Does Education Still Pay Off in Rural China: Revisit the Impact of Education on Off-farm Employment and Wages

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Abstract

The present study considers how education affects off-farm job participation and wages. We use a nationally representative dataset from a survey conducted in 5 provinces, 101 villages and 808 households by the authors in early 2005. The empirical results show that educational attainment, skill training and years of experience of rural residents have positive, statistically significant effects on off-farm employment. The average return to a year of education is 7 percent, which is higher than those observed in previous studies. We also find the return to an additional year of schooling to be higher for post-junior high schooling than for junior high and below schooling: 11.8 versus 3.2 percent. We conclude that not only does education still pays off in rural China, but also the rate of return to education is increasing over time.

Key words: off-farm employment, returns to education, rural labor force
JEL codes: I21, J24, O15

I. Introduction

Although the income level of farmers in China has grown significantly over the past three

decades, almost all of this income growth has come from employment in the off-farm sector. In terms of comparable prices, per capita income of rural households rose 107.5 percent between 1985 and 2004 (Zhong and He, 2007). Since the mid-1980s, off-farm sectors, especially tertiary industries, have grown rapidly. The proportion of the rural labor force entering the off-farm labor force rose from around 15 percent in 1981 to approximately 43 percent in 2000 (de Brauw et al., 2002). By 2003, half of China's rural labor force earned at least part of their income from off-farm jobs (CCICED ARD Task Force members, 2006). Off-farm work has emerged as the main source of income growth for rural households in China.

Many studies have shown that improving education can help the rural labor force access off-farm job opportunities. de Brauw et al. (2006) demonstrate that better educated rural workers are most likely to take jobs in off-farm sectors. Zhang et al. (2001) examine the role of education in off-farm and on-farm work in the periods of boom and bust in rural China, using data from rural household surveys. They find evidence that education and experience of rural residents increase off-farm employment opportunities. Zhao's (1999) study shows that the development of rural education facilitates the displacement of a large part of China's rural labor force from on-farm work to off-farm work. Yang (1997) discusses the linkage between education and surplus labor transfer in rural China. He finds that non-agricultural sectors prefer more educated rural residents.

Previous studies also find evidence that better education positively impacts the off-farm earnings of rural residents. Zhang and Li (2006) explore the effect of human capital on off-farm earnings using a dataset collected in rural Shandong, Anhui and Sichuan province in 2006. They demonstrate that the average return to year of schooling is 9.9 percent. Correcting for selectivity into off-farm work and using the hourly wage rate, de Brauw and Rozell (2006) use a nationally representative survey of 1199 households in 6 provinces and 60 villages in rural China collected in late 2000 to estimate returns to education. They find that across all individuals with off-farm jobs in the sample, the mean return to a year of education is 6.4 percent. When the sample is restricted to individuals who are aged 35 years and under, the return of schooling is 10.5 percent, which equals the average return found in Asia. Using a dataset of households in northern Jiangsu in 2002, Li et al. (2005) investigate the rates of return to education and compare them to the same households in 1988, 1992 and 1996. They show that returns to education have risen over time. When rural households are able to place a member into an off-farm job, household income rises by an average 56 percent (CCICED ARD Task Force members, 2006).

The Chinese Government also recognizes the importance of education and has increased its investment in education. According to the National Bureau of Statistics, between 2001 and 2005, total investment in education increased from 463.8 billion yuan to 841.9 billion yuan, which is equivalent to an annual growth rate of 16.1 percent. Government appropriation

for education increased from 305.7 billion to 516.1 billion, an average annual growth rate of 14 percent (NBS, 2002, 2006).

Although few observers dispute the fact that government investment to education has been increased in absolute terms, China's investment in education is still comparatively low in relative terms. Heckman (2003, 2005) reports that in 1995 all levels of government in China spent approximately 2.5 percent of GDP on investment in schooling. This figure is 5.2 percent for the world, and 4–5 percent for other developing counties in Asia. An important question arises from this international comparison: Why is China's investment in education comparatively lower? Some scholars say that education might be underfunded in China in part because investment in rural education is perceived to generate relatively low private and, therefore, social rates of return (de Brauw and Rozell, 2006). If this explanation is accurate, then a further question worth asking is: Why are the rates of return to education low in China?

The measurement and use of data in studies in China might partially explain why the rates of return to education are lower in rural China (Zhang et al., 2001; de Brauw and Rozell, 2006). For example, the use of localized or unrepresentative samples (e.g. Ho et al., 2002; Zhang and Li, 2006) limits the generalizations that can be made. Using inappropriate measures of wages (e.g. Parish et al., 1995; Yang, 1997) could underestimate the true returns to schooling. In addition, failure to correct for sample selectivity bias, treating each year of education as the same, and failure to control for individual ability might also obscure the relationship between wages and educational attainment. Therefore, the goal of this paper is to reexamine the returns to education in rural China. Unlike previous studies (cited above), we will take measurement, selectivity bias and individual ability into consideration. We use a nationally representative dataset obtained from 5 provinces in rural China in 2004.

To meet these objectives, the rest of the paper will be organized as follows. In the next section, we introduce the data that are used for the analysis, which were collected by the authors in the spring of 2005. Section III uses descriptive statistics to explore the impacts of human capital on off-farm employment and wages. Section IV establishes an analytical method and presents a multivariate analysis. The final section concludes the paper.

II. Data

The data we used in this paper is obtained from a survey of 808 households in 5 provinces, 25 counties, 50 townships and 101 villages in rural China conducted by the authors in April 2005.

The sampling process is presented as follows. Five provinces were selected from each of China's major agro-ecological zones from a list of provinces arranged in descending order of gross value of industrial output (GVIO). GVIO was used on the basis of the

conclusion of Rozell (1994, 1996) that GVIO is one of the best predictors of standard of living and development potential and is often more reliable than net rural per capita income. China's major agro-ecological zones are eastern coastal areas (Jiangsu, Zhejiang, Shandong, Fujian and Guangdong); southwestern provinces (Sichuan, Chongqing, Guizhou, Yunnan, Tibet and Guangxi); Loess Plateau (Shanxi, Shaanxi and Inner Mongolia); north and central provinces (Hebei, Henan, Anhui, Hubei, Hunan and Jiangxi); and northeastern provinces (Liaoning, Jilin and Heilongjiang). Although we recognize that we have deviated from the standard definition of China's agro-ecological zones, the realities of survey work justified our compromises.

According to the above procedure, Jiangsu, Sichuan, Shaanxi, Hebei and Jilin were selected as sample provinces. From each province, 5 countries were selected, 1 from each tercile of a list of counties arranged in descending order of GVIO. Within each county, we chose 2 townships, and within each township, we chose 2 villages, all following the same procedure as the county selection. Hence, in each sample province we selected 20 villages (1 province $\times$ 5 counties $\times$ 2 townships $\times$ 2 villages), excepting for Jilin, where there was a problem in the initial village sample selection, so we add 1 more village in Jilin. Altogether, we selected 101 villages (20 for Jiangsu, Sichuan, Shaanxi and Hebei, and 21 for Jilin). Our enumerators selected 8 households randomly according to the roster of each village. The number of households was 808 households: 168 for Jilin province, and 160 for the other 4 sample provinces.

Enumerators questioned all household members about, for example, their educational attainment, on-farm and off-farm work, and off-farm earnings in the year 2004. Information was collected about the off-farm employment history (excluding housework) of each family member. There is no clear retirement line for rural residents: most elders above 60 years are still working, in on-farm or off-farm sectors. Therefore, we regard the 16 to 65 year old labor force as our study group. The descriptive statistics and participation model includes 1806 individuals. Those who were under 16 years of age, enrolled full-time in school, were retirees or household members who did not work for health-related reasons, and the self-employed were excluded from the study. Of those included in the study, 753 individuals worked for a wage off the farm, and 1053 did not. The rate of off-farm labor participation was 41.7 percent.

III. Descriptive Results

1. Relationship between Human Capital and Off-farm Employment in Rural China

Based on previous studies on education, and other human capital factors affecting

individuals' employment choices, we use descriptive statistics to determine whether people engaged in non-agricultural labor have higher levels of education. Firstly, however, we will pay attention to other features of rural labor market.

Separated into four educational levels, educational attainment and off-farm employment were found to have a positive and increasing relationship. The participation in off-farm jobs was at a much lower rate, approximately 10 percent, for illiterate rural workers in 2004; as the educational level increases, the off-farm participation rate of rural residents increases greatly. Almost 30 percent of primary school graduates were working off the farm, which is two times as likely as for illiterate group. Over 50 percent rural labor workers graduated from junior high school were engaged in off-farm jobs, and nearly 70 percent rural labor workers with senior high education participated in off-farm employment. In addition, over 93 percent of individuals with higher education were employed in the off-farm sector (Table 1). In contrast, as educational attainment increases, the on-farm participation rates of the rural labor force decline: the participation rates in off-farm employment were nearly 88 percent, over 65 percent, less than 50 percent, less than 30 percent for illiterate, primary school, junior high and senior high education rural workers. Participation rate of the on-farm employment rural workers with higher education graduates was relatively lower, and only about 3 percent. Hence, workers with higher education attainment composed the largest component of the rural labor force.

The propensity for the rural labor force who participated in professional or skill-building training to find a job off the farm was higher than those who haven't had training. We asked respondents the following questions: "Have you had technical or professional training (including apprenticeship)?" and "What kind of training have you had?" For 16 to 65 year olds, 70 percent of rural individuals who had technical or professional training worked off the farm (see Table 1), and approximately 25 percent of workers who have attended training worked on the farm (see Table 1). Therefore, rural workers who had participated in skill-building training were more likely to find off-farm jobs.

In addition, there are two distinct characteristics evident in the rural labor market. First, the younger workers dominated off-farm employment in rural China. The off-farm participation rate of young workers, including both individuals who worked off-farm and on-farm in the 16 to 30 year old cohort, was approximately 70 percent (see Table 1). Moving from the youngest to oldest cohorts, off-farm participation rates fell, and, in contrast, on-farm participation rates increased (see Table 1). The difference in rural labor employment across age cohorts demonstrates that young workers had the propensity to engage in off-farm work. Second, most of the rural labor force in the off-farm sector was male. In the 16 to 65 year old cohort, over 50 percent of male rural residents worked off the farm (see Table 1). In contrast, approximately two-thirds of women spent their time in farming (see Table 1).

Table 1. Relationship between Type of Work and Human Capital

	Work off the farm [a]		Work on the farm		Do not work	
	Observation	%	Observation	%	Observation	%
1. Age group						
16–30 years	390	68.90	131	23.14	45	7.95
31–50 years	272	37.52	445	61.38	8	1.10
51–65 years	91	17.67	410	79.61	14	2.72
2.Gender						
Male	502	55.29	386	42.51	20	2.20
Female	251	27.95	600	66.82	47	5.23
3.Educational level						
Illiteracy	22	9.13	212	87.97	7	2.90
Primary school	164	28.37	396	68.51	18	3.11
Junior high school	411	53.24	327	42.36	34	4.40
Senior high school (including technical school)	128	69.19	50	27.03	7	3.78
College and above	28	93.33	1	3.33	1	3.33
4. Skill training?						
Yes	256	70.72	90	24.86	16	4.42
No	497	34.42	896	62.05	51	3.53

Notes: [a] Labor force working off farm includes those individuals working both on and off-farm sector.
Source: Author's survey.

Farm work was dominated by female workers in rural China in 2004.

2. Relationship between Human Capital and Hourly Wages in Rural China

There is no positive and increasing relationship between age and hourly wages. When moving from the youngest to oldest cohorts, hourly wages of rural labor workers did not climb accordingly, but declined firstly then increased (see Table 2).

There is statistical difference in incomes between male and female workers. Men average 3.89 yuan hourly, more than women, who average only 3.19 yuan hourly, displaying the evidence that women earn less than men in the labor market (see Table 2).

Not only did off-farm employment opportunities differ across educational levels, but so did wages. The hourly wages of illiterate rural workers and primary school graduates were, on average, 2.39 yuan and 2.56 yuan, respectively. The hourly wage for junior high

school graduates were nearly equivalent to the whole sample level, 3.66 yuan per hour. The average hourly wage of individuals with higher education was 9.71 yuan, more than two times the average level, and four times that of the illiterate (see Table 2).

The training that has been undertaken by the rural labor force also affects their hourly wages. According to our survey, those individuals who have participated in professional or skill-building training receive nearly 4 yuan per hour, which is higher than the average for the whole sample. In contrast, rural workers who have not had any technical or professional training receive only about 3.5 yuan per hour, slightly lower than the average level of the whole sample (see Table 2).

Table 2. Relationship between Human Capital and Hourly Wages (unit: Yuan/hour)

	Observation	Mean	Standard deviation
1. Age group			
16–30 years	390	3.78	5.07
31–50 years	272	3.28	2.10
51–65 years	91	4.25	5.48
2. Gender			
Male	502	3.89	4.51
Female	251	3.19	3.85
3. Educational level			
Illiteracy	22	2.39	1.32
Primary school	164	2.56	1.72
Junior high school	411	3.54	3.62
Senior high school (including technical school)	128	4.32	3.48
College and above	28	9.71	13.90
4. Skill training?			
Yes	256	3.94	4.92
No	497	3.51	3.96
Total	753.00	3.66	4.31

Source: Author's survey.

Notes: Hourly wages were computed by taking all monetary earnings over the whole year (in multiple jobs, if the person held more than one wage earning job) and dividing by the total number of hours that were reported as being worked during the year.

IV. Empirical Analysis

To accurately test hypotheses regarding the effect of education on non-farm work and wages, we construct and estimate labor participation and wage models: the probit and Mincer models, (holding constant other relevant variables). First, we estimate how educational attainment of those in the rural labor force affects their entry into the off-farm sector. Second, we examine the effect of education on off-farm employment wages.

1. Modeling the Determinants of Off-farm Employment

We apply the probit model to explore the determinants of participation in off-farm employment. An individual i chooses to participate in the activity j that maximizes his or her expected utility given a vector of individual, household characteristics X_i. If we define an indicator variable, Y that equals 1 when individual i participates in work off the farm and is 0 otherwise, we can estimate the effects of the variables contained in X on the individual's labor market participation decision by estimating the model:

$$\Pr ob(Y = j \mid X) = X_i b + u_i, \tag{1}$$

where b is a vector of parameters that represents the effects of individual and household characteristics on participating in off-farm employment, and u_i is a disturbance term. Based in part on our survey and in part on the labor supply theory, we consider how each individual's gender, age and marital status affects his or her participation decision. We first hypothesize that human capital measures, including years of education and whether or not the individual has received any professional or skill-building training, will positively affect participation rates if labor markets are performing efficiently. Second, we include province dummies in the regression.

2. Modeling the Determinants of Off-farm Employment Wages

Jacob Mincer's model of earnings (1974) is a cornerstone of empirical economics and is the basis for economic studies in education. Mincer has provided a convenience method of estimating returns to education by means of the semi-log earnings function:

$$\log Y_i = rS_i + dEXP_i + gEXP_i^2 + X_i b + u_i, \tag{2}$$

where Y_i is an earnings measure for an individual i; S_i represents years of education; EXP_i is an experience measure, EXP_i^2 is experience squared; X_i is a set of other variables assumed to affect earnings and u_i is a disturbance term representing other forces that may not be

explicitly measured. We assume that X_i and S_i are independent. Equation (2) is standard Mincer "earnings function". To extract the effect of schooling on earnings more precisely, we first add a dummy variable that reflect's the training that an individual has received. We then include a gender dummy variable controlling for the possibility that men and women are paid different base wages. Next, we add provincial dummy variables to interpret different base wages. Finally, we include marital status as dummy variable.

Previous studies have generally used two measures for "experience". One is the use of age directly; the other is calculated (age – years of education – 6) if a person has been to school, and (age-6) if he has not. The shortcomings for relevant both measures are that they ignore the periods when people are out of work. Considering this disadvantage, we use work experience of rural workers over the past 9 years (including on-farm and off-farm work) before 2004, as an experience measure, and thus avoid the problem of estimating experience. This is a unique characteristic of our estimation. We assume that an individual's recent employment history has a significant effect on his or her employment decision.

To avoid methodological shortcomings (as described in de Brauw and Rozell (2006) and Zhang et al. (2001)), we use hourly wages as an earnings measure and educational attainment of the individual's father and mother as proxy variables of an individual's ability, and also correct for selectivity into employment in estimating wage equation.

Furthermore, Equation (2) implies that the rates of return to schooling are constant for each additional year. In fact, the effects of different educational levels on earnings are unequal. To better understand the difference in return to educational level, we have adjusted the model:

$$LnY = a + b_1 Midd + b_2 High + gExp + dExp^2 + C_4 B_1. \tag{3}$$

Equation (3) is the same as Equation (2), except for the variables representing schooling years. Midd refers to years of schooling for junior high and below, and equals 0 if the individual is illiterate; High is years of schooling for post-junior high school. Therefore, b_1 is interpreted as the returns to an additional year of junior high and below. In contrast, b_2 is the returns to an additional year of post-junior high school. The advantage of this specification is that it distinguishes the effects of senior high and above education from 9 year compulsory education.

3. Empirical Results

Descriptive statistics indicate that gender, age, educational attainment, technological and professional training of an individual impact off-farm employment and wages. However, we

Table 3. Education's Effect on Off-farm Job Participation in Rural China

	Dependent variable: off-farm work participation	
	dF/dx[a]	Z
Human capital		
Years of education	0.037***	7.36
Years of experience	0.104***	4.06
Experience, squared (/100)	−0.009***	−3.55
Skill training(1 = yes)[b]	0.177***	5.02
Individual characteristics		
Age	−0.013***	−8.49
Gender (1 = male)[b]	0.266***	9.47
Married? (1 = yes)[b]	−0.105**	−2.16
Father's years of education	−0.002	−0.58
Mother's years of education	0.011**	2.12
Household traits		
Ratio of non-labor force in total labor of hh	−0.001*	−1.77
Land endowment (mu)	−0.02***	−6.14
Number of Obs.	1806	
Obs. P	0.416944	
Pred. P	0.385771	

Source: Author's survey.

Notes: [a]dF/dx may be interpreted as the change in likelihood of exiting or entering the off-farm labor force with a 1-unit change of the independent variable. [b]dF/dx is for discrete change of dummy variable from 0 to 1. The probit model included a constant, but the coefficient is not reported. Provincial fixed effects are included in the equation. Absolute value of Z statistics in parentheses. *Significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

could not draw any conclusion about the relationship between schooling and wages, because we have not controlled for other variables that might affect an individual's employment decision. To further explore the effects of educational attainment on off-farm jobs and wages, multivariate analyses are needed. Table 3 presents estimation results of off-farm labor participation determinants and Table 4 shows the returns to education. As for returns to education, we estimate Equation (2) in the first model for the returns to years of schooling and Equation (3) in the second model for returns to years of different education phrases. The coefficients of most explanatory variables are of the expected sign and statistically significant. In the reported estimation results we find the concave relationship between wags and experience measured in years.

Table 4. Returns to Education in Rural China

Explanatory variables	Model 1		Model 2	
	Selection equation	Wage equation	Selection equation	Wage equation
Human capital				
Years of education	0.097	0.07		
	(7.36)***	(4.52)***		
Years of middle and below school			0.069	0.032
			(4.39)***	(1.83)*
Years of post-middle school			0.22	0.118
			(5.07)***	(4.80)***
Years of experience	0.272	0.086	0.291	0.093
	(4.06)***	(1.79)*	(4.27)***	(1.96)*
Experience, squared(/100)	−0.024	−0.005	−0.026	−0.005
	(3.55)***	(1.06)	(3.72)***	(1.17)
Skill training? (1 = yes)	0.453	0.026	0.472	0.038
	(5.02)***	(0.36)	(5.21)***	(0.53)
Individual characteristics				
Age	−0.034	0	−0.036	−0.001
	(8.49)***	(0.02)	(8.87)***	(0.26)
Gender (1 = male)	0.71	0.198	0.733	0.183
	(9.47)***	(2.27)**	(9.69)***	(2.13)**
Married? (1 = yes)	−0.269	0.035	−0.247	0.065
	(2.16)**	(0.39)	(1.96)*	(0.73)
Father's years of education	−0.006	0.02	−0.006	0.021
	(0.58)	(2.39)**	(0.58)	(2.54)**
Mother's years of education	0.029	−0.006	0.028	−0.007
	(2.12)**	(0.61)	(2.07)**	(0.74)
Household traits				
Ratio of non-labor force in total labor of hh	−0.002		−0.002	
	(1.77)*		(1.70)*	
Land endowment (?), 2004	−0.053		−0.053	
	(6.14)***		(6.08)***	
Constant	−0.066	−0.195	0.089	0.105
	(0.28)	(0.7)	(0.37)	(0.38)
Inverse Mills Ratio		0.032		−0.032
		(0.17)		(0.18)
Observations	1806	753	1806	753

Source: Author's survey.

Notes: Absolute value of Z statistics in parentheses. * significant at the 10 percent; ** significant at the 5 percent; and *** significant at the 1 percent. Provincial fixed effects are included in all equations.

Consistent with previous findings of other studies of determinants of participation in the off-farm labor market (de Brauw and Scott, 2006), the multivariate analysis demonstrates that education has a positive, statistically significant effect on off-farm participation. Controlling for other influential variables, an individual with an additional year of education is 3.7 percent more likely to find an off-farm job (see Table 3). Education helps people to find jobs in the off-farm sector; it also has a strong impact on an individual's hourly wages. On the basis of our specification, the average rates of return to a year of schooling were 7 percent (see Table 4). We add the marital status variable into the equation, and find that martial status has a negative effect on selection into off-farm work (see Table 3), and has no effect on wages (see Table 4). In addition, we include the educational attainment for each individual's parents as a proxy for the individual's ability, and find that educational attainment of an individual's mother affects his or her off-farm participation directly, but that a father's education has no effect (see Table 3). In contrast, educational attainment of an individual's father has a positive, statistically significant impact on rural labor force wages, but an individual's mother's education is statistically insignificant (Table 4). Using the entire sample and the basic specification, the average return to schooling is 7 percent.

The experience measure (9 year employment history) of rural residents that we use has a positive, strong impact on both participation choices and wages. An additional year of work experience is associated with being 10.4 percent more likely to find an off-farm job (Table 3), and with earning 8.6 percent more in wages (Table 4).

The training received by those in the rural labor force only affects off-farm work, and has no influence on wages. Rural residents who have received professional or technical training are 17.7 percent more likely to find a job than those who have not (Table 3). Employers consider whether the rural workers have received training or not before hiring them. Once they have entered the off-farm labor market, training will not further affect their wages (Table 4). Training acts as an information signal for employees.

Individual age affects only off-farm participation, and has no effect on wages. For every additional year of age of an individual, the probability that he or she will be in the off-farm labor market falls by 1.3 percent (see Table 3).

Our findings hold up to multivariate analysis. Male participation in off-farm work is higher than female participation. Likewise, earnings of rural male work force off the farm exceed those of female workers. Controlling for marital status, a male worker with an additional year of education is 26.6 percent more likely to take part in an off-farm job than a female worker with an extra year of education (see Table 3), and receives 19.8

percent higher earnings (see Table 4). Such findings are contrary to Hou (2004), but are consistent with the facts of gender differentiation in China's labor market. This is associated with labor force division within families: the propensity for women to stay at home, do household work, and take care of the elderly and children is higher than men.

When separated into two educational levels, using estimation results from model 2 (Table 4), we find that junior high and senior high education all have positive, statistically significant effects on off-farm employment wages, but the returns to a year of schooling are quite different. For individuals who find jobs off the farm the return of an additional year of junior high and below schooling is only 3.2 percent; however, the return to a year of post-junior high schooling is 11.8 percent (see Table 4). These findings suggest that since more educated workers were scarce in the labor market; they were receiving a higher return to their education level.

V. Conclusions

In this paper, we use a nationally representative dataset to examine determinants of off-farm employment and wages. Our descriptive and multivariate results have shown in a number of ways that educational attainment, have received training or not and experience have positive, significant effects on the availability of off-farm employment for rural workers. Holding all else constant, those rural residents with more education, longer experience, and have received training are more likely to find a job off the farm; in addition, an individual's marital status, age, gender and mother's years of education also affect his or her off-farm employment. Therefore, to encourage a large portion of the labor force to shift out of agriculture, investment in rural education and vocational training are desperately needed.

As for determinants of hourly wages, we find that the average return to a year of education is 7 percent, which is higher compared to earlier studies of rural China. This demonstrates clearly that education still pays off in rural China, that formal education has been rewarded increasingly, and that labor markets are improving over time. An important consequence of the rising returns to education is that incentives for human capital investments have improved, which augurs well for the future quality of the rural labor force. Based on the relatively high rates of return to education we derived in this paper, increasing educational availability for rural residents would be a good policy strategy to help them find off-farm work and to increase their income. Using the 9 year employment history of rural workers as an experience measure, we also found an

increased effect of job experience on wages. Although have received training or not is statistically insignificant, it has a positive effect on off-farm wages. When we split educational levels into junior high and below and senior high and above, we find that all educational levels have positive, statistically significant effects on wages. The return to a year of post-junior high schooling is relatively higher than the return to junior high and below schooling. For sustainable economic development, China's government should make rural education and the provision of appropriate training to the rural labor force a top priority. At a time when 9 year compulsory education has been successfully implemented, China should keep the momentum and proceed to develop its senior high and above education. Fortunately, China's education policy is moving in this direction. Recently, at the 17th National Congress of the Chinese Communist Party, it was emphasized that China will optimize the educational structure, promote the balanced development of compulsory education, move faster toward universal access to high school education, vigorously develop vocational education, and improve the quality of higher education.

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Appendix: Summary Statistics

	All Sample				
Variable	Observation	Mean	Standard deviation	Minimum	Maximum
Years of education	1806	6.27	3.40	0	15
Education level					
Years of middle and below school	1806	5.95	2.96	0	9
Years of post-middle school	1806	0.32	1.06	0	7
Years of experience	1806	7.48	2.87	0	9
Skill training? (1 = yes)	1806	0.20	0.40	0	1
Married? (1 = yes)	1806	0.79	0.41	0	1
Father's years of education	1806	3.77	4.07	0	16
Mother's years of education	1806	1.82	3.20	0	16
Province					
Jiangsu (1 = yes)	1806	0.21	0.41	0	1
Sichuan (1 = yes)	1806	0.22	0.41	0	1
Shaanxi (1 = yes)	1806	0.21	0.41	0	1
Jilin (1 = yes)	1806	0.19	0.40	0	1
	Off-farm workforce				
Variable	Observation	Mean	Standard deviation	Minimum	Maximum
Hourly wage	753	3.66	4.31	0.09	61.53
Years of education	753	7.83	2.84	0	15
Education level					
Years of middle and below school	753	7.23	2.07	0	9
Years of post-middle school	753	0.60	1.48	0	7
Years of experience	753	6.55	3.26	0	9
Skill training?(1 = yes)	753	0.34	0.47	0	1
Married?(1 = yes)	753	0.63	0.48	0	1
Father's years of education	753	5.07	4.12	0	16
Mother's years of education	753	2.80	3.71	0	16
	All Others				
Variable	Observation	Mean	Standard deviation	Minimum	Maximum
Years of education	1053	5.15	3.33	0	15
Education level					
Years of middle and below school	1053	5.04	3.15	0	9
Years of post-middle school	1053	0.11	0.53	0	7
Years of experience	1053	8.15	2.34	0	9
Skill training?(1 = yes)	1053	0.10	0.30	0	1
Married?(1 = yes)	1053	0.90	0.31	0	1
Father's years of education	1053	2.83	3.76	0	16
Mother's years of education	1053	1.11	2.55	0	16

Source: Author's survey.

Notes: For 67 observations, the father's or mother's education level was unknown, so these observations are not included.

(Edited by Xinyu Fan)