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Wage premium, functioning labor markets, and the role of education: Evidence from rural China

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Abstract:

This paper assesses the China's rural labor market by exploring the role of education playing in the wage premium among different job locations by using samples covering more than 2000 households in 100 villages which are nationally representative. The results indicate that the rural labor markets are functioning and reflect as follows: (i) Whether the definitions of migration are, there are obvious wage premiums of migrants and with the boundary that we defined gradually away from the home township of rural labor, the wage premium becomes more obviously. At the same time, we find the return to education of migrants is significantly higher than those who work locally. (ii) Compared to the labor force employed in his/her township, those who worked in other job locations all have a significant wage premium when we have a more comprehensive division after considering the employment distance and cost of living. (iii) Only work in the big cities has a consistent significantly higher return to education than work within labor's home township.

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Wage premium, functioning labor markets, and the role of education: Evidence from rural China

1 Introduction

Recent years have witnessed the large-scale outflow of rural laborers from rural areas to supplement their local source of income through migration and wage employment (Guang & Zheng, 2005; Hare, 2002; Ning, 2012; Zhang, Huang, & Rozelle, 2002). The proportion of the rural labor force entering the labor market rose from around 22 percent in 1988 to 61 percent in 2011 (Li, Huang, Luo, & Liu, 2013; Rozelle, Li, Shen, Hughart, & Giles, 1999). According to official statistics, the number of migrant workers increased from 25 million in 1985 to 169 million in 2016. The income of households in China has grown significantly over the past few decades, and most of this growth has come from employment in the off-farm sector (McNamara & Weiss, 2005; Parish *et al.*, 1995; Rozelle, 1996; Zhang, Zhang, Luo, & Li, 2008).

The emergence and development of the labor market plays an important role in increasing the off-farm work and income of rural laborers. The effective labor market is conducive to the integration of urban and rural labor markets in China (Li *et al.*, 2013; Zhang *et al.*, 2002). Therefore, it is important to understand whether the labor market is functioning effectively for the better-coordinated development of urban and rural areas.

In the two decades since rural reform, many studies have explored whether the emergence of the labor market has played an important role in the process of national economic growth. Some studies have demonstrated that labor markets do not function well and significant barriers still exist in China's economy (Benjamin & Brandt, 1997; Johnson, 1996; Liu, Carter, & Yao, 1998; Mallee, 2000; Yang & Hao, 1996). In the meantime, other researchers have told a different story and shown that the rural labor market is constantly improving and plays an important role in China's economic

development (Cook, 1999; Knight & Song, 2001; Lohmar, 1999; Rozelle et al., 1999).

More importantly, some studies have assessed the role of education in increasing access to off-farm jobs and wages to judge whether the labor market has emerged in rural China. For example, some scholars suggest that non-market factors play an important role in the labor market, and that the role of human capital has not been reflected (Mallee, 2000; Meng, 1990, 1995). In the meantime, some studies have demonstrated that the labor market is constantly improving, because education has a significant effect on wage determination (Li, De Brauw, Rozelle, & Zhang, 2005; Maurer-Fazio, 1999; Zhang et al., 2002). Since then, more and more studies have been conducted to explore the returns to education of rural laborers (De Brauw & Rozelle, 2008; Deng & Ding, 2013; Xing, Jia, & Li, 2013; Zhang et al., 2008; Zhang & Li, 2006). These studies have made important contributions to the literature regarding the role of education in the labor market; however, most rural studies only estimate the overall returns to education, as it is assumed that the returns to education in different regions are the same.

Although there has been a small amount of research on the difference in the return to education between urban and rural areas (Deng & Ding, 2013; Johnson & Chow, 2010; Liu & Zhang, 2013; Yao & Zhang, 2004), moreover, research has been conducted to measure the compensatory effect of the labor market on distance and living cost by measuring the wage premium of the labor force among different job locations (Ning, 2012, 2014; Kong, Liu, & Kong, 2017), but there is still a lack of studies on the regional differences in the return to education.

To the best of our knowledge, only two studies have explored the wage premium of education among different job locations (regional distribution of the return to education) using a rural dataset in China. Using data collected from 309 households in 1995 in Xiayi County of Central China's Henan Province, Hare (2002) explored the differences in the returns to education of destination-provinces with different capital-labor ratios. Xing et al. (2013) found that the east and the rich cities have higher returns to education than do the central and west regions. However, in his study, laborers that do not migrate across the county are excluded. Hence, the division of job

location was too broad and the studies were relatively old and, thus, did not adequately reflect the recent characteristics of the returns to education of the rural labor force at different job locations. Further, they have not adopted strategies to alleviate the endogenous problem because of missing variables, such as personal ability. Therefore, it is necessary to use the latest nationally representative data to analysis the returns to education in different job locations in more detail, as well as to further assess China's rural labor market.

The overall goal of this study is to assess China's rural labor market by exploring the role of education in the wage premium among different job locations. To meet this goal, we have three specific objectives. First, we describe the distribution of job locations at different levels of education and the hourly wage of rural laborers at different job locations with different levels of educational attainment. Second, we model the effect of job location on the hourly wages of rural laborers. Third, we examine the returns to education among different job locations with different model specifications. In this process, we not only take job location as binary division, but also have a more comprehensive division after considering the employment distance and cost of living for a more detailed study.

The remainder of this paper is organized as follows. In Section 2, we briefly introduce the data used in this study. Section 3 describes the difference in wages among different job locations by educational attainment. Section 4 presents our empirical models and results. Finally, a summary of the findings and discussion are presented in Section 5.

2 Data

This study uses the China Rural Development Survey dataset collected by the Center for Chinese Agricultural Policy of the Chinese Academy of Sciences in April 2016. Multi-stage stratified cluster sampling was used to select the sample. The sample provinces were randomly selected from each of China's major agro-ecological zones, excluding Tibet and Hainan. Five sample counties were then selected from each province using a two-step procedure. First, the enumeration team listed all

counties in each province in descending order of the per capita gross value of industrial output (GVIO). GVIO was used, as it is a good predictor of standard of living and development potential and is often more reliable than net rural per capita income statistics (Rozelle, 1996). Second, the five sample counties were randomly selected from each list. After the county selection was completed, the team then chose the sample townships and villages following the above mentioned procedure. Further, the survey team used village rosters and the team's own count (of households that were living in the village, but not on the roster) to randomly choose 20 households in each village. Finally, a nationally representative sample of 2026 households in 100 villages was selected.

The enumerators questioned all household members regarding their formal schooling years, on- and off-farm work, job location, average working hours in a day, average working days in a month, working months in a year, off-farm earnings, and other individual traits in each household.

To focus on job location and wage premium in the labor market, we restricted our sample to those engaged in off-farm wage employment. There is no clear retirement line for rural residents. Most individuals over 60 years are still working in on- or off-farm sectors. Therefore, we considered the labor force in the age range of 16 to 64 years with off-farm wage employment as our sample group. Individuals under the age of 16, those enrolled full-time in school, retirees, the self-employed, and household members who did not work for health-related reasons were excluded. Thus, the number of individuals in this study was 2472. Further, wage was comprised by three major components: basic wage, subsidies, and bonuses.

3 Methodology

For the benchmark estimation, we use the ordinary least squares (OLS) model to examine whether there is a significant wage differential across job locations. For convenience, we define Y_i as the hourly earnings measured for individual i . To avoid methodological shortcomings, using off-farm earnings and working hours, we calculate the hourly wages. The measure of wages largely affects the estimation

results. Since differences in wealth endowments depend on differences in work and leisure choices, this may cause relatively poor workers to work longer after completing their own education. Therefore, the poor workers may work more hours per day, month, or year, and studies that utilize daily, monthly, or annual earnings to estimate the returns to education may probably underestimate the results. The hourly wage is a more accurate measure (Card, 1999; Schultz, 1988), as it is not affected by the number of hours per day or days per month that laborers work.

Moreover, $joblocation_i$ represents the vector of the rural laborers' choice of job location. The labor-source-province dummy variables, which are characterized by $lsprovince_i$, are control variables, while u_i is a disturbance term representing other forces that cannot be explicitly measured. Therefore, we obtain the following equation to demonstrate the impact of job location on wage as follows.

$$\log Y_i = \alpha joblocation_i + \lambda lsprovince_i + u_i \quad (1)$$

The impact of education on wages is the focus of this study. Thus, we add the years of formal schooling in Model (1). Moreover, we add other control variables to Model (1) to obtain Model (2). X is the vector of individual feature variables including social capital, gender, experience (age minus years of formal education and then minus 6), experience squared, whether a Chinese Communist Party member, gender, whether having a village cadre in his/her family, and marital status. The detailed definitions of the variables are shown in Table A.1 of the Appendix.

$$\log Y_i = \alpha joblocation_i + \beta edu_i + \delta X_i + \lambda lsprovince_i + u_i \quad (2)$$

In order to better examine the differences in returns to education in different job locations, we further join the cross items of years of formal education and job location.

$$\log Y_i = \alpha joblocation_i + \chi joblocation_i * edu_i + \beta edu_i + \delta X_i + \lambda lsprovince_i + u_i \quad (3)$$

Considering the availability of different occupations in different locations and the differences in wages that may arise from different occupations, we control the occupation of the labor force. Thus, we obtain the following equation to demonstrate the impact of job location on wage as shown below:

$$\log Y_i = \alpha joblocation_i + \chi joblocation_i * edu_i + \beta edu_i + \delta X_i + \lambda lsprovince_i + \varepsilon occu_i + u_i \quad (4)$$

where ocu_i stands for the occupation that the individual pursues.

In order to address the endogenous problem, we use family fixed effects to estimate the impact of job location on wage. The definitions of the explained variables are the same as those in the OLS model. For each individual i in the family j , we have:

$$\log Y_{ij} = \alpha \text{joblocation}_{ij} + \chi \text{joblocation}_{ij} * \text{edu}_{ij} + \beta \text{edu}_{ij} + \delta X_{ij} + \varepsilon \text{ocu}_i + \mu_j + \varepsilon_{ij}, \quad (5)$$

where the meanings of the expressions are the same as above, μ_j are the unobservable characteristics shared in family j , and ε_{ij} is the error term assumed to be white noise. A pooled regression is not appropriate since it ignores the unobservable characteristics μ_i shared in each family, such as genetics and family culture, which have an influence on both migration choice and hourly wage. Thus, we obtain the average at the family level as shown below.

$$\overline{\log Y_j} = \alpha \overline{\text{joblocation}_j} + \chi \overline{\text{joblocation}_j * \text{edu}_j} + \beta \overline{\text{edu}_j} + \delta \overline{X_j} + \varepsilon \overline{\text{ocu}_j} + \mu_j + \varepsilon_j \quad (6)$$

By using the family fixed effects model, we can eliminate μ_j from the equation by differentiating the above equation in the following way.

$$\log Y_{ij} - \overline{\log Y_j} = \alpha (\text{joblocation}_{ij} - \overline{\text{joblocation}_j}) + \chi (\text{joblocation}_{ij} * \text{edu}_{ij} - \overline{\text{joblocation}_j * \text{edu}_j}) + \beta (\text{edu}_{ij} - \overline{\text{edu}_j}) + \delta (X_{ij} - \overline{X_j}) + \varepsilon (\text{ocu}_{ij} - \overline{\text{ocu}_j}) + (\mu_j - \mu_j) + (\varepsilon_{ij} - \overline{\varepsilon_j}) \quad (7)$$

4 Empirical Results

4.1 Descriptive Results

As Table 1 reports, the rural labor force with a higher education level has a higher proportion of employment outside of its own township. For example, we can see that the proportion of rural laborers with college and above education levels working outside of their own townships is about 25 percent more than those that are illiterate (Table 1, Column 1, Rows 1 and 4). When we looked at those rural laborers outside of their own counties, we found roughly the same trend, although the proportion was roughly the same between rural laborers with junior and senior high school education levels (Table 1, Column 2, Rows 1 to 4). However, when we took the own province of a rural laborer as a boundary to define migration, the results were different. The rural labor force, which had a low educational level, showed a higher

proportion of employment outside its own province (Table 1, Column 3, Rows 1 to 4).

[Table 1 about here]

In addition, we have a more comprehensive division considering the employment distance and cost of living. As shown in Table 2, the rural labor force with a higher education level had a higher proportion of employment within its own county, but outside of its own township; within province, but outside of its own county; and staying in big cities for a position (Table 2; Columns 2, 4, and 5; Rows 1 to 4), while the opposite phenomenon appeared between those job locations within its own township and in the ordinary cities outside of its own province (Table 2, Columns 1 and 4, Rows 1 to 4). It is interesting to note that the ratio of primary and junior high school laborers working in ordinary cities outside of their own provinces was higher than that of laborers with other educational levels (Table 2, Column 4, Rows 1 to 4).

[Table 2 about here]

Table 3 presents the hourly wages of the workforce at different job locations. Overall, the hourly wage of the migrant labor force was significantly higher than those working locally, regardless of the boundary (Table 3; Columns 3, 6, and 9; Row 5). We found an interesting phenomenon that the higher the level of education, the higher the wage premium paid by migration (Table 3; Columns 3, 6, and 9; Rows 1 to 4). At the same time, the differences in the hourly wage of the laborers working locally were less than those of migrant laborers with different educational endowments (Table 3; Columns 1, 2, 4, 5, 7, and 8; Rows 1 to 4).

[Table 3 about here]

Table 4 shows a more detailed description of the hourly wages of laborers at different levels of education in different job locations. Compared to the labor force employed within its own township, regardless of education level, those laborers outside of their own townships and within their own counties, or outside of their own counties and within their own provinces, did not show a significantly higher wage (Table 4, Columns 3 and 5, Rows 1 to 4). Compared to the labor force employed within its own township, those laborers working in big cities have shown a higher wage premium (Table 4, Column 9, Rows 2 to 5). Moreover, the hourly wages of the

laborers working in big cities were significantly higher than those of the laborers working in other job locations with different educational endowments (Table 4, Column 9, Rows 1 to 4).

[Table 4 about here]

4.2 Estimation Results

When we only examined the relationship between migration and wages, we found that the wage premium was more than 20 percent and grew with the increase in the boundaries of migration (Table 5; Columns 1, 4, and 7; Row 1). When we added other control variables, we came to the same conclusion, even though the absolute value of the wage premium had been reduced (Table 5; Columns 2, 5, and 8; Row 1). At the same time, we found that for each additional year of education of rural laborers, the off-farm wages increased by more than 3 percent (Table 5; Columns 2, 5, and 8; Row 2). When we shed light on the wage premium of education among different job locations, we found that migration rural laborers could earn over 3 percent than those working locally when the educational years of labor increased by one year (Table 5; Columns 3, 6, and 9; Row 3). In other words, the return to education of migrants was 3 percent higher than those working locally.

[Table 5 about here]

The estimates of the coefficients of the other variables in the model were also reasonable. Social capital had a significant effect on the off-farm wage. If laborers have more than one relative or friend that works in the hospital or government departments, or as a business manager, his/her hourly wage would increase by about 8 percent (Table 5; Columns 3, 6, and 9; Row 4). The hourly wage was higher for men than women, and the wage premium was more than 27 percent (Table 5; Columns 3, 6, and 9; Row 7). Likewise, those who had a spouse had a 15 percent wage premium more than did those who were single (Table 5; Columns 3, 6, and 9; Row 10). Moreover, those laborers who had a village cadre in his/her own family earned less more than 5 percent than those laborers with no village cadre in his/her family (Table 5; Columns 2, 3, 5, 6, 8, and 9; Row 6).

Considering the availability of different occupations at different locations and the differences in wages that may arise from different occupations, we further controlled the occupation of the labor force. The results are presented in Table 6. We found that the wage premium paid was slightly increased if laborers worked outside their own townships, as migration. For example, when we only examined the relationship between migration and wages, the wage premium increased from 24.7 percent to 25.8 percent (Table 6, Column 1, Row 1); when we further included the other control variables, it increased from 20.6 percent to 21.4 percent (Table 6, Column 2, Row 1). In addition, when we considered migration as outside of one's own county or province, the opposite results were presented, that is, the wage premium of migration decreased when we controlled the occupation (Table 6; Columns 4, 5, 7, and 8; Row 1). Moreover, returns to education declined slightly (Table 6; Column 2, 5, and 7). Further controlling the occupation of the labor force, the impact of education on the wage premium of migration was lowered, compared with the results in Table 6. The impacts of education on the wage premium of migration were reduced to 3.1 percent, 3.2 percent, and 2.7 percent as per different definitions of migration (Table 6; Columns 3, 6, and 9, respectively; Row 3).

[Table 6 about here]

The estimates of the coefficients of the other individual variables in the model are still significant. The impact of social capital on wage has increased, while that of marital status on wage has declined (Table 6; Columns 2, 3, 5, 6, 8, and 9; Rows 4 and 9). Interestingly, whether there were village cadres in the family no longer had an impact on wage (Table 6; Columns 2, 3, 5, 6, 8, and 9; Row 6), which differs from the results in Table 5. The estimated results when we further controlled the dummy variables of county, township, and village of the labor force are presented in Table A.2 of the Appendix, and are consistent with those discussed above.

By using family fixed effects estimation to eliminate the influence of genetics and family culture, we obtain the net impacts of education among different job locations on wage. Our results are still roughly the same as the previous estimates and show a significant wage premium. However, the OLS estimation underestimated the

extent of the wage premium. When we only examine the relationship between migration and wages, the wage premiums were 35.5 percent, 29.2 percent, and 37.6 percent depending on the different definitions of migration, and were higher than the results of the OLS model (Table 7, Columns 1, 4, and 7, respectively). At the same time, we concluded that the returns to education fell from about 3 percent in Table 6 to less than 1 percent (Table 7; Columns 2, 5, and 8; Row 2). Yet, the return to education of migrants was still significantly higher than that of those working locally (Table 7, Columns 6 and 9, Row 3). Furthermore, the result of the family fixed effects estimation showed that the OLS estimation underestimated the wage premium of gender (Table 7; Columns 3, 6, and 9; Row 5). Those who had a spouse had a wage premium of about 10 percent more than those without a spouse and slightly lower than the results in Tables 5 and 6 (Table 7; Columns 3, 6, and 9; Row 8).

[Table 7 about here]

Table 8 reflects the wage premiums at different job locations in more detail. When we only examine the relationship between job location and wage, compared to the labor force employed in its own township, those who work outside of their own townships and within their own counties can earn a wage premium of about 11 percent (Table 8, Column 1, Row 1). In the meantime, those who work outside of their own counties, but within their own provinces, earn a slightly higher wage premium than do those working outside their own townships and within their own counties, at about 21.4 percent (Table 8, Column 1, Row 2). Moreover, compared to the labor force employed in its own township, laborers who work in ordinary cities outside of their own provinces can earn about a 30 percent off-farm wage premium, and those working in big cities can earn more than a 45 percent wage premium (Table 8, Column 1, Rows 3 and 4). After adding the control variables, we found that the wage premiums in all job locations were reduced (Table 8; Column 2; Rows 1, 2, 3, and 4). The wage premium was improved after further controlling the occupation of the labor force (Table 8; Column 4; Rows 1, 2, 3, and 4). Returns to education were similar to those of the previous analysis at about 3 percent (Table 8, Columns 2 and 5, Row 5).

[Table 8 about here]

More importantly, regarding the previous results in Tables 5, 6, and 7, only reflecting the differences in the returns to education between migrating for work and working locally, Table 8 presents a detailed difference in the return to education at different job locations. We concluded that the returns to education in one's own province, but outside his/her own county, or in big cities, are significantly higher than those within one's own township (Table 8, Column 3, Rows 7 and 9). After further controlling the occupation of the labor force, the results were still consistent (Table 8, Column 6, Rows 7 and 9). In addition, the estimated results when we further controlled the dummy variables of county, township, and village of the labor force are listed in Table A.3 of the Appendix, and are consistent with those discussed above.

Similar to the previous analysis, we used family fixed effects estimation to test robustness. We found, in addition to in big cities, wage premiums in other job locations have risen by more than 10 percent (Table 9, Columns 1 and 2, Rows 1 to 4), while the overall returns to education disappeared (Table 9, Column 2, Row 5). Further, only the returns to education in big cities were significantly higher than those within one's own township, and the difference was 6.5 percent (Table 9, Column 3, Row 5).

[Table 9 about here]

5 Conclusion and Discussion

In this paper, we have studied the role of education in wage premiums among different job locations in rural China using samples covering more than 2000 households in 100 villages, which are nationally representative.

We found that, whatever the definitions of migration, there are obvious wage premiums associated with it. When we define the boundary gradually away from the township to which the village belongs, the wage premium becomes more obvious. The results are consistent with those of previous studies (Kong et al., 2017; Ning, 2012). At the same time, we have found that the returns to education of migration are significantly higher than those of local laborers. Moreover, we have a more

comprehensive division after considering the employment distance and cost of living. We conclude that compared to the labor force employed in its township, those who work in other job locations all have a significant wage premium. It is worth mentioning that the wage premium in the big cities is more obvious.

These results indicate that the rural labor markets are functioning. In addition, the wage premium is probably a compensation for the cost of living as well as the psychological burden of being away from home. Additionally, a part of the higher premium can be explained by obvious knowledge spillover and technological advancement in big cities (Glaeser & Resseger, 2010; Puga, 2010). However, the specific cause of the wage premium is not the focus of our paper and, thus, our data cannot support this part of the argument.

More importantly, according to the OLS and the family fixed effect model estimates, we concluded that only laborers working in big cities have a significant and consistently higher return to education than have those that work locally. That is to say, the role of education has been better reflected in big cities where there is a higher degree of marketization. This also reveals why big cities are attractive to the better-educated laborers.

Considering that education is rewarding, increasing the investment in human capital is necessary for the income growth of rural residents and poverty alleviation in rural areas. Xing et al. (2013) show that, assuming the same average income, job locations offering a high rate of return to education will attract more laborers with high education levels. From a policy perspective, actions that serve to even the playing field between rural and urban residents seem to be the most efficient ways to achieve desirable efficiency outcomes in the labor market. It is necessary to enhance the ability of rural residents to move to areas that are more efficient by minimizing their transportation and communication costs. At the same time, gradually eliminating institutional barriers is crucial to facilitating the flow of rural labor to the city (especially the big cities).

Our study, to the best of our knowledge, has made at least three contributions to the literature. First, we further verify that the increased investment in education pays

off and migrants earn a significant wage premium compared to those working locally. Second, we use the latest Chinese rural data to understand the role of education in the wage premium across different job locations. Finally, we use the family fixed effects model to alleviate the endogenous problems. However, despite the abovementioned contributions, we acknowledge that the conclusion of this study depends on a hypothesis that seems too strong: individuals from the same family share the same genetics, ability, and family background. Our research can be improved in the future when more appropriate data and advanced approaches are available.

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Tables

Table 1 The distribution of job locations at different levels of education

	Education endowments	Outside own township	Outside own county	Outside own province
(1)	Primary school and Below (%)	63.3	42.1	24.8
(2)	Junior high school (%)	71.3	49.7	27.1
(3)	Senior high school (%)	72.4	48.0	21.7
(4)	College and above (%)	88.0	62.9	24.4
(5)	All sample (%)	71.7	49.3	25.3
(6)	N	1,773	1,218	625

Data source: China Rural Development Survey.

Table 2 The distribution of job locations at different levels of education

		Within county, but outside own township	Within province, but outside own county	The ordinary cities outside own province	Big cities outside own province	
	Education endowments	(1)	(2)	(3)	(4)	(5)
(1)	Primary school and Below (%)	36.73	21.15	17.31	10.96	13.85
(2)	Junior high school (%)	28.74	21.6	22.52	11.01	16.13
(3)	Senior high school (%)	27.56	24.43	26.3	7.72	13.99
(4)	College and above (%)	12.01	25.09	38.52	6.36	18.02
(5)	All sample (%)	36.73	21.15	17.31	10.96	13.85
(6)	N	699	555	593	243	382

Notes: (i) Data source: China Rural Development Survey. (ii) We define ordinary city outside own province not include big cities (iii) Big cities include those provincial capitals, municipalities and First-tier cities outside home province of labors.

Table 3 The hourly wages of the workforce at different job location (unit:Yuan)

	Education endowments	Outside own township			Outside own county			Outside own province		
		(a)	(b)	Difference=b-a	(c)	(d)	Difference=d-c	(e)	(f)	Difference=e-f
		No	Yes		No	Yes		No	Yes	
(1)	Primary school and below	11.7	13.3	1.6*	12.3	13.4	1.1*	12.4	13.7	1.3*
(2)	Junior high school	12.8	14.4	1.6**	13	14.9	1.9***	13.2	16	2.8***
(3)	Senior high school	13.1	15.3	2.2*	12.8	16.7	3.9***	13.5	18.9	5.4***
(4)	College and above	15.8	20.8	5.0*	15.4	23.0	7.6***	17.5	28.5	11.0***
(5)	All sample	12.7	15.3	2.6***	13.0	16.1	3.1***	13.6	17.4	3.8***

Notes: (i) Data source: China Rural Development Survey. (ii) *** p<0.01, ** p<0.05, * p<0.1

Table 4 The hourly wages of the workforce at different job location (unit:Yuan)

Education endowments	(a)	(b)	(c)		(d)		(e)		
	Within own township	Within county, but outside own township	Difference =b-a	Within province, but outside own county	Difference =c-a	The ordinary cities outside own province	Difference =d-a	Big cities	Difference =e-a
(1) Primary school and below	11.7	13.2	1.5	12.9	1.2	13.7	2.0*	13.7	2.0*
(2) Junior high school	12.8	13.2	0.4	13.5	0.7	14.2	1.4	17.2	4.4***
(3) Senior high school	13.1	12.4	-0.7	14.9	1.8	15.7	2.6**	20.6	7.5***
(4) College and above	15.8	15.2	-0.6	19.5	3.7*	21.9	6.1***	30.8	15.0***
(5) All sample	12.7	13.3	0.6	14.8	2.1***	14.9	2.2***	19.0	6.3***

Notes: (i) Data source: China Rural Development Survey. (ii) We define ordinary city outside own province not include big cities (iii) Big cities include those provincial capitals, municipalities and First-tier cities outside home province of labors.

Table 5 Estimation on the impact of job location on wages, OLS

		Explained variables: ln(hourly wage)								
		Outside own township defined as migration			Outside own county defined as migration			Outside own province defined as migration		
Explanatory variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Migration (Yes=1)	0.247*** (0.032)	0.206*** (0.033)	-0.102 (0.088)	0.259*** (0.028)	0.248*** (0.029)	-0.076 (0.080)	0.296*** (0.033)	0.284*** (0.032)	0.010 (0.092)
(2)	Years of formal schooling		0.032*** (0.005)	0.007 (0.008)		0.035*** (0.005)	0.017** (0.007)		0.035*** (0.005)	0.028*** (0.006)
(3)	Migration*Year of formal schooling			0.036*** (0.009)			0.035*** (0.008)			0.030*** (0.009)
(4)	Social capital		0.077** (0.032)	0.078** (0.032)		0.080** (0.032)	0.083*** (0.032)		0.077** (0.032)	0.079** (0.032)
(5)	CCP member (yes=1)		-0.014 (0.046)	-0.008 (0.046)		-0.020 (0.045)	-0.015 (0.045)		-0.033 (0.045)	-0.031 (0.045)
(6)	Village cadre in family(yes=1)		-0.052* (0.028)	-0.051* (0.028)		-0.053* (0.028)	-0.052* (0.028)		-0.052* (0.028)	-0.054* (0.028)
(7)	Gender (male=1)		0.277*** (0.029)	0.282*** (0.029)		0.271*** (0.029)	0.273*** (0.029)		0.277*** (0.029)	0.276*** (0.029)
(8)	Experience (Years)		0.013*** (0.005)	0.018*** (0.005)		0.013*** (0.005)	0.017*** (0.005)		0.011** (0.005)	0.012*** (0.005)
(9)	Experience squared (Years)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)
(10)	Marital status (have spouse=1)		0.159*** (0.047)	0.152*** (0.047)		0.183*** (0.047)	0.185*** (0.047)		0.176*** (0.047)	0.182*** (0.047)
(11)	Provincial dummy variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
(12)	Constant	2.210*** (0.039)	1.545*** (0.086)	1.707*** (0.096)	2.275*** (0.033)	1.539*** (0.083)	1.656*** (0.087)	2.338*** (0.030)	1.631*** (0.081)	1.684*** (0.082)
(13)	Observations	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472
(14)	R-squared	0.039	0.107	0.109	0.047	0.119	0.123	0.046	0.121	0.124

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 6 Estimation on the impact of job location on wages, OLS(Join the occupational dummy variables)

Explanatory variables	Explained variables (ln(hourly wage))								
	Outside own township defined as migration			Outside own county defined as migration			Outside own province defined as migration		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Migration (Yes=1)	0.258*** (0.033)	0.214*** (0.033)	-0.053 (0.087)	0.254*** (0.029)	0.243*** (0.029)	-0.050 (0.080)	0.287*** (0.033)	0.273*** (0.032)	0.026 (0.092)
(2) Years of formal schooling		0.029*** (0.005)	0.007 (0.008)		0.031*** (0.005)	0.015** (0.007)		0.031*** (0.005)	0.025*** (0.006)
(3) Migration*Year of formal schooling			0.031*** (0.009)			0.032*** (0.008)			0.027*** (0.009)
(4) Social capital		0.082** (0.032)	0.083** (0.032)		0.085*** (0.032)	0.088*** (0.032)		0.081** (0.032)	0.082** (0.032)
(5) CCP member (yes=1)		0.048 (0.049)	0.053 (0.049)		0.043 (0.048)	0.047 (0.048)		0.030 (0.048)	0.030 (0.048)
(6) Village cadre in family(yes=1)		-0.034 (0.028)	-0.033 (0.028)		-0.035 (0.028)	-0.035 (0.027)		-0.035 (0.027)	-0.037 (0.027)
(7) Gender (male=1)		0.277*** (0.030)	0.280*** (0.030)		0.274*** (0.029)	0.275*** (0.029)		0.284*** (0.029)	0.283*** (0.029)
(8) Experience (Years)		0.014*** (0.005)	0.018*** (0.005)		0.014*** (0.005)	0.018*** (0.005)		0.012*** (0.005)	0.013*** (0.005)
(9) Experience squared (Years)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)
(10) Marital status (have spouse=1)		0.150*** (0.046)	0.144*** (0.046)		0.173*** (0.046)	0.175*** (0.046)		0.166*** (0.046)	0.172*** (0.046)
(11) Provincial dummy variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
(12) Occupational dummy variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
(13) Constant	2.035*** (0.204)	1.289*** (0.213)	1.430*** (0.217)	2.156*** (0.201)	1.332*** (0.210)	1.448*** (0.211)	2.217*** (0.201)	1.417*** (0.209)	1.469*** (0.210)
(14) Observations	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472
(15) R-squared	0.068	0.136	0.139	0.074	0.146	0.151	0.073	0.146	0.149

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. (iii) In accordance with the "People's Republic of China occupation classification ceremony", we divided the jobs of rural labors into seven kinds of occupation.

Table 7 Estimation on the impact of job location on hourly wage, FFE (Family Fixed Effect)

Explanatory variables	Explained variables (ln(hourly wage))								
	Outside own township defined as migration			Outside own county defined as migration			Outside own province defined as migration		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Migration (Yes=1)	0.355*** (0.049)	0.285*** (0.050)	0.065 (0.113)	0.292*** (0.045)	0.235*** (0.046)	-0.033 (0.108)	0.376*** (0.055)	0.302*** (0.053)	-0.021 (0.129)
(2) Years of formal schooling		0.005 (0.007)	-0.013 (0.011)		0.006 (0.007)	-0.007 (0.009)		0.007 (0.007)	-0.001 (0.008)
(3) Migration*Year of schooling			0.025** (0.012)			0.029*** (0.010)			0.034*** (0.012)
(4) CCP member (yes=1)		0.089 (0.062)	0.092 (0.062)		0.070 (0.062)	0.076 (0.062)		0.068 (0.062)	0.069 (0.062)
(5) Gender (male=1)		0.288*** (0.030)	0.291*** (0.030)		0.290*** (0.031)	0.292*** (0.030)		0.291*** (0.030)	0.292*** (0.030)
(6) Experience (Years)		0.009 (0.006)	0.013** (0.006)		0.010* (0.006)	0.014** (0.006)		0.009 (0.006)	0.010* (0.006)
(7) Experience squared (Years)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)
(8) Marital status (have spouse=1)		0.133** (0.067)	0.119* (0.067)		0.130* (0.067)	0.123* (0.067)		0.115* (0.067)	0.116* (0.067)
(9) Occupational dummy variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
(10) Constant	2.064*** (0.258)	1.649*** (0.265)	1.761*** (0.270)	2.331*** (0.254)	1.840*** (0.260)	1.961*** (0.263)	2.459*** (0.253)	1.970*** (0.258)	2.036*** (0.258)
(11) Observations	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472
(12) R-squared	0.074	0.168	0.172	0.065	0.164	0.169	0.070	0.168	0.173
(13) Number of household	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 8 Estimation on the impact of job location on wages, OLS

Explanatory variables	Explained variables (ln(hourly wage))					
	(1)	(2)	(3)	(4)	(5)	(6)
(1) (a) Within county, but outside own township	0.110*** (0.040)	0.066* (0.039)	-0.059 (0.110)	0.130*** (0.041)	0.081** (0.040)	-0.009 (0.109)
(2) (b) Within province, but outside own county	0.214*** (0.039)	0.185*** (0.040)	-0.183* (0.108)	0.227*** (0.040)	0.195*** (0.040)	-0.132 (0.108)
(3) (c) The ordinary city cities outside own province	0.297*** (0.053)	0.277*** (0.053)	0.099 (0.153)	0.301*** (0.053)	0.270*** (0.053)	0.130 (0.151)
(4) (d) Big cities	0.463*** (0.045)	0.432*** (0.045)	-0.172 (0.123)	0.467*** (0.045)	0.432*** (0.045)	-0.118 (0.123)
(5) Years of formal schooling		0.035*** (0.005)	0.008 (0.008)		0.030*** (0.005)	0.008 (0.008)
(6) a*Years of formal schooling			0.016 (0.011)			0.012 (0.011)
(7) b*Years of formal schooling			0.041*** (0.011)			0.037*** (0.011)
(8) c*Years of formal schooling			0.021 (0.017)			0.016 (0.016)
(9) d*Years of formal schooling			0.067*** (0.013)			0.061*** (0.013)
(10) Social capital		0.081** (0.032)	0.082*** (0.032)		0.085*** (0.032)	0.086*** (0.032)
(11) CCP member (yes=1)		-0.014 (0.045)	-0.012 (0.045)		0.043 (0.048)	0.043 (0.048)
(12) Village cadre in family(yes=1)		-0.054** (0.028)	-0.051* (0.027)		-0.037 (0.027)	-0.035 (0.027)
(13) Gender (male=1)		0.266*** (0.029)	0.272*** (0.029)		0.271*** (0.029)	0.274*** (0.029)
(14) Experience (Years)		0.013*** (0.005)	0.018*** (0.005)		0.014*** (0.005)	0.018*** (0.005)
(15) Experience squared (Years)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)
(16) Marital status (have spouse=1)		0.187*** (0.047)	0.191*** (0.046)		0.177*** (0.046)	0.181*** (0.046)
(17) Provincial dummy variables	Included	Included	Included	Included	Included	Included
(18) Occupational dummy variables	-	-	-	Included	Included	Included
(19) Constant	2.230*** (0.038)	1.521*** (0.086)	1.691*** (0.095)	2.057*** (0.202)	1.282*** (0.210)	1.436*** (0.214)
(20) Observations	2,472	2,472	2,472	2,472	2,472	2,472
(21) R-squared	0.061	0.135	0.146	0.088	0.157	0.167

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 9 Estimation on the impact of job location on wages, FFE(Family Fixed Effect)

Explanatory variables	Explained variables (ln(hourly wage))		
	(1)	(2)	(3)
(1) (a) Within county, but outside own township	0.241*** (0.059)	0.195*** (0.058)	0.194 (0.142)
(2) (b) Within province, but outside own county	0.297*** (0.062)	0.248*** (0.063)	0.056 (0.145)
(3) (c) The ordinary cities outside own province	0.524*** (0.087)	0.418*** (0.087)	0.284 (0.206)
(4) (d) Big cities	0.541*** (0.071)	0.467*** (0.071)	-0.158 (0.170)
(5) Years of formal schooling		0.006 (0.007)	-0.011 (0.011)
(6) a*Years of formal schooling			0.003 (0.014)
(7) b*Years of formal schooling			0.022 (0.014)
(8) c*Years of formal schooling			0.016 (0.021)
(9) d*Years of formal schooling			0.065*** (0.016)
(10) CCP member (yes=1)		0.089 (0.062)	0.094 (0.062)
(11) Gender (male=1)		0.280*** (0.030)	0.282*** (0.030)
(12) Experience (Years)		0.009 (0.006)	0.013** (0.006)
(13) Experience squared (Years)		-0.000*** (0.000)	-0.000*** (0.000)
(14) Marital status (have spouse=1)		0.138** (0.067)	0.140** (0.067)
(15) Occupational dummy variables	Included	Included	Included
(16) Constant	2.198*** (0.036)	1.804*** (0.109)	1.919*** (0.120)
(17) Observations	2,472	2,472	2,472
(18) R-squared	0.062	0.157	0.171
(19) Number of household	1,324	1,324	1,324

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table A.1 Description of variables

Independent Variable	Measurement	Mean	Std
(1) Years of formal schooling	Years	9.17	3.51

(2)	Social capital	=1,if labors have more than one relatives and friends work in the hospital or government departments or as a business manager	0.25	0.44
(3)	CCP member	=1,if CCP member; 0, otherwise	0.11	0.32
(4)	Village cadre in family	=1,if at least a household member serving as village official; 0, otherwise	0.53	0.50
(5)	Gender	=1,if male; 0, otherwise	0.64	0.48
(6)	Experience	=age-years of formal schooling-6	22.42	13.90
(7)	Experience squared	years	695.61	711.09
(8)	Marital status	=1,if have spouse; 0, otherwise	0.81	0.39

Data source: China Rural Development Survey.

Table A.2 Estimation on the impact of job location on wages, OLS

Explanatory variables		Explained variables (ln(hourly wage))								
		Outside own township defined as migration			Outside own county defined as migration			Outside own province defined as migration		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Migration (Yes=1)	-0.070 (0.088)	-0.070 (0.087)	-0.031 (0.089)	-0.026 (0.080)	-0.028 (0.080)	-0.007 (0.081)	0.052 (0.092)	0.024 (0.093)	0.036 (0.094)
(2)	Years of formal schooling	0.005 (0.008)	0.006 (0.008)	0.007 (0.008)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	* (0.006)	* (0.006)	* (0.006)
(3)	Migration*Year of formal schooling	0.035** *	0.034** *	0.031** *	0.033** *	0.033** *	0.031** *	0.027** *	0.027** *	0.025** *
(4)	Social capital	0.084** *	0.087** *	0.095** *	0.086** *	0.090** *	0.098** *	0.083** *	0.085** *	0.093** *
(5)	CCP member (yes=1)	0.017 (0.046)	0.008 (0.046)	0.019 (0.046)	0.009 (0.045)	-0.001 (0.045)	0.005 (0.046)	-0.008 (0.045)	-0.016 (0.045)	-0.008 (0.046)
(6)	Village cadre in family(yes=1)	-0.044 (0.028)	-0.046 (0.028)	-0.067** (0.029)	-0.045 (0.028)	-0.046* (0.028)	* (0.028)	-0.053* (0.028)	-0.055* (0.028)	* (0.029)
(7)	Gender (male=1)	0.286** *	0.285** *	0.280** *	0.280** *	0.279** *	0.276** *	0.281** *	0.281** *	0.279** *
(8)	Experience (Years)	0.015** *	0.016** *	0.014** *	0.014** *	0.016** *	0.014** *	0.010** (0.005)	0.010** (0.005)	0.009** (0.005)
(9)	Experience squared (Years)	-0.000** *	-0.000** *	-0.000** *	-0.000* **	-0.000* **	-0.000* **	-0.000* **	-0.000* **	-0.000* **
(10)	Marital status (have spouse=1)	0.192** *	0.167** *	0.176** *	0.223** *	0.196** *	0.202** *	0.215** *	0.191** *	0.197** *

Continued Table A.2

Explanatory variables	Outside own township defined as migration			Outside own county defined as migration			Outside own province defined as migration		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(11) County dummy variables	Include d	-	-	Include d	-	-	Include d	-	-
(12) Township dummy variables	-	Include d	-	-	Include d	-	-	Include d	-
(13) Village dummy variables	-	-	Include d	-	-	Include d	-	-	Include d
(14) Constant	1.993** *	1.952** *	1.954** *	1.940** *	1.934** *	1.954** *	1.935** *	1.928** *	1.955** *
(15) Observations	(0.115)	(0.146)	(0.146)	(0.108)	(0.138)	(0.138)	(0.105)	(0.136)	(0.136)
(16) R-squared	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472
	0.143	0.168	0.193	0.157	0.182	0.205	0.153	0.173	0.196

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 3 Estimation on the impact of job location on wages, OLS

Explanatory variables	Explained variables (ln(hourly wage))								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) (a) Within county, but outside own township	0.132* ** (0.040)	0.091* * (0.040)	-0.039 (0.109)	0.133* ** (0.040)	0.088* * (0.040)	-0.037 (0.109)	0.153* ** (0.041)	0.109* ** (0.040)	0.004 (0.111)
(2) (b) Within province, but outside own county	0.262* ** (0.040)	0.233* ** (0.042)	-0.117 (0.108)	0.290* ** (0.041)	0.252* ** (0.042)	-0.088 (0.108)	0.302* ** (0.041)	0.263* ** (0.042)	-0.049 (0.110)
(3) (c) The ordinary city cities outside own province	0.348* ** (0.054)	0.329* ** (0.054)	0.170 (0.152)	0.356* ** (0.055)	0.327* ** (0.054)	0.169 (0.152)	0.367* ** (0.055)	0.335* ** (0.055)	0.200 (0.154)
(4) (d) Big cities	0.506* ** (0.047)	0.480* ** (0.047)	-0.113 (0.123)	0.493* ** (0.047)	0.458* ** (0.048)	-0.141 (0.124)	0.499* ** (0.048)	0.464* ** (0.048)	-0.104 (0.125)
(5) Years of formal schooling		0.033* ** (0.005)	0.007 (0.008)		0.032* ** (0.005)	0.007 (0.008)		0.031* ** (0.005)	0.008 (0.008)
(6) a*Years of formal schooling			0.016 (0.011)			0.016 (0.011)			0.013 (0.011)
(7) b*Years of formal schooling			0.039* ** (0.011)			0.038* ** (0.011)			0.035* ** (0.011)
(8) c*Years of formal schooling			0.019 (0.016)			0.018 (0.016)			0.015 (0.016)
(9) d*Years of formal schooling			0.065* ** (0.013)			0.066* ** (0.013)			0.062* ** (0.013)
(10) Social capital		0.085* ** (0.032)	0.086* ** (0.032)		0.088* ** (0.032)	0.090* ** (0.032)		0.097* ** (0.033)	0.099* ** (0.033)
(11) CCP member (yes=1)		0.014 (0.045)	0.015 (0.045)		0.004 (0.045)	0.005 (0.045)		0.015 (0.046)	0.015 (0.046)

Continued Table A.3

Explanatory variables	Explained variables (ln(hourly wage))								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(12) Village cadre in family(yes=1)		-0.049*	-0.045		-0.050*	-0.046*		-0.067*	-0.064*
		(0.028)	(0.027)		(0.028)	(0.028)		(0.028)	(0.028)
(13) Gender (male=1)		0.270**	0.276**		0.270**	0.276**		0.267**	0.272**
		*	*		*	*		*	*
		(0.029)	(0.029)		(0.029)	(0.028)		(0.029)	(0.029)
(14) Experience (Years)			0.016**			0.017**			0.015**
		0.011**	*		0.012**	*		0.011**	*
		(0.005)	(0.005)		(0.005)	(0.005)		(0.005)	(0.005)
(15) Experience squared (Years)		-0.000*	-0.000*		-0.000*	-0.000*		-0.000*	-0.000*
		**	**		**	**		**	**
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
(16) Marital status (have spouse=1)		0.221**	0.224**		0.197**	0.199**		0.203**	0.205**
		*	*		*	*		*	*
		(0.047)	(0.046)		(0.047)	(0.047)		(0.047)	(0.047)
(17) County dummy variables	Include	Included	Included	-	-	-	-	-	-
(18) Township dummy variables	-	-	-	Include	Included	Included	-	-	-
(19) Village dummy variables	-	-	-	-	-	-	Include	Included	Included
(20) Constant	2.510**	1.790**	1.963**	2.450**	1.767**	1.934**	2.440**	1.786**	1.938**
	*	*	*	*	*	*	*	*	*
	(0.068)	(0.105)	(0.113)	(0.114)	(0.137)	(0.143)	(0.114)	(0.137)	(0.144)
(21) Observations	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472	2,472
(22) R-squared	0.089	0.163	0.174	0.113	0.185	0.196	0.138	0.209	0.218

Note: (i) Data source: China Rural Development Survey. (ii) Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.