Wage Differential between Rural Migrant and Urban Workers in the People's Republic of China

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Using a recently constructed dataset that draws on the China Employer–Employee Survey, this paper provides new evidence on the earnings gap between rural migrant and urban manufacturing workers in the People's Republic of China. When we only control for province fixed effects, we find that rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. We find that the gap in hourly earnings is larger than the gap in monthly earnings because rural migrant workers tend to work an average of 5.6% more hours per month than urban workers. Using these data, we also find that 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap can be attributed to differences in the individual characteristics and human capital levels of rural migrant and urban workers. Furthermore, we find that this unexplained earnings gap varies among different groups of workers. The earnings gap is much larger (i) for workers in state-owned enterprises than in nonstate-owned enterprises, (ii) for college-educated workers than workers with lower levels of educational attainment, and (iii) in Guangdong province than in Hubei province.

Keywords: China Employer–Employee Survey, rural migrant workers, wage gap
JEL codes: O15, J01, J31

I. Introduction

The large-scale movement of rural migrant workers from the low-productivity agriculture sector to higher-productivity sectors has been an important force behind the development of the economy of the People's Republic of China (PRC) (Li et al. 2017). According to the National Bureau of Statistics of China (NBSC), the total number of rural migrant workers reached 286.5 million and accounted for 37% of the total labor force in the PRC in 2017. The labor of rural

migrant workers has been particularly important in the PRC's manufacturing sector, which relies heavily on cheap, unskilled labor.

However, there is a large body of evidence indicating that rural migrant workers are paid significantly less than urban workers (Meng and Zhang 2001, Démurger et al. 2009, Zhang et al. 2016, Ge 2017, Ma 2018). Recent research has sought to understand the reasons why this earnings gap exists between rural migrant and urban workers. Some studies have found that a large portion of the gap can be explained by differences in individual characteristics, human capital levels, occupations, and industries (Démurger et al. 2009, Zhang et al. 2016), while others have found that most of the gap cannot be explained by observable factors (Meng and Zhang 2001, Ma 2018).

In this paper, we will use a new dataset, the China Employer–Employee Survey (CEES), to reexamine whether there is an earnings gap between rural migrant and urban workers in the PRC, and to determine how much of the gap can be explained by the individual characteristics and human capital levels of workers. To do so, we will first measure the earnings gap between rural migrant and urban workers in terms of both monthly and hourly wages. Next, we will examine how much of this gap can and cannot be explained by differences in the individual characteristics and human capital levels of workers after controlling for province fixed effects. Finally, we will investigate whether the size of the earnings gap and the amount left unexplained vary by firm ownership type, educational attainment, and region.

The CEES is a new longitudinal study on manufacturing firms and workers in the PRC. The CEES data offer several advantages to our research. First, the data provide detailed information on the *hukou* (household registration) status of each worker, which allows us to identify rural migrant and urban workers. The CEES also asks workers to provide the number of hours they work on a weekly basis, which allows us to calculate the hourly wages of workers. Furthermore, this dataset matches rich firm-level information with worker-level information, which helps us examine whether the wage differential between rural migrant and urban workers varies between different types of firms.

From our analysis, we find that, controlling for province fixed effects, rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. The gap in hourly wages is larger than that for monthly wages because rural migrants work an average of 5.6% more hours per month than their urban counterparts. As migrants and local workers are both selected groups of workers with different human capital attributes, such as age and education, we need to control for these attributes to partially address the potential concern of sample selection. Indeed, we find that the majority of the earnings gap can be explained by differences in individual characteristics and human capital levels. Specifically, 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap can be explained by differences in these observable factors between rural migrant

and urban workers, suggesting that selection based on human capital attributes is important for the earnings gap. When taking all these observable factors into consideration, we find that rural migrant workers earn 2.8% less per month and 8.4% less per hour than urban workers.

We also find that the earnings gap between rural migrant and urban workers varies substantially between workers who (i) are employed in firms under different types of ownership, (ii) have different levels of educational attainment, and (iii) live in different provinces. Specifically, we find that the hourly earnings gap between rural migrant and urban workers is 14 percentage points larger in state-owned enterprises (SOEs) than in other firms. This may suggest that SOEs favor local urban workers as a means of supporting the government's pursuit of social stability. In terms of educational attainment levels, we find that the hourly earnings gap is 10.9 percentage points larger between rural migrant and urban workers who have at least a college education compared to workers with lower levels of educational attainment. Last, we find that the hourly earnings gap is 5 percentage points larger in Guangdong province than in Hubei province.

This paper sheds light on the debate in the literature regarding the allocation of labor in different sectors. It is widely documented that large gaps in productivity and wages exist between rural and urban areas, and between agriculture and nonagriculture sectors (Young 2013; Gollin, Lagakos, and Waugh 2013). The underlying reasons for this trend have been thoroughly discussed in the literature of development economics. One strand of these studies argues that these gaps are the manifestation of the spatial misallocation of labor. Thus, some institutional barriers or labor mobility friction should be removed to encourage workers to move out of less productive rural areas or agriculture sectors to achieve productivity and welfare gains (Gollin, Lagakos, and Waugh 2013; Bryan, Chowdhury, and Mobarak 2014).

An alternative theory argues that the spatial distribution of labor may already be efficient and that such gaps could simply reflect differences in human capital and unobserved skills (Young 2013; Lagakos and Waugh 2013; Hicks et al. 2017; Herrendorf and Schoellman 2018; Lagakos, Mobarak, and Waugh 2018). Specifically, this line of thought argues that workers are geographically sorted into urban and rural areas based on their human capital and skills in response to the regional demand for skills. Generally, urban industries are more skill intensive and have a higher relative demand for skilled workers. Therefore, workers in urban areas may be more educated and have higher intrinsic ability.

Despite the fact that we cannot directly observe the differences between rural and urban workers in human capital or skills, our study's finding that a majority of the earnings gap between rural migrant and urban workers can be explained by their differences in educational attainment still informs this debate. To some extent, we can infer indirectly that rural workers may have much less human capital than urban workers, and this may account for much of the rural–urban gap in both productivity and wages. This result also suggests that in order to reduce such

rural–urban gaps, more government programs need to be provided for rural workers to accumulate human capital.

The remainder of this paper is organized as follow. Section II describes the institutional background of the *hukou* system and labor migration in the PRC. Section III describes our survey and data. Section IV presents our descriptive and regression results. Section V concludes.

II. Institutional Background

Following a series of economic reforms that began in the mid-1980s, the PRC's labor market experienced a set of remarkable transformations. One particularly important transformation has been the migration of labor from the agriculture sector to the urban manufacturing sector. Despite the importance of this labor migration, it was not always allowed in the PRC due to the *hukou* system.

The *hukou* system was first implemented in 1958 and assigned individuals either a "rural" or "urban" *hukou* classification based on where they were born. Under this system, individuals were not permitted to migrate from rural to urban areas, and it effectively established separate urban and rural economies as a result (Lardy 1983, Chan 1994, Chan 2015). Individuals with a rural *hukou* faced a series of institutional barriers to working in urban areas because converting one's *hukou* status was strictly regulated and subject to official quotas. For a rural individual to obtain an urban *hukou*, he or she needed to obtain a document demonstrating employment by an urban unit, admission to an urban school, or approval from urban authorities to migrate to the city.

However, there was an impetus to loosen *hukou* restrictions starting in the mid-1980s when the rapid development of township and village enterprises and the surge of foreign direct investment in the PRC's coastal areas created tremendous demand for the low-skilled labor residing in rural areas. As a result, workers in rural areas were provided opportunities to earn higher wages in the urban manufacturing sector and incentivized to migrate to urban areas in search of work. To satisfy the rising demand for low-skilled labor in the urban labor market, the *hukou* system was gradually relaxed by the government. The loosening of *hukou* restrictions significantly lowered the costs of migration and released excess labor from rural areas into the urban labor market. According to the NBSC, the total number of rural migrant workers reached 286.5 million and accounted for 37% of the total labor force in the PRC in 2017.

Even though rural migrant workers have contributed substantially to the PRC's economic growth in recent decades, a large body of evidence indicates that they face worse treatment than their urban counterparts in the urban labor market. For example, there appears to be a large gap between rural migrant and urban workers in terms of earnings, although the size of the gap has decreased

over time (Meng and Zhang 2001, Démurger et al. 2009, Zhang et al. 2016, Ge 2017, Ma 2018). It is not clear to what extent the gap can be explained by the observable differences between rural migrant and urban workers, such as individual characteristics and human capital levels. Some studies have found that the earnings gap can largely be explained by these factors (Démurger et al. 2009, Zhang et al. 2016), while other research finds that these factors cannot fully explain the earnings gap (Meng and Zhang 2001, Ma 2018).

III. Survey and Data

A.   China Employer–Employee Survey

The CEES is a new longitudinal study on manufacturing firms and workers in the PRC. CEES began in 2015 with a survey of firms and workers in the PRC's most important industrial province, Guangdong. In 2015, Guangdong accounted for 13.4% of all manufacturing firms (300,000 firms), 19.4% of all manufacturing workers (9.3 million workers), and 25.9% of international trade (imports and exports amounting to $1.1 trillion) in the PRC. In 2016, we followed up with the firms and workers that were surveyed in Guangdong in 2015 and added new workers from the province to the employee sample. Then, to capture differences between firms in Guangdong and those in the PRC's emerging central region, another province, Hubei, was added. Hubei province produced $708.3 billion in gross industrial output and employed 3.4 million manufacturing workers in 2015.

Lists of firms from the Third National Economic Census, which was conducted in early 2014, were used as the sampling frame for the survey. Sampling was conducted in two stages, each using probability proportionate-to-size sampling with size defined as the number of employees involved in manufacturing. Thus, the firm sample is representative of the employment size of firms in the PRC. In the first stage, 20 county-level districts were randomly sampled in each province, with probabilities proportionate to manufacturing employment size in each district. In the second stage, 50 firms were selected in each district as a target sample, again with probabilities proportionate to employment in each firm. Enumerators then visited the 50 firms sequentially and attempted to survey the first 36 eligible firms (that had production activities in the selected district). Employees were also randomly selected with stratification.

In total, we collected data from 573 firms in Guangdong in 2015 and from 1,122 firms in both Guangdong and Hubei provinces in 2016 (Appendix Table A.1). We achieved response rates of over 80% in both years. As an additional check of the representativeness of our sample, we present a comparison of our CEES sample against that of the Third National Economic Census and the *2016 China Statistical*

Yearbook in Appendix Table A.2. The numbers presented in the table suggest that our sample is generally representative of firms across the PRC.

The firm and worker questionnaires were designed by the authors together with a team of over 30 researchers. The 2016 firm questionnaire includes seven modules and 1,030 variables covering the basic situation of firms (including firm accounting data), firm head characteristics, management, production, sales, innovation, quality control, and human resources. In 2016, CEES questionnaires also included a management module that was designed for the World Management Survey (Bloom and Van Reenen 2007, Bloom et al. 2017).

There are several advantages to using CEES data to analyze the earnings differential between rural migrant and urban workers in the PRC. First, it is a newly constructed dataset, which can reflect the most recent conditions of rural migrant and urban workers. Second, it has detailed information on the *hukou* status of each worker, which can help us to differentiate between rural migrant and urban workers. For the purposes of our study, we define rural migrant workers as those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Third, the survey collects information on the working hours of survey respondents, which allows us to calculate the hourly wages of sampled workers. Finally, CEES has rich firm-level data that can be matched with worker data, which allows us to examine whether the earnings differential between rural migrant and urban workers varies between different types of firms.

B.   Data Summary

Summary statistics are presented in Table 1, which shows that 59% of workers in our sample are rural migrant workers. This share is almost twice as large as the proportion of rural migrant workers in the manufacturing sector nationally (31%) (NBSC 2017). However, this is likely because there is variation in the share of migrant workers in the manufacturing sector across provinces. As reported in Table 2, there is even considerable variation in the share of rural migrant workers employed in the manufacturing sector between our two sample provinces. Specifically, we find that 69.4% of sample workers in Guangdong province are rural migrant workers, while rural migrant workers only account for 47.3% of the sample workers in Hubei province.

In our paper, we evaluate the earnings of workers using two measures: monthly earnings (including both wages and bonuses) and hourly earnings (measured by dividing the monthly earnings measure by average hours worked per month).[1] As can be seen in Table 1, we find that the average monthly earnings of workers in our sample is about CNY4,997, which is 8.4% more than the national

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[1]Average hours worked per month is measured by multiplying the average hours worked per week for each worker by 4.3.

Table 1. **Summary Statistics**

Variables	Number	Mean	Standard Deviation	Minimum	Maximum
Rural migrant	7,799	0.59	0.49	0	1
Monthly earnings in 2015 (CNY)	7,799	4,997	4,328	1,000	86,667
Hourly earnings in 2015 (CNY)	7,799	24.27	22.68	3.32	388.52
Weekly working hours	7,799	51	11.58	6	112
Male	7,799	0.56	0.50	0	1
Age	7,799	37.09	9.44	17	72
Years of schooling	7,799	11.80	2.99	0	22
Junior high school or below	7,799	0.34	0.47	0	1
High school or vocational high school	7,799	0.37	0.48	0	1
Vocational college or above	7,799	0.29	0.45	0	1
State-owned enterprises	7,799	0.09	0.28	0	1
Hubei	7,799	0.47	0.50	0	1

CNY = Chinese yuan.
Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Monthly earnings include both wages and bonuses; hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month.
Source: Authors' calculations.

Table 2. **Percentage of Rural Migrants among Different Types of Firm Ownership and Provinces**

	Rural Migrant	
	Number	%
Ownership		
Non-SOEs	4,432	62.3
SOEs	175	25.4
Province		
Guangdong	2,883	69.4
Hubei	1,724	47.3
Total	**4,607**	**59.1**

SOE = state-owned enterprise.
Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*.
Source: Authors' calculations.

average of CNY4,610 (NBSC 2017).[2] Additionally, we find that the average hourly earnings is about CNY24. We also find that workers in our sample worked an average of 51 hours per week.[3]

In terms of the individual characteristics of workers, we find that 56% of workers in our sample are male, which is 5 percentage points higher than the national average in 2015 (51%) (NBSC 2017). On average, workers in our sample are 37 years old and have completed 11.8 years of schooling. When we examine the

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[2]The national average for monthly earnings is based on the annual average wages in urban manufacturing units in 2015.
[3]Weekly working hours is calculated by multiplying the weekly working days and daily working hours of each sample worker.

educational outcomes of workers by the highest level of educational attainment, we find that 34% of sample workers have a junior high school education or less, 37% have completed high school, and 29% have completed college.

In this paper, we also examine how the earnings gap varies between workers in firms under different forms of ownership and between workers from different provinces. Summary statistics for these two variables are also reported in Table 1. We evaluate two types of firms: SOEs and other types of firms (non-SOEs). As can be seen in the table, 9% of our sample are SOEs and 91% are non-SOEs. In terms of provinces, 47% of workers in our sample are from Hubei province and 53% are from Guangdong province.

Table 2 also presents the percentage of rural migrant workers employed in firms under different forms of ownership. As shown, 62.3% of workers in non-SOEs are rural migrant workers, but only about a quarter (25.4%) of sample workers in SOEs are rural migrant workers.

IV. Empirical Results

A.   Descriptive Results

Table 3 presents the mean differences in earnings, working hours, individual characteristics, and human capital levels between rural migrant and urban workers in our sample. This table shows that, on average, rural migrant workers earn less and work longer hours than urban workers. Specifically, rural migrant workers earn about CNY4,421 per month, which is 31.8% less than the monthly earnings of urban workers (significant at the 1% level). In addition, rural migrant workers earn about CNY20.4 per hour, which is 47% less than the hourly earnings of urban workers (significant at the 1% level). Furthermore, we find that the difference in hourly wages is larger than the difference in monthly wages because rural migrants work an average of 5.2 hours, or 10.8%, more per week than urban workers (53 hours versus 48 hours per week).

We also find that rural migrant and urban workers tend to differ significantly in terms of individual characteristics. For example, more urban workers than rural migrant workers are male (60% of urban workers versus 54% of rural migrant workers) (significant at the 1% level). Urban workers also appear to be older than rural migrant workers; the average age of urban workers is about 39 years old, while the average age of rural migrant workers is about 36 years old (significant at the 1% level).

When examining years of schooling, we find that rural migrant workers have received an average of 10.9 years of schooling, while urban workers have received an average of 13.2 years of schooling (significant at the 1% level). When looking at levels of educational attainment, we can see that there are significant differences

Table 3. **Mean Difference between Rural Migrant and Urban Workers**

	Urban Mean (SD) N = 3,192	Rural Migrant Mean (SD) N = 4,607	Mean Difference (3) = (2) − (1) (SE)
	(1)	(2)	(3)
Monthly earnings in 2015 (CNY)	5,828	4,421	−1,407***
	(5,593)	(3,038)	(98)
Hourly earnings in 2015 (CNY)	29.92	20.36	−9.56***
	(29.75)	(14.84)	(0.51)
Weekly working hours	48	53	5.2***
	(10)	(12)	(0.3)
Male	0.60	0.54	−0.066***
	(0.49)	(0.50)	(0.011)
Age	39.15	35.66	−3.49***
	(9.22)	(9.33)	(0.21)
Years of schooling	13.18	10.85	−2.33***
	(2.62)	(2.85)	(0.06)
Junior high school or below	0.15	0.47	0.317***
	(0.36)	(0.50)	(0.010)
High school or vocational high school	0.38	0.36	−0.023**
	(0.49)	(0.48)	(0.011)
Vocational college or above	0.47	0.17	−0.294***
	(0.50)	(0.38)	(0.010)

CNY = Chinese yuan, N = number of observations, SD = standard deviation, SE = standard error.
Notes: Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*.
Monthly earnings include both wages and bonuses; hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month.
Source: Authors' calculations.

between urban and rural migrant workers. Specifically, we find that, by a difference of 29.4 percentage points, more urban workers have received a vocational college education or above (47%) than rural migrant workers (17%) (significant at the 1% level).

B. Baseline Regressions

The descriptive results of our study are very revealing. On the one hand, we find that rural migrant workers are paid significantly less than urban workers in terms of both monthly earnings and hourly wages. On the other hand, rural migrant workers also differ significantly from urban workers in many observable human capital attributes such as age, gender, and education. Among these attributes, education may play the most important role. As rural migrants tend to have a lower level of education, they are expected to be paid less as the returns to education are generally positive. In this paper, we resort to multivariate regressions to estimate the rural–urban worker wage gap by controlling for these human capital attributes. As a caveat, our approach cannot fully account for the sample selection issue; rather, our

Table 4. **Monthly Earnings Differential Between Rural Migrant and Urban Workers**

	Monthly Earnings in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	−0.223***	−0.206***	−0.206***	−0.028**
	(0.014)	(0.013)	(0.013)	(0.013)
Male		0.287***	0.305***	0.252***
		(0.012)	(0.012)	(0.011)
Age			0.056***	0.063***
			(0.004)	(0.004)
Age squared			−0.001***	−0.001***
			(0.000)	(0.000)
Years of schooling				0.069***
				(0.002)
Hubei	−0.216***	−0.225***	−0.205***	−0.235***
	(0.013)	(0.012)	(0.012)	(0.012)
R-squared	0.059	0.124	0.149	0.247
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Monthly earnings include both wages and bonuses. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.
Source: Authors' calculations.

analysis descriptively compares the wage gap between rural migrant workers and urban workers given that they have the same observable human capital attributes.

To further investigate the earnings differential between rural migrant and urban workers when controlling for relevant variables, we estimate several regression equations. First, we estimate ordinary least squares regression equations using log monthly earnings as the dependent variable and individual characteristics (*hukou* status, gender, age, and years of schooling) as independent variables. We also include province fixed effects to control for regional variations that could affect our regression estimates, such as economic development levels and average wages. Robust standard errors are calculated for all regressions to obtain unbiased standard error estimates under possible heteroscedasticity.

Consistent with the descriptive results, our regression results reveal a large gap in monthly earnings between urban and rural migrant workers. As can be seen in column 1 of Table 4, when only controlling for province fixed effects, rural migrant workers are paid 22.3% less per month than urban workers (significant at the 1% level). When we add a gender control variable in column 2, we find that the magnitude of the coefficient estimate decreases, but it still suggests that rural migrant workers are paid 20.6% less per month than urban workers (significant at the 1% level). When a control for the age of workers is added into the regression equation (column 3), we again find that rural migrant workers are paid 20.6% less than urban workers.

When we add a variable representing the average years of schooling, we find that the majority of the monthly earnings gap between rural migrant and urban workers can be explained by differences in individual characteristics and human capital levels. When we control for years of schooling in column 4, we find that rural migrant workers are only paid 2.8% per month less than urban workers (significant at the 5% level). Notably, this estimated earnings gap is 86.4% smaller than the estimate in column 3 (–0.206 versus –0.028). The coefficient on the years of schooling variable suggests that each additional year of schooling is associated with a 6.9% increase in monthly earnings (significant at the 1% level). Taken together, when comparing the coefficient estimates in column 1 and column 4, we find that 87.4% of the gap in monthly earnings between rural migrant and urban workers can be explained by differences in individual characteristics and human capital levels.

C.   Working Hours

To investigate whether differences in earnings between rural migrant and urban workers are influenced by working hours, we also examine the differences in weekly working hours and hourly earnings between these two groups. We do so by estimating ordinary least squares regressions, similar to those described in the section above, that use weekly working hours and hourly earnings as dependent variables.

We find that rural migrant workers tend to work longer hours than their urban counterparts. In Table 5, we examine the difference in average weekly working hours between rural migrant and urban workers. When we only control for province fixed effects in column 1, we find that rural migrant workers typically work 9.9% more hours than urban workers on a weekly basis (significant at the 1% level). After adding controls for gender, age, and years of schooling, we find in column 4 that the estimated coefficient decreases, which suggests that rural migrant workers typically work 5.6% more hours per week than urban workers (significant at the 1% level).

In Table 6, we present the results of a series of regressions that examine the hourly earnings of workers. The earnings gap between rural migrant and urban workers appears to increase when we examine the hourly earnings of workers. This finding makes sense given that we have found that rural migrants work longer hours than urban workers. As is shown in column 1, the hourly earnings of rural migrant workers are 32.2% less than those of urban workers; this gap is 44.4% larger than that in column 1 of Table 4 (−0.223 versus −0.322). When we add controls for gender, age, and years of schooling in column 4, we find that urban workers earn 8.4% more on an hourly basis than rural migrant workers; this difference is over three times larger than that in column 4 of Table 4 (−0.028 versus −0.084).

Consistent with the baseline results presented in section IV.B, we find that, although there is still a significant difference in hourly earnings between rural migrant and urban workers, the majority of this gap can be explained by differences

Table 5. **Weekly Working Hours Differential between Rural Migrant and Urban Workers**

	Weekly Working Hours in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	0.099***	0.100***	0.102***	0.056***
	(0.005)	(0.005)	(0.005)	(0.006)
Male		0.022***	0.020***	0.034***
		(0.005)	(0.005)	(0.005)
Age			−0.002	−0.004**
			(0.002)	(0.002)
Age squared			0.000	0.000
			(0.000)	(0.000)
Years of schooling				−0.018***
				(0.001)
Hubei	−0.010**	−0.011**	−0.014***	−0.006
	(0.005)	(0.005)	(0.005)	(0.005)
R-squared	0.048	0.051	0.052	0.091
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.
Source: Authors' calculations.

Table 6. **Hourly Earnings Differential between Rural Migrant and Urban Workers**

	Hourly Earnings in Logarithm			
	(1)	(2)	(3)	(4)
Rural migrant	−0.322***	−0.307***	−0.308***	−0.084***
	(0.015)	(0.014)	(0.014)	(0.014)
Male		0.265***	0.285***	0.218***
		(0.013)	(0.013)	(0.012)
Age			0.058***	0.067***
			(0.005)	(0.004)
Age squared			−0.001***	−0.001***
			(0.000)	(0.000)
Years of schooling				0.086***
				(0.002)
Hubei	−0.205***	−0.214***	−0.191***	−0.229***
	(0.014)	(0.014)	(0.014)	(0.013)
R-squared	0.075	0.121	0.145	0.272
Number of observations	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong province.
Source: Authors' calculations.

in the individual characteristics and human capital levels of workers. After we add a control for years of schooling in Table 6, the magnitude of the coefficient estimate decreases from 0.308 in column 3 to 0.084 in column 4. Given that we also find that the coefficient on the years of schooling variable is positive and significant, the results appear to suggest that lower levels of educational attainment among rural migrant workers explain most of the hourly earnings gap. In addition, when we compare the coefficient estimates in column 1 (−0.322) and column 4 (−0.084), we find that 73.9% of the hourly earnings gap between rural migrant and urban workers can be explained by differences in individual characteristics and human capital.

D.   Heterogenous Effects

In Table 7, we examine whether the earnings gap between rural migrant and urban workers varies based on the ownership type of firms, educational attainment level of workers, and the region where workers are employed. We find that the hourly earnings gap between rural migrant and urban workers is much larger among workers employed in SOEs than in non-SOEs. In column 1, when our SOE dummy is added, the coefficient on the rural migrant dummy variable is still negative and significant (compared with the result in column 4 of Table 6), but the magnitude becomes slightly smaller (−0.073 versus −0.084). In column 2, we add a variable interacting the SOE dummy variable and the rural migrant dummy variable. As shown, the coefficients on the rural migrant dummy variable and the interaction term are both negative and significant. These findings suggest that an earnings gap exists in both SOEs and non-SOEs, and that the two gaps are significantly different. Specifically, the hourly earnings gap is 6.4% in non-SOEs, which is 14 percentage points smaller than the 20.4% gap observed for SOEs (significant at the 1% level), suggesting that urban workers in SOEs are more protected by the government for certain political reasons (Lin, Cai, and Li 1998; Dong and Putterman 2003; Bai, Lu, and Tao 2006).

From Table 7, we also find that the earnings gap between rural migrant and urban workers is much larger among those who have higher levels of educational attainment. In column 4, we add an interaction term between the college and rural migrant dummy variables to the regression equation. The results show that the coefficient on the rural migrant dummy variable is still negative (significant at the 1% level); however, the coefficient on the interaction term is also negative (significant at the 1% level). These findings suggest that an earnings gap exists both for workers who have received at least a college education as well as for those with lower levels of educational attainment. Specifically, for those workers who have not received any sort of college education, we find that rural migrant workers are paid 12.4% less than urban workers. This gap is 10.9 percentage points larger (23.3%) for those who have received at least a college education (significant at the 1% level).

Table 7. **Hourly Earnings Differential between Rural Migrant and Urban Workers with Interactions**

	Hourly Earnings in Logarithm					
	(1)	(2)	(3)	(4)	(5)	(6)
Rural migrant	−0.073***	−0.064***	−0.157***	−0.124***	−0.084***	−0.109***
	(0.014)	(0.015)	(0.014)	(0.016)	(0.014)	(0.020)
SOE	0.144***	0.183***				
	(0.023)	(0.029)				
Rural migrant × SOE		−0.140***				
		(0.045)				
College			0.454***	0.503***		
			(0.016)	(0.022)		
Rural migrant × college				−0.109***		
				(0.030)		
Hubei	−0.239***	−0.238***	−0.211***	−0.210***	−0.229***	−0.258***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.022)
Rural migrant × Hubei						0.050*
						(0.026)
Male	0.214***	0.215***	0.255***	0.255***	0.218***	0.219***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Age	0.066***	0.066***	0.066***	0.065***	0.067***	0.067***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
Age squared	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years of schooling	0.085***	0.084***			0.086***	0.086***
	(0.002)	(0.002)			(0.002)	(0.002)
R-squared	0.276	0.277	0.237	0.238	0.272	0.273
Number of observations	7,799	7,799	7,799	7,799	7,799	7,799

Notes: Robust standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Rural migrant workers are those who work in manufacturing (nonagriculture sector) and have a rural *hukou*. Hourly earnings are measured by dividing the monthly earnings measure by average hours worked per month. College is a dummy variable where 1 denotes vocational college and above and 0 denotes high school and vocational high school and below. SOE is a dummy variable where 1 denotes firms with state ownership and 0 denotes firms with nonstate ownership. Hubei is a dummy variable where 1 denotes Hubei province and 0 denotes Guangdong.
Source: Authors' calculations.

Last, we find that the earnings gap between rural migrant and urban workers is larger in Guangdong province than in Hubei province. In column 6, we interact the province dummy variable with the rural migrant dummy variable and find that the coefficient estimated on the interaction term is positive and significant. Additionally, the coefficient on the rural migrant worker dummy variable remains negative and significant, suggesting that the hourly earnings gap exists in both Hubei and Guangdong provinces, but the earnings gaps are significantly different between the two provinces. Specifically, the results indicate that the hourly earnings gap between rural migrant and urban workers is 10.9% in Guangdong province and 5.9% in Hubei province (significant at the 10% level).

V. Conclusions

In this paper, we use a recent dataset derived from the CEES to examine the earnings gap between rural migrant and urban workers, and to determine how much of this gap can be explained by differences in the individual characteristics and human capital levels of sample workers. When we control for province fixed effects only, we find that rural migrant workers are paid 22.3% less per month and 32.2% less per hour than urban workers. We find that the gap in hourly earnings is larger than in monthly earnings because rural migrant workers tend to work an average of 5.6% more hours per month than urban workers. After controlling for individual characteristics and human capital levels, we find that these factors account for 87.4% of the monthly earnings gap and 73.9% of the hourly earnings gap between rural migrant and urban workers. This means that most of the earnings gap between rural migrant and urban workers can be explained by the differences in individual characteristics and human capital levels, while only a small portion of the earnings gap is left unexplained after taking these factors into consideration.

Our research also shows that the size of the earnings gap between rural migrant and urban workers varies noticeably between (i) firms under different types of ownership, (ii) workers with different levels of educational attainment, and (iii) workers from our two sample provinces. Specifically, we find that the hourly earnings gap between rural migrant and urban workers is larger in SOEs than in non-SOEs, among workers with a college education compared to those with lower levels of educational attainment, and among workers in Guangdong province than in Hubei province.

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Appendix: China Employer–Employee Survey

Table A.1. **Sample Size and Response Rates of China Employer–Employee Survey in Hubei and Guangdong Provinces**

	Number of Observations	Response Rate (%)
Firms survey 2015 (Guangdong only)	573	82
Firms survey 2016	1,122	85
New sample (Hubei)	585	83
Follow-up sample (Guangdong)	487	85
New sample (Guangdong)	50	—
Workers survey 2015 (Guangdong only)	4,838	88
Workers survey 2016	9,103	80
New sample (Hubei)	4,114	89
Follow-up sample (Guangdong)	2,575	53
New sample (Guangdong)	2,414	94

Source: Authors' calculations.

Table A.2. **Characteristics of China Employer–Employee Survey versus the Census and Yearbook—Hubei and Guangdong Provinces**

	Third National Economic Census	2016 Statistical Yearbook	2016 CEES (Weighted)	2016 CEES (Unweighted)
Number of firms (thousand)	361.13	56.45	1.12	1.12
Employment (persons)	69	307	62	827
Assets (CNY million)	30.5	197.7	52.1	769.9
Industrial output (CNY million)		281.1	50.3	803.0
Profit (CNY million)		15.9	3.0	46.7
Profit rate (profit/sales) (%)		5.5	6.5	6.2
Type of industry (%)				
Farm and sideline food processing	3	5	14	5
Food manufacturing	2	2	3	2
Wine, beverage, and refined tea manufacturing	1	1	4	2
Tobacco product manufacturing	0.01	0.03	0.2	0.3
Textiles	3	4	5	6
Clothing	7	6	4	7
Leather, fur, feathers, and footwear industry	4	4	2	4
Wood processing and wood product industry	2	1	1	1
Furniture manufacturing	3	3	1	2
Paper and paper products	3	2	2	1
Printing	4	2	2	3
Education, art, sports, and entertainment	4	3	1	2

Continued.

Table A.2. *Continued.*

	Third National Economic Census	2016 Statistical Yearbook	2016 CEES (Weighted)	2016 CEES (Unweighted)
Chemicals	0.2	0.2	0.0	0.2
Chemical materials and product manufacturing	4	6	2	3
Pharmaceuticals	1	1	1	2
Chemical fibers	0.1	0.1	0.03	0.2
Balata and plastic products	8	7	8	4
Nonmetallic mineral products	6	9	20	10
Ferrous metals	1	1	0.3	1
Nonferrous metals	1	1	1	2
Metal products	10	7	7	7
General equipment manufacturing	5	4	2	3
Special equipment manufacturing	6	4	4	4
Automobile manufacturing	2	4	5	6
Railway, ship, and other transportation equipment manufacturing	1	1	0.4	1
Electrical machinery and equipment	9	9	5	9
Computer, communications, and other electronic equipment	8	9	3	10
Instrument manufacturing	1	1	1	1
Others	1	1	0.2	0.5
Comprehensive utilization of waste resources	0.4	1	0.1	0.5
Metal products, machinery, and equipment repair	1	0.1	0.2	0.4

CEES = China Employer–Employee Survey, CNY = Chinese yuan.
Notes: Calculations from CEES data are weighted using both the firm-size weight in a county (the probability of a firm being in a sample is proportional to its employment size) and the employment weight within a firm in 2013. *Statistical Yearbook* tabulations are based on *The Annual Survey of Industrial Firms* conducted by the National Bureau of Statistics of China with state-owned enterprises and other firms having sales revenue exceeding CNY20 million ($308,000). The Third National Economic Census (carried out in 2013) tabulations are from *The Statistical Bulletin for the Third National Economic Census*. Industries are classified according to the two-digit code of *The Industrial Classification for National Economic Activities* (GB/4754-2011). Calculations were also done using data from Guangdong Provincial Bureau of Statistics (2015, 2016) and Hubei Provincial Bureau of Statistics (2015, 2016).
Source: Authors' calculations.