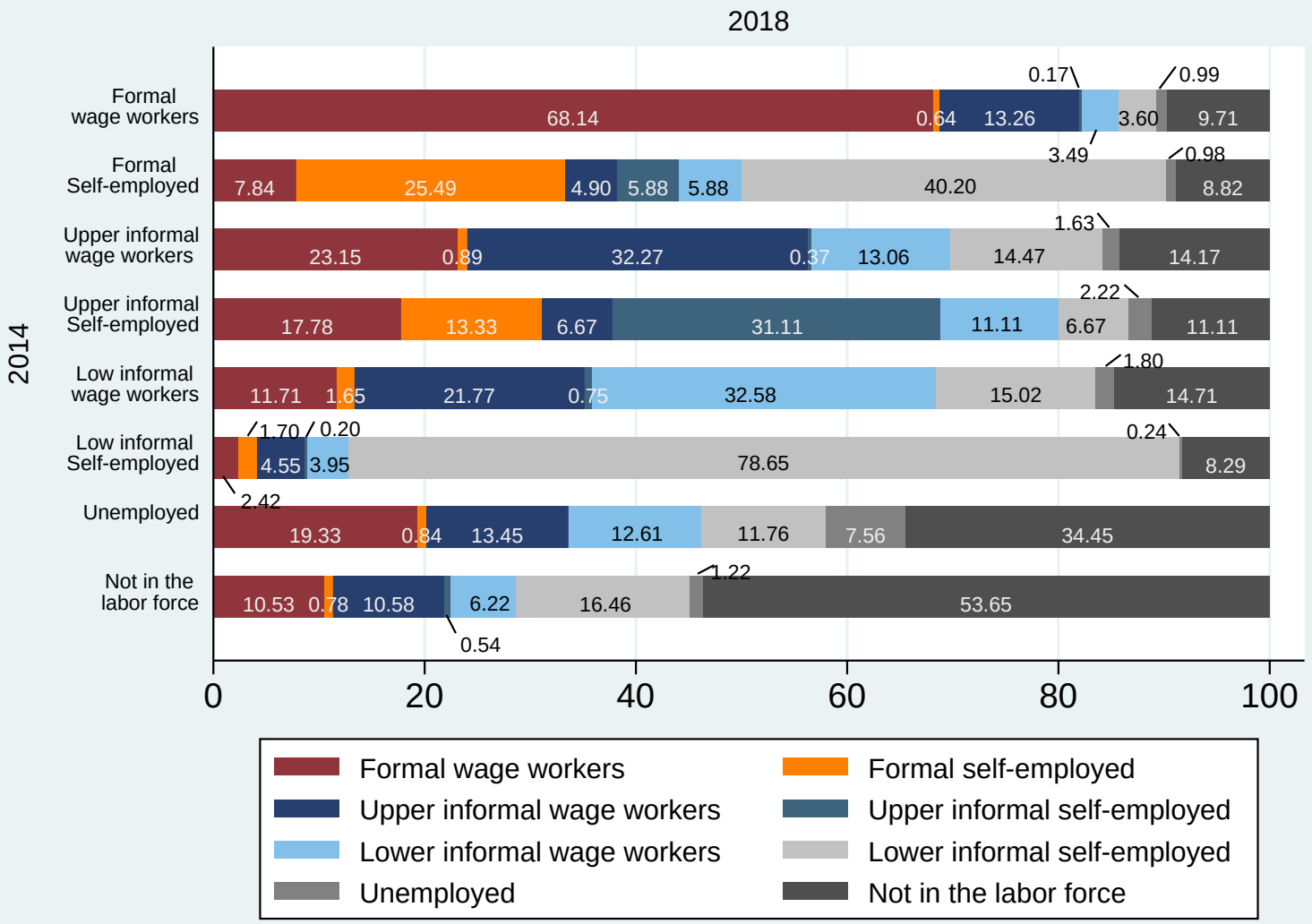
Source: authors' calculation based on CFPS data.

Figure D2-2: Transition matrices of work status, 2016–18



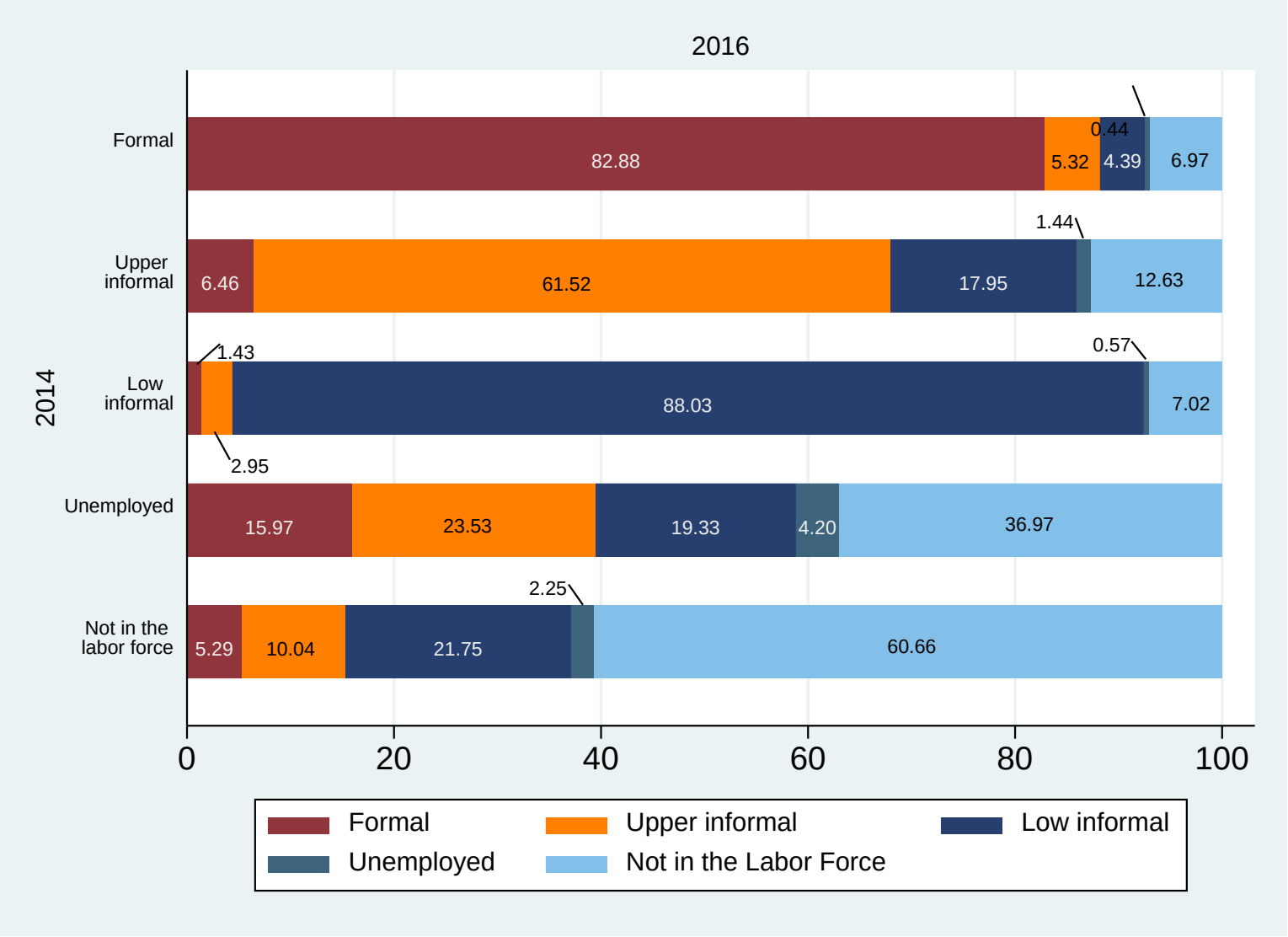
Source: authors' calculation based on CFPS data.

Figure D2-3: Transition matrices of work status, 2014–18



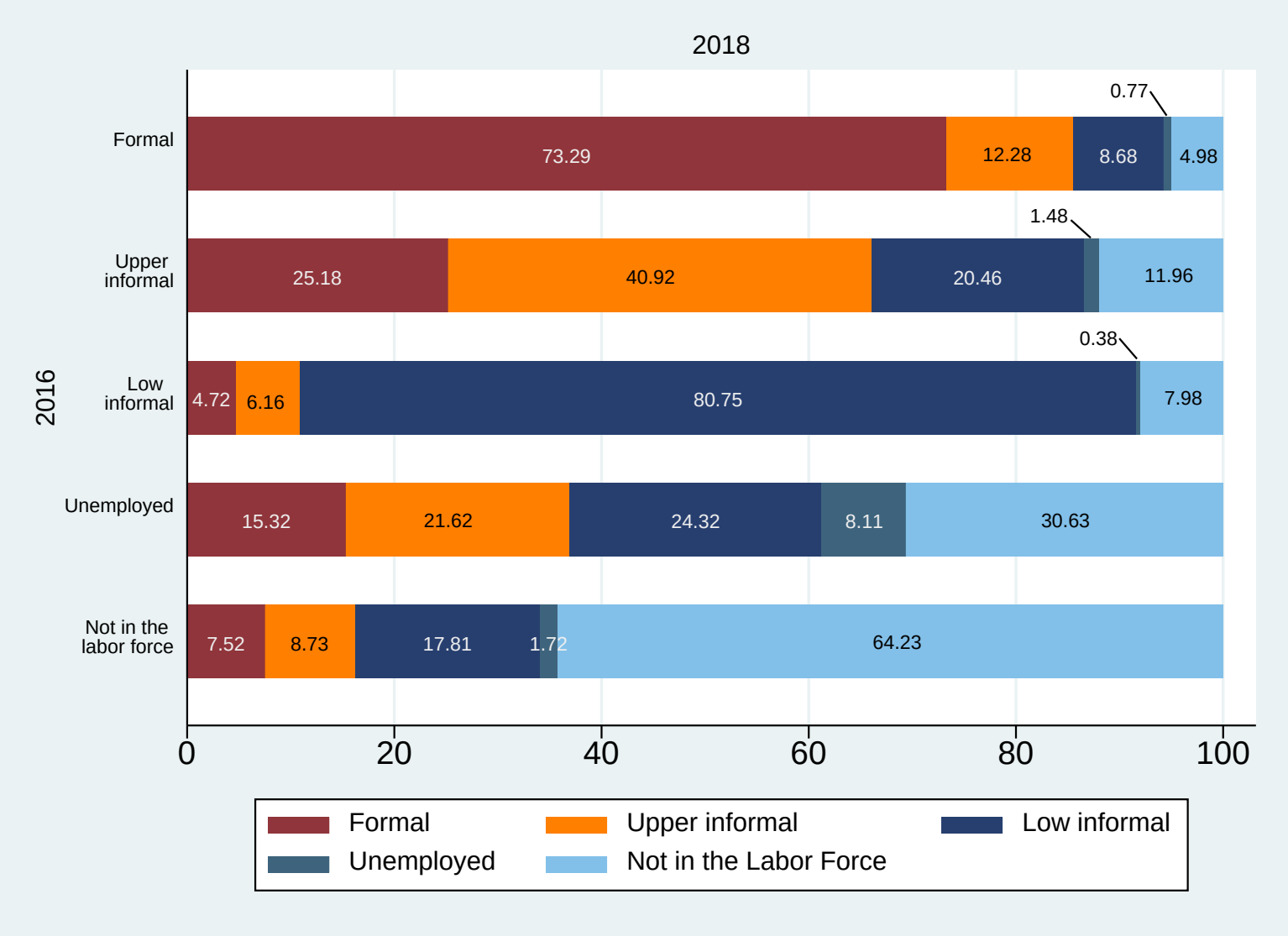
Source: authors' calculation based on CFPS data.

Figure D3-1: Transition matrices of general work status, 2014–16



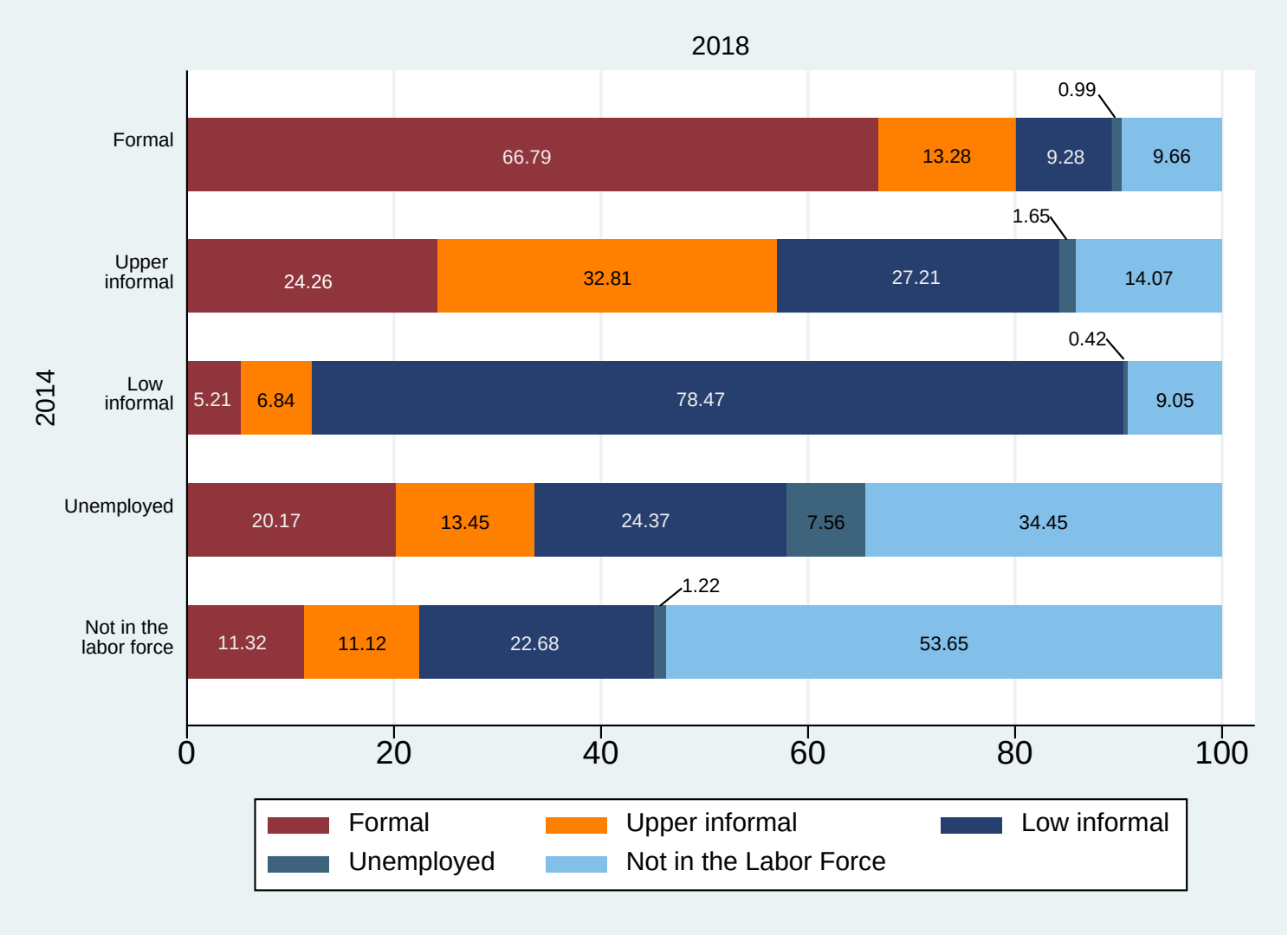
Source: authors' calculation based on CFPS data.

Figure D3-2: Transition matrices of general work status, 2016–18



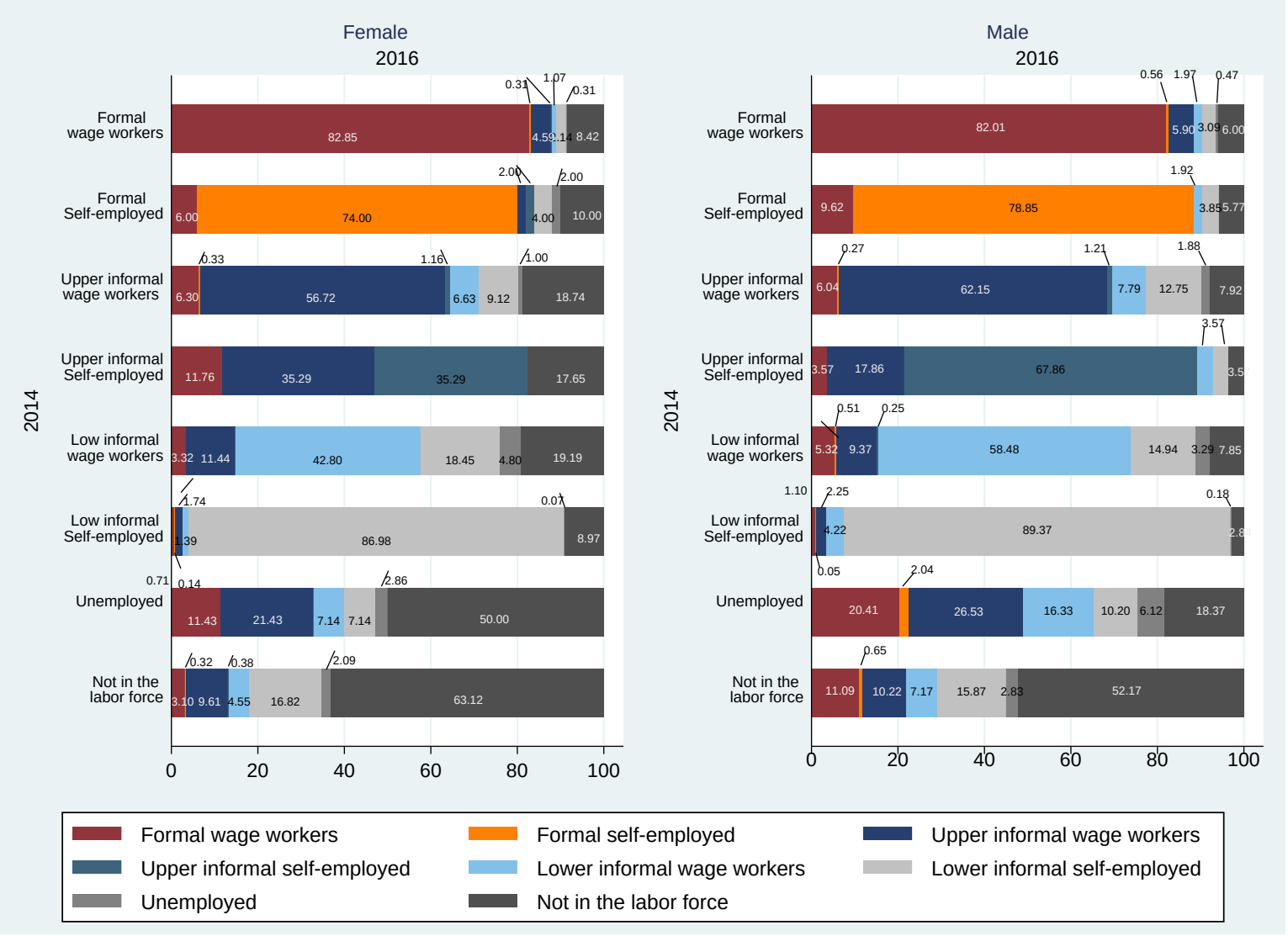
Source: authors' calculation based on CFPS data.

Figure D3-3: Transition matrices of general work status, 2014–18



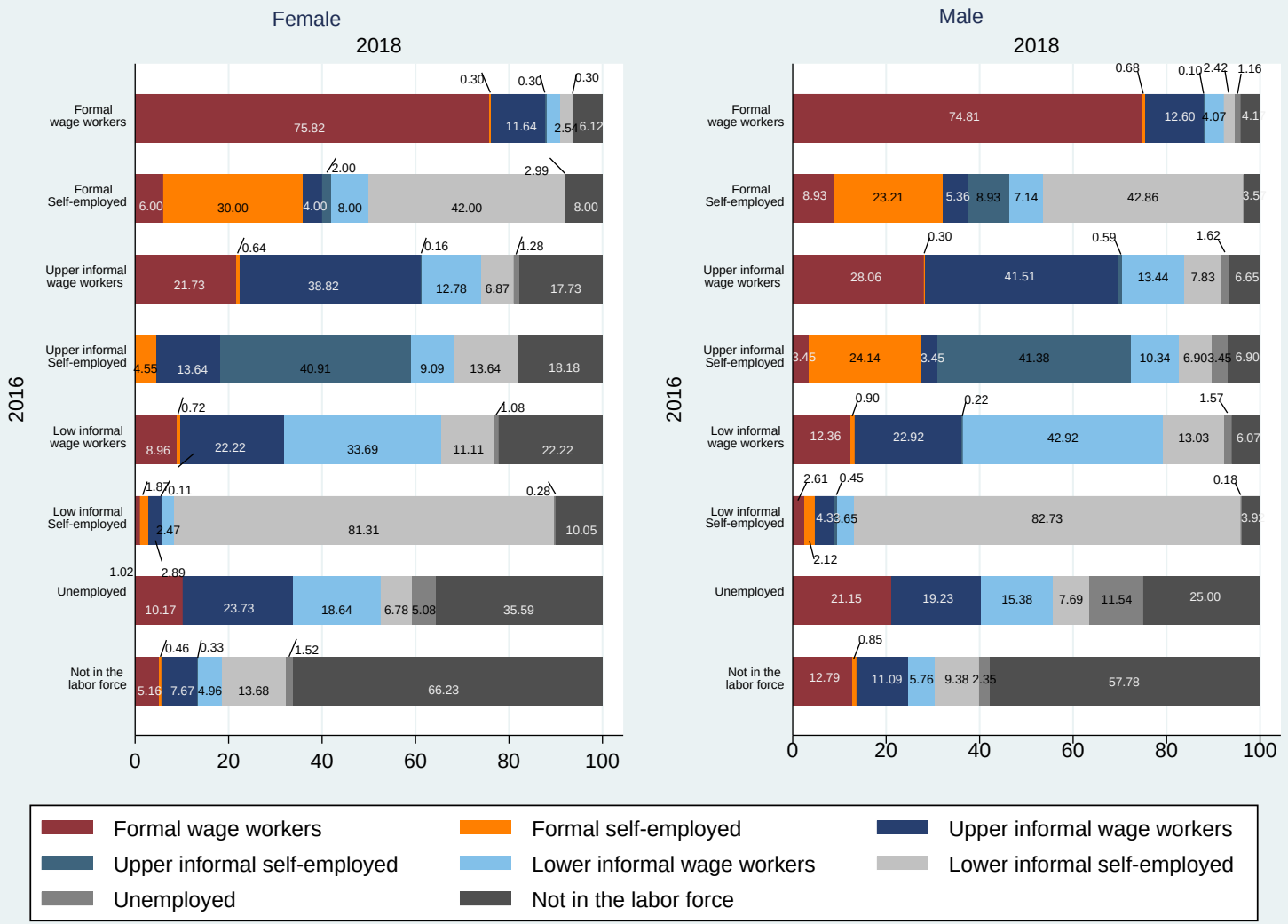
Source: authors' calculation based on CFPS data.

Figure D4-1: Transition matrices of work status by gender, 2014–16



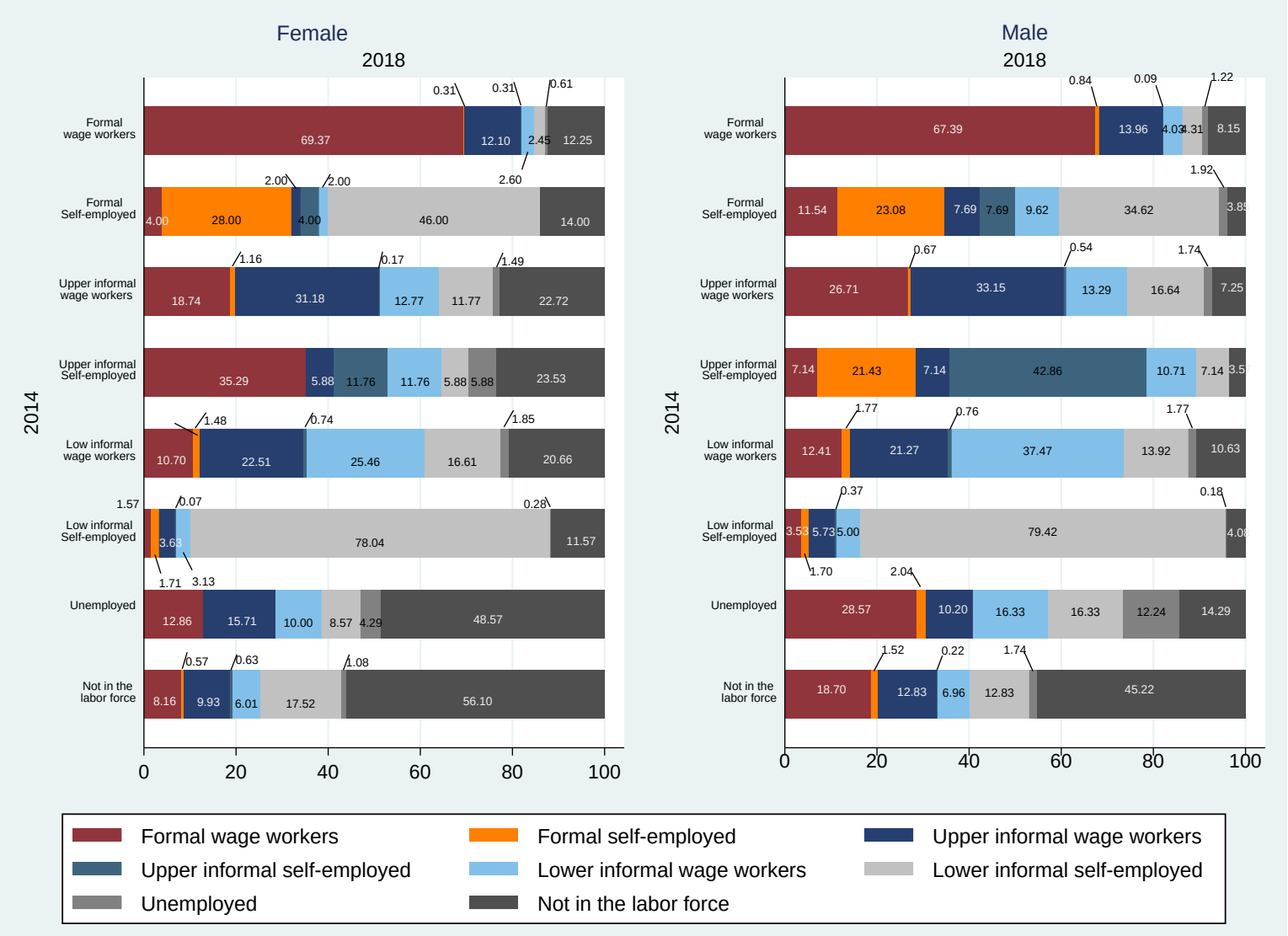
Source: authors' calculation based on CFPS data.

Figure D4-2: Transition matrices of work status by gender, 2016–18



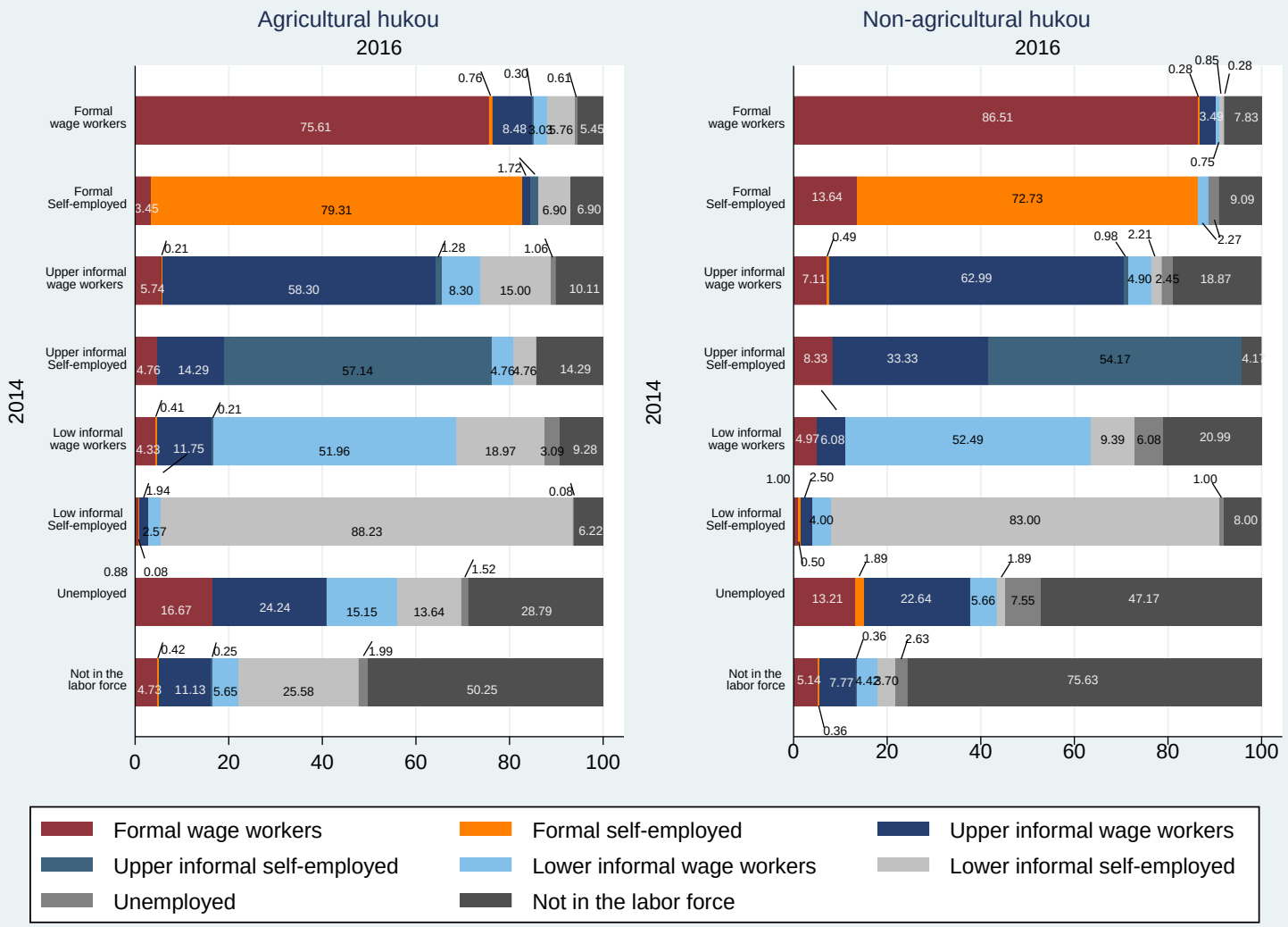
Source: authors' calculation based on CFPS data.

Figure D4-3: Transition matrices of work status by gender, 2014–18



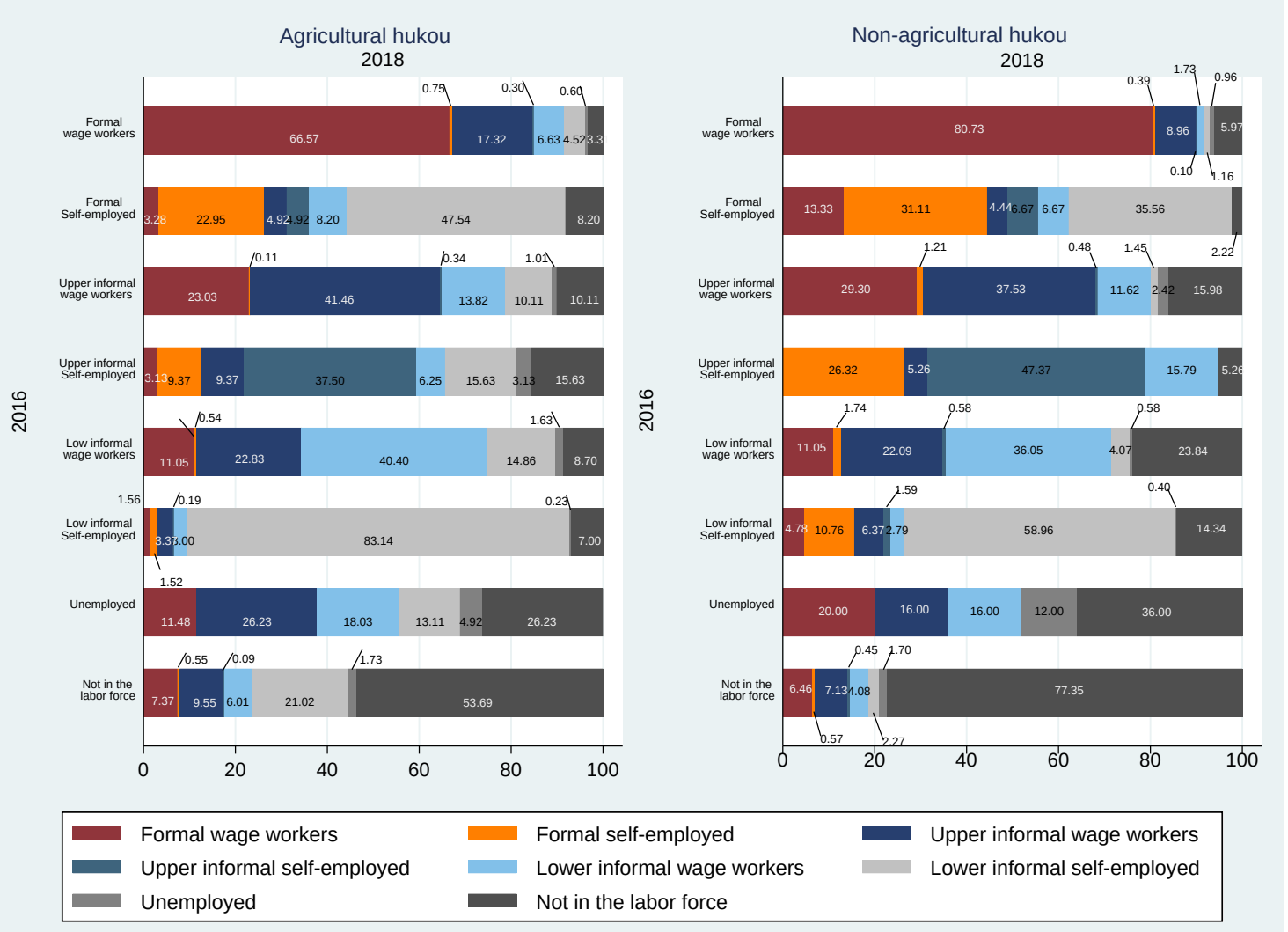
Source: authors' calculation based on CFPS data.

Figure D5-1: Transition matrices of work status by hukou, 2014–16



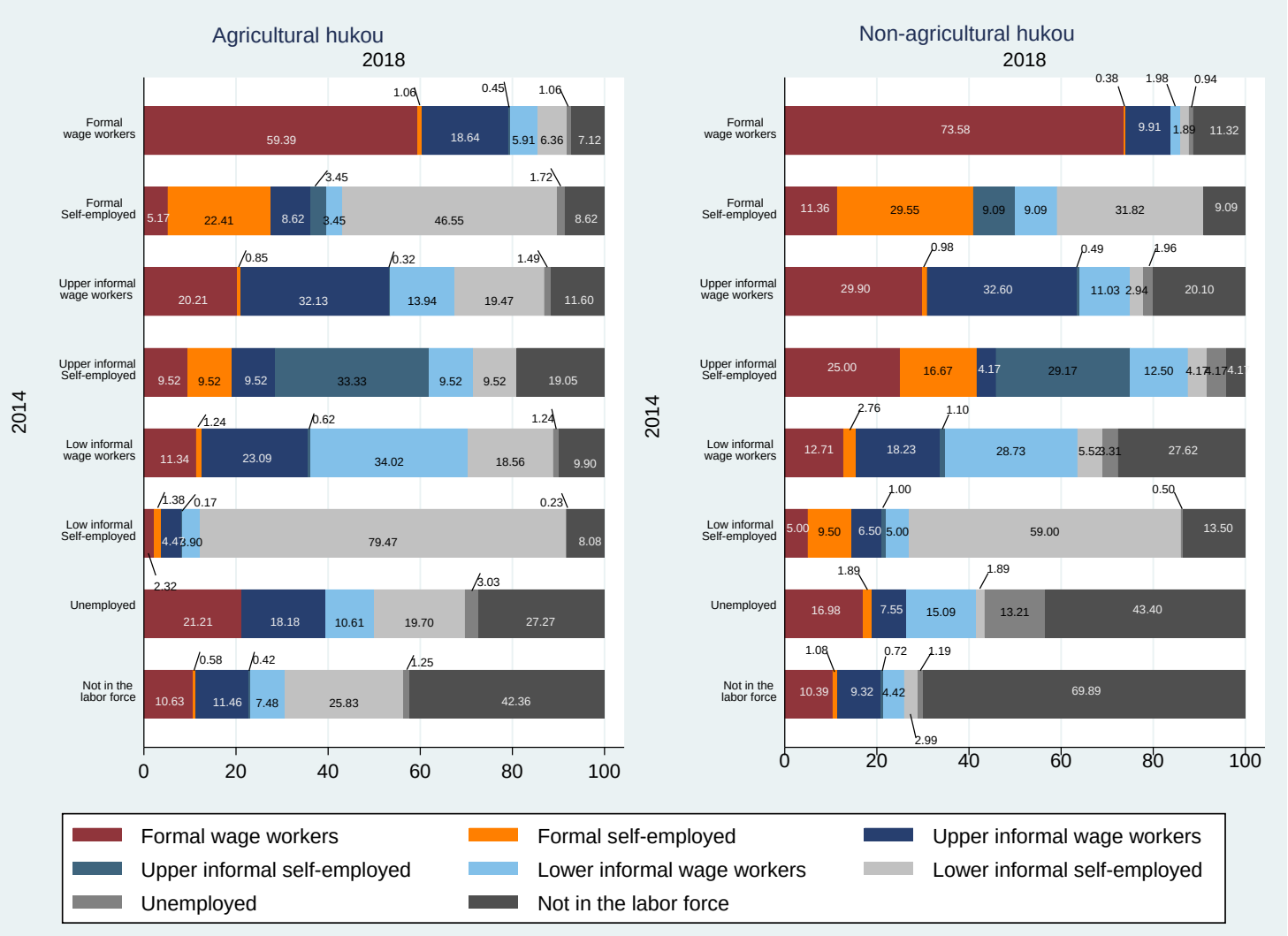
Source: authors' calculation based on CFPS data.

Figure D5-2: Transition matrices of work status by hukou, 2016–18



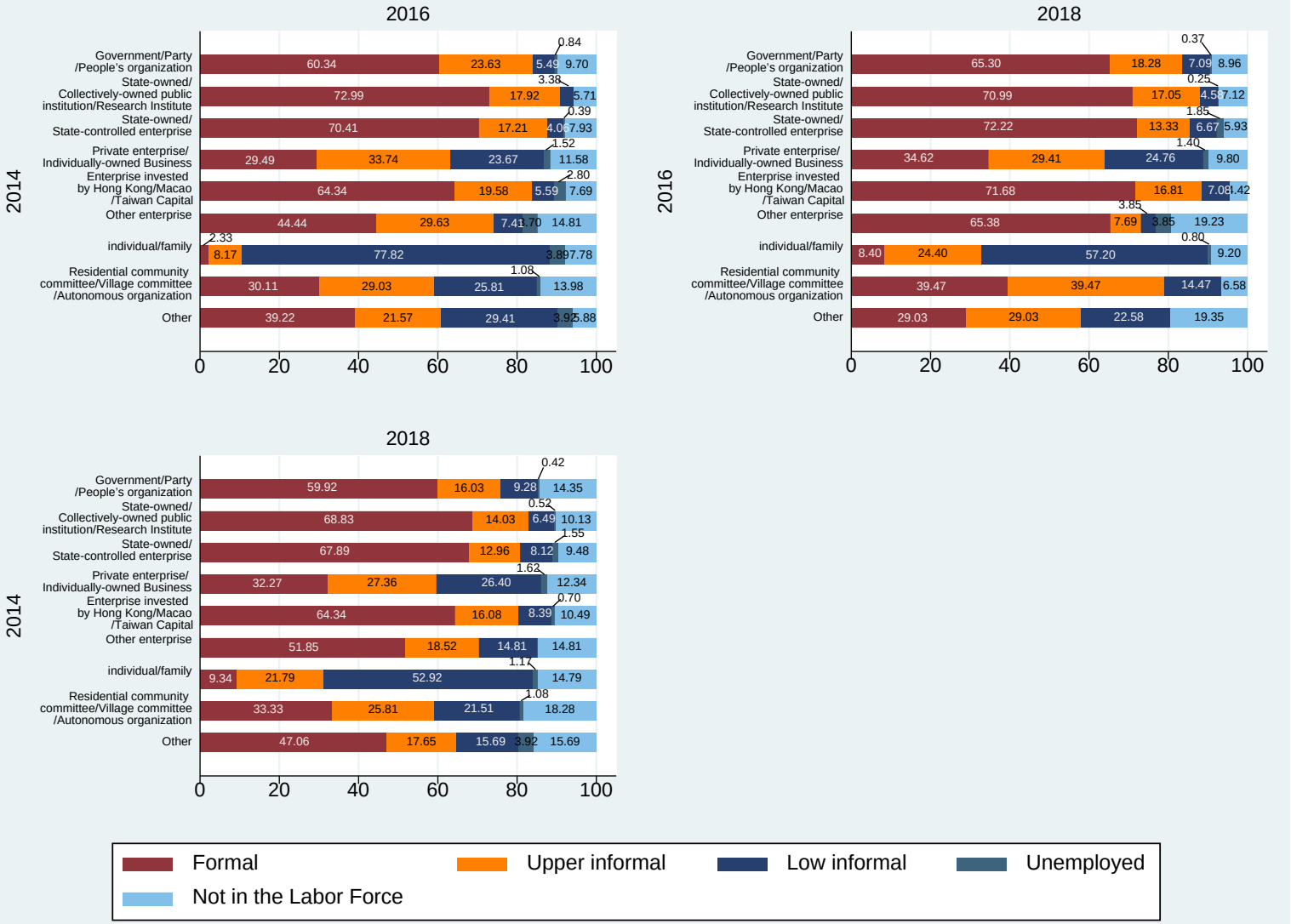
Source: authors' calculation based on CFPS data.

Figure D5-3: Transition matrices of work status by hukou, 2014–18



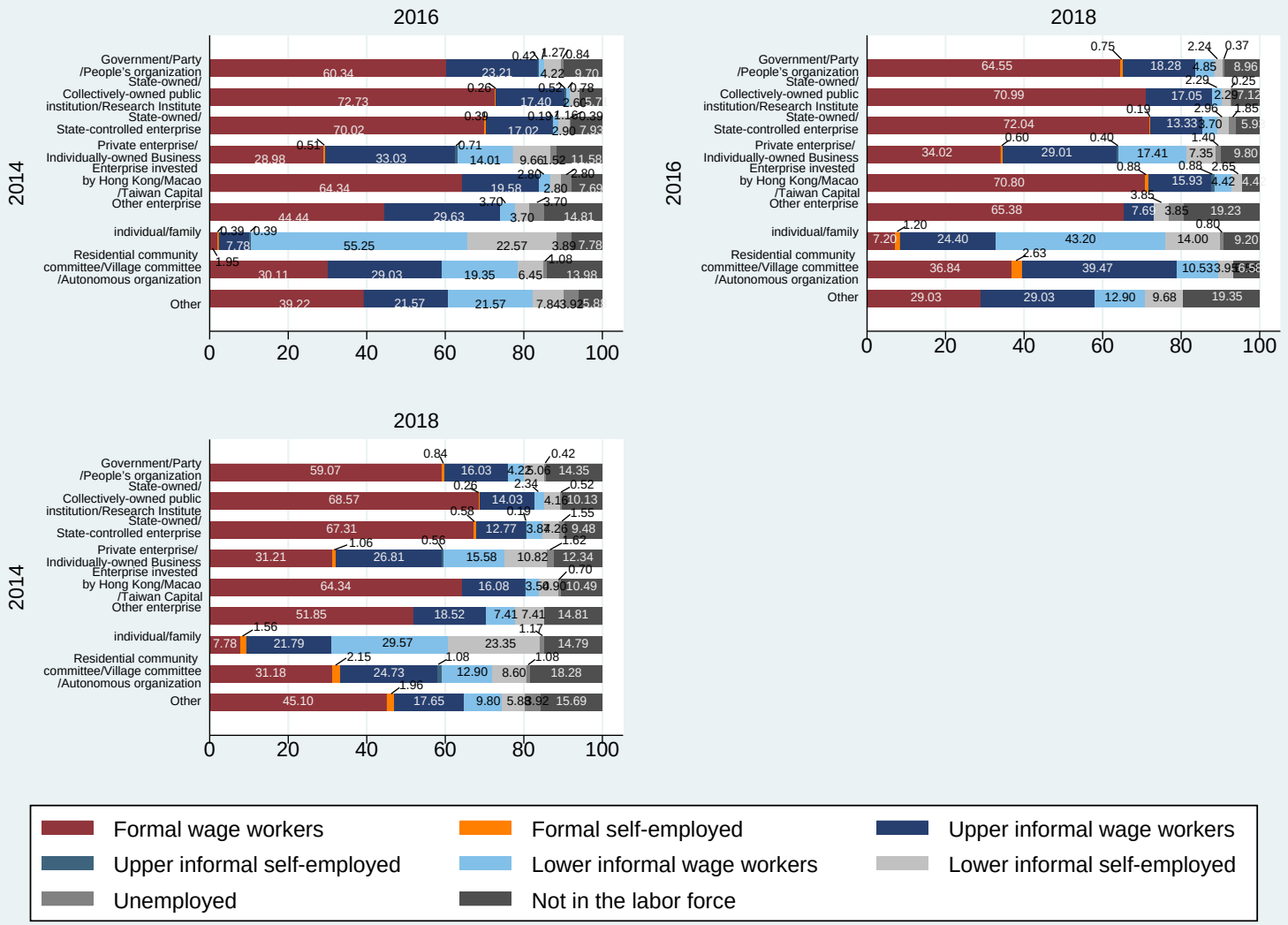
Source: authors' calculation based on CFPS data.

Figure D6-1: Transition matrices of general work status by ownership



Source: authors' calculation based on CFPS data.

Figure D6-2: Transition matrices of work status by ownership



Source: authors' calculation based on CFPS data.

Appendix E

Table E1: Definitions of work status from CFPS

		SELF-EMPLOYED（QG1=1, CFPS2014）				WAGE-EMPLOYED（QG1=5, CFPS2014）		
		Formal	Upper-tier Informal	Lower-tier Informal		Formal	Upper-tier Informal	Lower-tier Informal
Necessary criteria applied to distinguish between formal and informal work								
1	**SOCIAL SECURITY**	If contributing to social security.	Health insurance paid by the worker.	Does not pay Health insurance.	**SOCIAL SECURITY**	If contributing to social security.	Health insurance paid by the worker.	Does not pay Health insurance.
	Variable	QP605=1 or 2 or 4	QP605=3 or 5	QP605=78		QP605=1 or 2 or 4	QP605=3 or 5	QP605=78
Additional criteria applied to distinguish between formal and informal work								
2	**WORK INSURANCE**	If this job provide insurance for you.	Does not provide any insurance.		**INSTITUTIONAL SECTOR**	If working for government/public corporations,	If working in private enterprise	If working in private household
	Variable	QG9=1 or 2 or 3 or 4 or 5	QG9=78			QG2=1 or 2 or 3	QG2=4 or 5 or 6 or 8	QG2=7
Necessary criteria applied to distinguish between upper-/lower-tier informal work								
3	**EMPLOYER**		If unit has at least one (paid) employee		**CONTRACT TYPE**		If sign labor contract for this job	If sign labor contract for this job
	Variable		QG16>1				QG5=1	QG5=0

4	**PROFESSION**	If the worker is a professional or technical worker.	Otherwise	**PROFESSION**	If the worker is a professional or technical worker.	Otherwise
	Variable	QG303 (job duty)			QG303 (job duty)	
		Additional criteria applied to distinguish between upper-/lower-tier informal work				
5	**LOCATION OF WORKPLACE**	If unit is in fixed visible premises (i.e. offices, factories)	If unit is not in fixed premises (i.e. owners' dwelling, street. Construction sites, etc.)	**LOCATION OF WORKPLACE**	If unit is in fixed visible premises (i.e. offices, factories)	If unit is not in fixed premises (i.e. owners' dwelling, street. Construction sites, etc.)
	Variable	QG20=3	QG20!=3		QG20=3	QG20!=3

Source: authors' elaboration based on CFPS data (Institute of Social Science, Peking University 2018).

E.1 Excerpts from CFPS data (Institute of Social Science, Peking University 2018)

QG1 "Work ownership" Do you work for yourself/family or are you employed by others/organizations/units/ companies?

1. Work for myself/family
5. Employed by others/organizations/units/ companies

SELF-EMPLOYED

1. SOCIAL SECURITY

QP605 Do you have any of the following medical insurances?

1. Public medical insurance
2. Urban Employee Basic Medical Insurance
3. Urban Resident Basic Medical Insurance
4. Supplementary medical insurance
5. New Rural Cooperative Medical Insurance
78. None of the above

NOTE: (1) Public medical insurance was established based on the instruction on public medical insurance for government officials issued by the State Council in June 1952. The insurance covers government officials, party members, people's organizations, and employees from the work units that are related to health, education, academics and athletics. Disabled soldiers and college students are also covered. This insurance is financed by the local and central governments and is administered by the department of health or the ministry of finance at different levels. This insurance covers medical costs incurred in receiving outpatient and inpatient care, but not the costs of food, living and transportation. If one has financial difficulty, he/she should be compensated by his/her work unit through the administrative budget.

(2) Urban Employee Basic Medical Insurance is the material support provided by the state or society to individuals who are injured or sick, i.e. a social security system that provides medical service or economic compensation. According to the decision made by the State Council in December 1998, it is required to establish a new nationwide basic medical insurance system for urban employees. Based on this decision, those who are eligible to be covered should be the employees from the work units that are specified in the basic medical insurance and that pay the insurance premium. The medical insurance plan covers all of the work units in urban areas, including enterprises (state-owned enterprises, collective-owned enterprises, foreign commercial investment companies, private enterprise, etc.), government branches, institutions, social groups, and non-enterprise work units. It is up to the local government to decide whether rural enterprises and their employees should enter the basic medical insurance system. The insurance premium should be contributed by both the employers and employees. The document specifies that the amount contributed by the employer should be around 6% of the total income of the employee, while the amount contributed by the employee should be around 2% of his/her total income. Retired individuals are covered by the medical insurance system but do not need to pay the premium themselves.

(3) Urban Resident Basic Medical Insurance provides institutional support for basic medical care for unemployed urban residents. It covers the urban residents who have local household registration but are not covered by other types of medical insurance (e.g., Urban Employee Basic Medical Insurance, New Rural Cooperative Medical Insurance, etc.).

(4) Supplementary medical insurance is a concept related to the basic medical insurance. As the national basic medical insurance system can only meet the basic medical needs of the participants, extra medical care may be supported by other types of medical insurance such as the supplementary medical insurance. Unlike basic medical insurance, supplementary medical insurance is not required

by law and is not mandatory. Instead, it is a voluntary plan for employers and employees. There are two main ways to implement the supplementary medical insurance plan. One is to establish and manage the insurance system according to the insurance principles in an industry. Another is to let a commercial insurance company run the system. The current basic medical insurance for urban employees in China can only meet very basic medical needs with shallow coverage, and does not cover the rural population at all. Thus, the development of supplementary medical insurance will be good for the better implementation of basic medical insurance, improvement in the medical care for urban employees, the meeting of all the citizens' medical needs, and the prosperity of a harmonious society. (5) Urban basic pension insurance is also known as the national basic pension insurance, which is a mandatory system established by the government to cover the basic living needs of retirees. Before the 1990s, there was only one type of pension insurance for retirees in China. Since 1991, a multi-level pension insurance system has been established by incorporating basic pension insurance, enterprise supplementary pension insurance, and individual savings pension insurance. Combining social pooling and personal savings accounts, the basic pension insurance is a novel mode created by China. This system is financed the same way as the traditional basic pension insurance, that is, the cost is shared by government, work units and individuals. The basic pension insurance emphasizes social support, and is distributed in a structural way. It emphasizes the differences between the stimulus for personal saving and work contribution. Thus, this system bears the features of traditional social insurance, such as social support, risk diversification, and security, and meanwhile underlines the individual's sense of self-protection and the stimulus mechanism.

2. WORK INSURANCE

qg9 "Work insurance" Which kind of insurance did this job provide for you?

1. Pension
2. Health insurance
3. Unemployment insurance
4. Work injury insurance
5. Maternity insurance
78. None of the above

3. EMPLOYER

qg16 "organization size" How many employees does the company/work unit/business have?

0——1000000

4. PROFESSION

qg303 "Job duties" What is your job duty?

For example:

a) A logistic worker who purchases food and cook breakfast, lunch and dinner for the employees in the work unit.

b) A software engineer who develops on-line game software.

c) A customer manager who promotes credit card business.

d) A teacher who teaches English at a junior high school level in a training institution.

e) A government official who is responsible for the public traffic construction in the entire province.

f) Rice paddy farmer in this village

cfps2014edu "Highest educational degree in CFPS2014"

-9. Missing -1. Unknown 1. Illiterate/Semi-literate 2. Primary school 3. Junior high school 4. Senior high school/secondary school/technical school/vocational senior school

5. 3-year college 6. 4-year college/Bachelor's degree 7.Master's degree 8. Doctoral degree
9. no need to go to school

5. Location of workplace

qg20 "work location" In the company/work unit/business of your primary workplace is:

1. Outdoor
2. In a workshop
3. In an office
4. At home
5. Other indoor spaces
6. Inside a transportation vehicle
77. Other

SELF-EMPLOYED

1. SOCIAL SECURITY

QP605 Do you have any of the following medical insurances?

1. Public medical insurance
2. Urban Employee Basic Medical Insurance
3. Urban Resident Basic Medical Insurance
4. Supplementary medical insurance
5. New Rural Cooperative Medical Insurance
78. None of the above

2. INSTITUTIONAL SECTOR

QG2 "Employer type" What type of organization do you work for?

1. Government/Party/People's organization
2. State-owned/Collectively-owned public institution/Research Institute
3. State-owned/State-controlled enterprise
4. Private enterprise/ Individually-owned Business
5. Enterprise invested by Foreign/Hong Kong/Macao/Taiwan Capital
6. Other enterprise [please specify]
7. Individual/family
8. Residential community committee/Village committee/Autonomous organization
9. Unable to identify
77. Other [please specify]

3. Contract type

QG5"sign labor contract" Do you sign labor contract for this job?

1. Yes
5. No

WORK QUESTIONNAIRE IN CFPS2014（IN BRIEF）

QG1 "Work ownership" Do you work for yourself/family or are you employed by others/organizations/units/ companies?

1. Work for myself/family 5. Employed by others/organizations/units/companies

QG101 "Type of work" Is your job an agricultural job or a non-agricultural job?

1.Agricultural job (forestry, stock farming, fishing and other sideline productions)
5. Non-Agricultural job

【Data】 Generate JOBCLASS_base:

#1 JOBCLASS_base=1 (run business of agricultural products produced by family) if QG1=1 & QG101=1.
#2 JOBCLASS_base=2 (private company/self-employed business/ other self-employed) if QG1=1 & QG101=5.
#3 JOBCLASS_base=3(agricultural worker) if QG1=5 & QG101=1.
#4 JOBCLASS_base=4(employed) if QG1=5 & QG101=5.

If QG1=5, continue to ask QG2.

QG2 "Employer type" What type of organization do you work for?

1. Government/Party/People's organization
2. State-owned/Collectively-owned public institution/Research Institute
3. State-owned/State-controlled enterprise
4. Private enterprise/ Individually-owned Business
5. Enterprise invested by Foreign/Hong Kong/Macao/Taiwan Capital
6. Other enterprise [please specify]
7. Individual/family
8. Residential community committee/Village committee/Autonomous organization
9. Unable to identify
77. Other [please specify]

【Data】 Generate JOBCLASS:

#1 If JOBCLASS_base=3 and G2=1,2,3,4,5,6,8, JOBCLASS=4(employed).
#2 If JOBCLASS_base=4 and G2=7, JOBCLASS=5(Non-agricultural temporarily employed).
#3 If others, JOBCLASS=JOBCLASS_base.

JOBCLASS=
1，run business of agricultural products produced by family；
2，private company/self-employed business/ other self-employed；
3，agricultural worker；
4，employed；
5，non-agricultural temporarily employed。

(1) If JOBCLASS=2 (private company/self-employed business/ other self-employed) or 4 (employed), ask QG302.

QG302 "employer industry" What kind of business or industry is your work unit engaged in—that is, what type of products does your work unit make or what type of business is your work unit engaged in?_____

For example:

a) Consulting, providing legal consulting service to the government
b) Education, public university.
c) Manufacture, paper making.
d) Postal and telecommunication service, installing land-line phone.

(2) If JOBCLASS=2,3,4,or 5,ask QG303.

QG303 "Job duties" What is your job duty?_____

For example:

a) A logistic worker who purchases food and cook breakfast, lunch and dinner for the employees in the work unit.
b) A software engineer who develops on-line game software.
c) A customer manager who promotes credit card business.
d) A teacher who teaches English at a junior high school level in a training institution.
e) A government official who is responsible for the public traffic construction in the entire province.

f) Rice paddy farmer in this village

(3) If JOBCLASS=3,4,or 5,ask QG5 (sign labor contract),QG7 (benefit) and QG8 (material benefit).

QG5 "sign labor contract" Do you sign labor contract for this job?

1. Yes 5. No

QG7 "benefit" In the past 12 months, which kind of cash benefit does the job provide? Both cash and direct deposit to your bank account should be counted. [Select all that apply]

1. Transportation subsidy 2. Meal subsidy 3. Housing subsidy 4. Paid vacations 77. Other [please specify] ____ 78. None of the above

QG8 "material benefit" Which kind of material benefit did this job provide for you? [Select all that apply]

1. Free breakfast/lunch/dinner 2. Free housing 3.Company car/bus 4. Shopping card/coupon 77. Other[please specify]_____ 78. None of the above

(4) If JOBCLASS=2, or 4, ask QG9 (Work insurance).

QG9 "Work insurance" Which kind of insurance did this job provide for you? [Select all that apply]

1. Pension 2. Health insurance 3. Unemployment insurance 4. Work injury insurance 5. Maternity insurance 78. None of the above

#1 If QG9≠78, continue to ask QG901 and QG10.

#2 If QG9=78 and JOBCLASS=4(employed), skip to QG10.

#3 If QG9=78 and JOBCLASS=2(Individual-owned Business/other self-employed), do not ask QG10.

QG901 "contribution per month" How much was your own contribution per month to _____Yuan/per month (0…100,000).

QG10 "Whether fund for public housing" Did your employer provide funding for public housing?

1. Yes 5. No

(5) If JOBCLASS=2, 3, 4 or 5, ask QG12.

QG12 "total income" Including salary, bonus, cash benefit, material benefit, and excluding tax, insurances, and public housing, how much in total did you make from this job for the last 12 months? _____yuan (0…10,000,000).

(6) If JOBCLASS=4, ask QG14 and QG15.

QG14 "Management" Do you have management duty for this job?

1. Yes 5. No

QG15 "promotion" In the last 12 months, did you have technical/ management promotion?

1. Management job promotion 3. Technical job promotion 5. Both 78. Neither

(7) If JOBCLASS=2, or 4, ask QG16 and QG17.

QG16 "organization size" How many employees does the company/work unit/business have? ____ (0…1,000,000)

QG17 "direct subordinates" Do you have any direct subordinates in the company/work unit/business of this job?

1. Yes 5. No

(8) If JOBCLASS=2, 3, 4, or 5, ask QG20.

QG20 "work location" In the company/work unit/business of your primary workplace is:

1. Outdoor 2. In a workshop 3. In an office 4. At home 5. Other indoor spaces 6. Inside a transportation vehicle 77. Other [please specify] _____