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DOES *GUANXI* MATTER TO NONFARM EMPLOYMENT?

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ABSTRACT

Because land is scarce, farmers in China increasingly have to rely on nonfarm activities to enhance their incomes. The functioning of rural nonfarm labor markets is therefore crucial in determining who has access to nonfarm employment. Previous studies have identified human capital as a key factor determining the selection of workers in the rural nonfarm economy. Using a detailed household survey of northern and northeastern China, this paper shows that *guanxi* (social networks), has also played an important role. With limited nonfarm job opportunities and poor market information, farmers with better social contacts are more likely to obtain nonfarm jobs. Moreover, *guanxi* has a larger effect on the nonfarm employment opportunities of male workers than female workers.

KEYWORDS: Farming, China, nonfarm, *guanxi*

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“Relying on families when at home, whereas counting on friends when away from home.”

--- A Chinese Saying

DOES GUANXI MATTER TO NONFARM EMPLOYMENT?

Xiaobo Zhang¹ and Guo Li²

1. INTRODUCTION

With the success of the rural reforms starting in the late 1970s, a large number of agricultural labors have been released from agricultural production in China. With limited land available for farming, nonfarm employment has become one of the major ways for farmers to improve their incomes. As a result, employment in the nonfarm sector grew from 7 percent of total rural employment in 1978 to almost 30 percent in 1998 (SSB, 1999)³. And over the same period, rural enterprises increased their share of national GDP from virtually zero to 25% while the share of rural income arising from nonfarm activities increased from 8.5% to 39.3% (SSB, 1999). The expansion of the rural economy has become one of the most important features in Chinese economy (Rosegrant and Hazell, 2000).

Despite the rapid growth of the nonfarm sector, there are still insufficient nonfarm jobs in most regions, and workers are selected who have better physical and human capital. Accordingly, many scholars argue that demographic characteristics and human capital are the two most important factors in explaining observed patterns of nonfarm employment (Meng,

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³ These figures are from the official China Statistical Yearbook. Agricultural and non-agricultural employments are classified by major activities. For instance, a farmer primarily engaged in agricultural production and secondarily in commerce is classified as an agricultural laborer. Under this classification, the nonfarm employment is likely to be underestimated since most farmers are engaged in part-time nonfarm activities.

1990; Rozelle *et al.*, 1999; Yang, 1999; Zhao, 1999; Tuan, Somwaru, and Diao, 2000). The general finding from these studies is that young, well-educated, male farmers have a better chance of finding nonfarm jobs. An implicit assumption underlying these analyses is that all workers have access to the same set of information about the nonfarm labor market. But this ignores another important factor –*guanxi*. China has long been a *guanxi*-based society and there is a large body of sociology and anthropology literature concerning the use of *guanxi* to acquire power, status and resources in China.⁴ In her seminal book, Yang (1994) extensively shows the importance of *guanxi* in daily life in China from an anthropological perspective. Her key observation is that the more connections a person has, the more opportunity he/she is likely to find. Lovett, Simmons, and Kali (1999) also points out the centrality of *guanxi* in China's business practices based on an international comparison. Li and Li (2000) argue strongly that in most business practice, China is a relation-based economy rather than a rule-based economy. Bian (1994) describes the importance of using *guanxi* in acquiring jobs in cities:

“Because of a lack of advertising and formal hiring procedures, *guanxi* became the predominant means of channeling individuals into work units. People used their *guanxi* to solicit employment information, to create application opportunities and to influence informal screening. In a sense, *guanxi* was the lifeblood of direct individual job application” (p. 979)

Rural residents rely more on kinship in supporting each other than urban residents, hence we should expect *guanxi* to be a more significant factor contributing to nonfarm employment in rural areas than in cities. In this paper, we empirically examine the critical

⁴ The word *guanxi* (in Chinese) refers to the social networks of personal relationships. In this paper, the term of *guanxi* and social networks are used interchangeably.

role of social networks in rural nonfarm employment by incorporating it into a model of nonfarm employment. If *guanxi* is present and important in the labor market, then overlooking it will affect the estimated coefficients for schooling and other variables in the model, leading to biased estimates of the returns to investment in human capital. On the other hand, a significant and positive *guanxi* variable means that those who have access to it will have greater comparative advantage in securing nonfarm jobs than those who do not. If true, then government may need to adopt some pro-active measures to make market information more widely available to individuals lacking *guanxi*, especially those living in less-developed regions.

The paper is structured as follows. Section 2 discusses the development of nonfarm activities and the importance of social networks. Section 3 describes our data sources. Section 4 presents the model and estimations, and section 5 presents our conclusions.

2. BACKGROUND

Although the nonfarm sector is now the major engine of growth for farm household incomes, its development is unevenly distributed and variations in nonfarm income play a critical role in explaining worsening regional income inequalities (Rozelle, 1994). These regional differences in nonfarm development can be illustrated by comparing Zhejiang and Liaoning provinces. In Zhejiang, a southern coastal province in China, the proportion of nonfarm employment was 57 percent in 1996, whereas in Liaoning Province of north China, the proportion was only 26 percent (SSB, 2000). Yet the rural labor forces in the two provinces share similar demographic characteristics, such as their gender ratio, age structure, and human capital. Moreover, the average years of schooling in Zhejiang and Liaoning

provinces was 6.6 and 7.3 years, respectively, in 1996. Although Liaoning has a higher education attainment, the proportion of its rural laborers engaged in nonfarm activities outside the province was only 0.5 percent, much lower than that in Zhejiang where more than six percent of rural labor force worked outside their own province.

The above comparison highlights the insufficiency of using only personal characteristics and human capital variables to explain the observed patterns of nonfarm employment. In this paper, we argue that *guanxi* networks, a missing aspect in standard economic analyses, are also important channels affecting nonfarm employment outcomes.

China's rural labor market has two important characteristics. First, there are very few public venues in providing farmers with information about job and business opportunities. From the information point of view, rural labor markets are very imperfect. Under these conditions, personal networks often play a key role in conveying valuable information and minimizing search costs (Montgomery, 1991) and therefore may become major channels for people to find nonfarm jobs and business opportunities. For example, it is widely observed that migratory workers in cities transmit information on job opportunities and technical know-how back to relatives and friends in their villages of origin. This kind of social network expands the horizon for workers seeking nonfarm job opportunities and helps mitigate the risks and uncertainties of taking jobs outside their local communities. Rozelle *et al.* (1999) observes that the likelihood that more people will migrate is extremely high if someone in the village has already out-migrated. These kinds of information networks help explain the overwhelming proportion of migrants from Zhejiang Province who work in the service sector all around China.

Second, there is a large surplus of rural workers in rural China and hence nonfarm employers are extremely selective. When jobs are scarce, social groups are likely to accommodate their own members first (Banerjee, 1983). Rural people generally have more tightly knit networks of family members than urban people. Many people from the same village are often related to each other through birth or marriage, often to the point where people from the same village are often loosely regarded as one “big family”. Wu (1994) observes an important rule prevalent in rural communities: “a family’s benefit should not be shared with people from other families unless it favors the family’s interest” (p. 121). Hence, if a village has a collective enterprise, it tends to hire its workers and key managers from local communities (Wu, 1994; Nee, 1996).

These two characteristics of the labor market suggest that personal ties to the outside world as well as the level of local nonfarm development will affect an individual’s chances of obtaining nonfarm employment. Since most farmers in China work at non-farm activities on a part-time basis and hence is not recorded in most official employment data (Tuan, Somwaru, and Diao, 2000), then we must use household survey data to test these hypotheses.

3. DATA

DATA

The data set used in this paper came from the 1995 North and Northeast China Living Standards Survey (NNCLSS). The survey was carried out in the summer 1995, and covered 787 households in 6 counties, 18 townships and 30 villages in Hebei and Liaoning provinces (North and Northeast China)³. The survey provides detailed information about household characteristics (e.g. demographic structure, education, housing conditions, farm size) and

economic activities (e.g. farm management, own non-agricultural business, off-farm jobs, household expenditure, gifts, remittances, savings and loans). The survey design was based on the World Bank's Living Standards Measurement Survey that is described in more detail by Glewwe and Grosh (1998).

The six counties were not selected randomly, but were chosen to correspond to the site of an intensive household-level investigation carried out by Japanese investigators in 1936 and 1937. Five villages in each county were selected, one of which had been fully enumerated in the 1930s. The other four villages in each county were selected so as to obtain as representative a cross-section as possible. They included one village from the same township as the administrative capital; one located in the same township as the village surveyed in the 1930s; and two drawn from a third township. A total of 130 households were surveyed in each county: fifty from the village surveyed in the 1930s and twenty from each of the remaining four villages. Households were chosen randomly using the most recent village registry.

DESCRIPTIVE STATISTICS

The average per capita income in the sample was 3510 RMB, or about US\$442. Farm income accounted for nearly half of total income. Nearly three-quarters of farm income came from cropping (mostly corn in Hebei, and rice and corn in Liaoning) and the rest came from such sidelines as vegetable gardens and greenhouses.

Nonfarm activities included family-run businesses and off-farm wage employment. Family-run businesses accounted for slightly more than twenty percent of total household income. Nearly a third of all households were involved in some type of nonfarm business, such as construction, transportation, commerce, and restaurants. Wage income accounted for

about 15% of total income, with three-quarters of that coming from male wage earnings. Slightly more than a third (36.2%) of these jobs were in the villages in which the respondent households lived; 43.1 percent were in either the county or township seat; and the remainder (20.7 percent) were in the cities. Most of these jobs were found by households on their own and were not “allocated” or “rationed”.

The Gini coefficient for household income in the entire sample is 0.4. Income from nonfarm sources is the most unevenly distributed hence this paper’s focus on investigating the driving forces behind the development of nonfarm activity. Table 1 reports basic descriptive statistics about nonfarm employment in the sample. Nonfarm employment is measured as the number of months of nonfarm activity performed during the year, including wage jobs and own-family businesses.

TABLE 1--PROFILE OF NONFARM EMPLOYMENT IN THE SAMPLE

	Mean	Standard deviation	Number of observations
Sex			
Male	3.802	4.601	1187
Female	1.567	3.658	1177
Marital Status			
Married	2.831	4.347	1735
Single	2.297	4.167	629
Age			
<18	0.406	1.781	255
18-24	4.744	4.936	310
25-34	3.525	4.603	525
35-44	3.261	4.439	477
44-54	2.585	4.281	358
55 and above	1.029	3.047	439
Years of schooling			
None	0.473	2.018	298
Primary	1.768	3.511	540
Secondary	2.932	4.400	1028
High school	4.402	4.923	425
Above	5.164	5.411	73
<i>Guanxi</i>			
No	2.520	4.171	1269
Yes	2.886	4.450	1095
Average	2.690	4.305	2364

Note: Nonfarm employment is measured as the months spent on nonfarm jobs, including own-family business.

Gender, marital status, age, education, and *guanxi* all appear to affect nonfarm employment. On average, men work about 3.8 months per year in nonfarm activities, more than two months longer than women, indicating a significant gender difference. Married rural laborers work longer in the nonfarm sector than single laborers. Workers under 18 years of age average only 0.4 months of nonfarm employment per year, but this increases to 4.7 months for those between 18 and 24 years old. Thereafter, the intensity of nonfarm activity gradually declines to about one month per year for workers older than 54 years. Education and nonfarm employment are strongly and positively correlated. Illiterate workers average less than half a month each year on nonfarm activity, while those with primary, secondary, and high school education work for about 1.8, 2.9, and 4.4 months, respectively. The duration of nonfarm employment for workers having *guanxi* is 0.3 months greater than those without *guanxi*.⁵ The mean values by household mask differences between men and women. Men with *guanxi* have more nonfarm opportunities than those without *guanxi*. Because of the existence of a labor division by gender within households, the longer the husband works off-farm, the more likely the wife to stay home and engage in farm and housework. In order to quantify the impact of *guanxi* on nonfarm employment, a more formal analysis controlling for gender and other factors is needed.

⁵ We will formally define *guanxi* variables in the next section. The *guanxi* used here is the Type IV as defined in Table 2.

4. MODEL AND ESTIMATION

MODEL

Social networks provide information that affects nonfarm job searches. They also make one person's knowledge dependent upon the behavior of others in the same network. To quantify the effect of networks on nonfarm employment, we begin by assuming that a worker's nonfarm employment is given by:

$$(1) \quad D_{ij} = N_{ij}\mathbf{a} + X_{ij}\mathbf{b} + Y_j\mathbf{g} + \mathbf{e}_{ij}$$

where i indexes individuals, j indexes villages, D_{ij} is the number of months per year engaged in nonfarm activity, N_{ij} defines the information content of the worker's social network, X_i measures a set of personal characteristics, Y_j is a set of local area characteristics, and \mathbf{e}_{ij} is a stochastic error term. The variables used in the analysis are defined in more detail in Table 2.

We include two social network variables. The first is a *guanxi* variable that is defined as 1 if any one of the four criteria in Table 2 are satisfied, and 0 otherwise. The second is the share of nonfarm employment in total village employment, which is included to capture the effect of networks and labor market development at the village level.

TABLE 2--VARIABLE DEFINITIONS

Personal networks

TYPE I

- Having received help from family members or friends during the process of looking for a job.

TYPE II

- Having received remittance from family members living in towns or cities.
- Having family members working outside own region.
- Having a family member as a local official.

TYPE III

- Expenditure on gifts normalized by household size.

TYPE IV

- TYPE I + TYPE II.

Village nonfarm labor market development

- The proportion of nonfarm employment in total labor force in a village.

Personal characteristics and human capital

- Age and the square of age.
- Gender.
- Marital status.
- Education: total years of schooling.
- Years of vocational training.
- Years of apprentice.

Local characteristics (rural institutions and infrastructure)

- The size of land holding.
 - The frequency of adjustments to land tenure arrangements.
 - The burden of agricultural tax in 1996.
 - The number of buses running through the village.
-

Apart from the network variables, we also control for personal characteristics, rural institutions, and infrastructure development. For personal characteristics, we include variables for education, age, marital status, and gender. A square term for age is added to capture any curvature of age against nonfarm employment. Because male workers engage in far more nonfarm employment than female workers (Matthews and Nee, 2000), we estimate the determinants of nonfarm employment for men and women separately. To capture the effects of rural institutions, we include land size, frequency of adjustments to land tenure systems, and the agricultural tax burden in 1994. If a household has a larger farm, family members may spend more time in agricultural production and therefore less time in nonfarm activities. Similarly, if the agricultural tax burden is heavy, farmers may have to put more effort into farming. The number of buses running through a village is included as an indicator of rural infrastructure development. A region with better transportation is expected to offer better opportunities for farmers to obtain nonfarm employment.

ESTIMATION RESULTS

Because the number of months worked in nonfarm activities is double censored between 0 and 12, we use a Tobit model to estimate equation (1). Table 3 compares the estimates of the determinants of total nonfarm employment with and without the inclusion of the *guanxi* variable.

TABLE 3--COMPARING THE EFFECT OF DIFFERENT TYPES OF GUANXI

Variable	Type I	Type II	Type III	Type IV	No <i>guanxi</i>
Intercept	-31.792** (3.401)	-31.831** (3.501)	-29.858** (3.403)	-33.87** (3.504)	-21.552** (3.370)
<i>Guanxi</i>	4.206** (0.642)	1.501** (0.627)	0.001 (0.001)	3.227** (0.625)	
Market Development	2.630** (0.264)	2.803** (0.268)	2.852** (0.267)	2.878** (0.265)	
Personal Characteristics					
Age	0.982** (0.183)	1.006** (0.188)	0.921** (0.185)	1.070** (0.186)	0.918** (0.193)
Age*age	-0.013** (0.002)	-0.014** (0.002)	-0.013** (0.002)	-0.015** (0.002)	-0.013** (0.002)
Sex	7.682** (0.640)	7.713** (0.646)	7.746** (0.648)	7.761** (0.643)	7.715** (0.675)
Marital status	-3.164** (1.038)	-3.335** (1.049)	-3.449* (1.052)	-3.182** (1.041)	-3.718** (1.099)
Human Capital					
Education	0.942** (0.122)	0.918** (0.123)	0.919** (0.124)	0.905** (0.122)	0.982** (0.129)
Training	2.508** (0.708)	2.405** (0.719)	2.487** (0.722)	2.351** (0.712)	2.626** (0.756)
Apprentice	1.381** (0.510)	1.572** (0.516)	1.591** (0.517)	1.423** (0.513)	1.884* (0.544)
Rural Institutions					
Land size	-0.697** (0.150)	-0.724** (0.150)	-0.702** (0.150)	-0.748** (0.149)	-1.254** (0.1614)
Freq. of land tenure	-0.043 (0.146)	-0.076 (0.147)	-0.079 (0.147)	-0.030** (0.146)	-0.577** (0.149)
Ag. tax burden	-0.615** (0.262)	0.435* (0.263)	-0.468 (0.267)	-0.546** (0.262)	-0.080 (0.263)
Rural Infrastructure					
Number of bus	0.005 (0.009)	0.000 (0.009)	0.000 (0.009)	0.002 (0.009)	0.038** (0.009)
Log Likelihood	-2928.11	-2947.15	-2949.76	-2936.41	-3010.92

Note: - The dependent variable is the number of months engaged in any types of nonfarm jobs. * and ** indicate statistical significance at the 10% and 5%, respectively.

- Four types of *guanxi* variable are considered in regressions. Type I defines those who have received help from friends or relatives during the job searching process having *guanxi*. Under the definition of Type II, an individual has *guanxi* if at least one of his/her family member acts as a local official, or works outside the town, or has received remittance from relatives or friends. Type III is defined as the gift expenditure normalized by household size. Type IV *guanxi* is combination of Type I and Type II.
- Sex and marital status are dummy variables. Sex=1 refers to men. Marital status =1 defines married.

We examined four alternative definitions of the *guanxi* variable to test its robustness. The four types of *guanxi* correspond to the definitions in Table 2. The coefficients for all the *guanxi* variables except for Type III are significant and positive, confirming its importance. The coefficient for Type I *guanxi* is larger than that for Type II. But since Type I *guanxi* only considers networks that were used during a job search, it is directly related to the outcome and hence imparts an upward bias that overstates the importance of *guanxi*. Since a person's social networks can be very complex, Type II captures only part of the entire networks due to data availability, thus likely understating the overall effects. The real impact of *guanxi* may lie between the estimates for these two definitions. Hence, Type IV, a combination of Types I and II, may well give a more accurate estimate. In the following analyses, we will focus on Type IV *guanxi*.

If *guanxi* variables are included, the coefficients for other variables in the model are affected. Importantly, the regression excluding *guanxi* has a larger coefficient (0.982) for education than does the regression including Type IV *guanxi* (0.905), confirming an expected upward bias in the returns to human capital in models that ignore *guanxi*.

All the personal characteristics and human capital variables are significant which is consistent with previous findings in the literature (Tuan, Somwaru, and Diao, 2000). Most rural institution variables also have significant explanatory power.

To obtain additional information on the contributions of different variables to nonfarm employment outcomes, we calculated the marginal impact of each variable at the sample means.⁶ Table 4 presents these marginal effects.

⁶ See Greene (1993) for details.

TABLE 4--MARGINAL EFFECTS

Variable	Type I	Type II	Type III	Type IV	No <i>guanxi</i>
Intercept	-7.750	-8.001	-6.527	-7.457	-4.162
<i>Guanxi</i>	1.025	0.377	0.000	0.710	
Market Development	0.641	0.705	0.623	0.634	
Personal Characteristics					
Age	0.239	0.253	0.201	0.236	0.177
Age*age	-0.003	-0.004	-0.003	-0.003	-0.002
Sex	1.873	1.939	1.693	1.709	1.490
Marital status	-0.771	-0.838	-0.754	-0.700	-0.718
Human Capital					
Education	0.230	0.231	0.201	0.199	0.190
Training	0.611	0.605	0.544	0.518	0.507
Apprentice	0.337	0.395	0.348	0.313	0.364
Rural Institutions					
Land size	-0.170	-0.182	-0.153	-0.165	-0.242
Land tenure adj.	-0.010	-0.019	-0.017	-0.007	-0.111
Rural Infrastructure					
Ag. tax burden	-0.150	0.109	-0.102	-0.120	-0.015
Number of buses	0.001	0.000	0.000	0.000	0.007

Note: The marginal effects are calculated by multiplying the estimated coefficients in Table 3 with the probability that the predicted value evaluated at the sample mean lies between 0 and 12.

The regression results that include *guanxi* variables are more similar to each other than to the regression without *guanxi*. For example, when *guanxi* is not included, the marginal effects of sex and land size are 1.49 and -0.242, respectively, which are quite different from the range of corresponding values of 1.693 to 1.939 and -0.153 to -0.182 obtained from the regressions that include *guanxi* variables. Another important finding from Table 4 is that the marginal effect of *guanxi* is almost as significant as gender in explaining nonfarm employment and it is more important than schooling. This confirms that

information networks are important in explaining how people find nonfarm jobs as well as their own skills and characteristics.

Gender has the largest positive impact of any variable on nonfarm employment, confirming a clear gender divide. We therefore estimated the determinants of nonfarm employment by gender and the results are reported in Table 5. Here we have used Type IV *guanxi* as our network variable.

TABLE 5--NONFARM EMPLOYMENT BY GENDER

Variable	Male	Male	Female	Female
Intercept	-28.029** (3.522)	-15.969** (3.458)	-41.733** (9.142)	-27.82** (8.79)
<i>Guanxi</i>	3.611** (0.636)		2.975* (1.548)	
Market Development	2.572** (0.267)		3.858** (0.673)	
Personal Characteristics				
Age	1.145** (0.183)	0.964** (0.192)	1.623** (0.527)	1.554** (0.543)
Age*age	-0.015** (0.002)	-0.012** (0.002)	-0.025** (0.007)	-0.023** (0.007)
Marital status	-0.122 (1.022)	-0.423 (1.097)	-11.736** (2.859)	- 13.059* * (2.999)
Human Capital				
Education	0.776** (0.131)	0.860** (0.141)	0.858** (0.291)	0.924** (0.303)
Training	1.218* (0.651)	1.485** (0.708)	7.108** (2.204)	7.366** (2.284)
Apprentice	1.048** (0.415)	1.473** (0.448)	5.606* (3.013)	6.810** (3.115)
Rural Institutions				
Land size	-0.886** (0.161)	-1.382** (0.178)	-0.531 (0.343)	-1.164** (0.363)
Land tenure adj.	0.014 (0.141)	-0.488** (0.148)	-0.191 (0.403)	-0.915** (0.404)
Ag. tax burden	-0.370 (0.254)	0.150 (0.264)	-0.998 (0.710)	-0.029 (0.685)
Rural Infrastructure				
Number of buses	-0.024** (0.010)	0.009 (0.010)	0.048** (0.022)	0.095** (0.022)
Log Likelihood	-1933.83	-1995.33	-927.60	-948.05

Note: The dependent variable is the number of months engaged in any types of nonfarm jobs. *Guanxi* variable used in this table is Type IV.

* and ** indicate statistical significance at the 10% and 5% level, respectively. Figures in parentheses are standard errors.

Although the results are similar to Table 3, some features are still of interest. First, *guanxi* has a larger marginal effect for male workers than female workers. Moreover, the marginal effect of *guanxi* is larger for male workers than is the effect of village ties and market development (the proportion of people involved in local nonfarm activities), whereas the opposite is true for female workers. This result suggests that women are more likely to find jobs locally.

Marital status has a much larger effect on women than on men. The coefficients for this variable are negative but insignificant in the male worker equations, but are significantly negative in those for female workers. Marriage apparently plays little role in affecting men's nonfarm activities, but it significantly reduces a woman's chance to participate in nonfarm activities. After marriage, women are more likely to be left behind to work on the family farm and take care of their families. These results suggest a strong labor division between husband and wife and an obvious bias against women engaging in nonfarm jobs, conforming the findings of Matthews and Nee (2000). Interestingly, the coefficients for training and apprentice variables are much larger for women than for men, suggesting the importance of providing more vocational training for women.

Up to this point in the analysis, we have used the number of months worked in nonfarm jobs as the dependent variable with no distinction by job type. We now disaggregate total nonfarm employment into three types of nonfarm jobs – self-employment, and paid employment in construction and transportation activities or in industry and services. Table 6 reports the results.

TABLE 6--THE EFFECT OF GUANXI ON DIFFERENT TYPES OF NONFARM JOBS

Variable	Self-employment	Construction and transportation	Industry and services
Intercept	-32.392** (7.407)	-46.511** (6.519)	-65.862** (8.456)
<i>Guanxi</i>	-5.641** (1.325)	1.072 (0.965)	8.239** (1.457)
Market Development	0.374 (0.542)	1.035** (0.399)	4.936** (0.608)
Personal Characteristics			
Age	0.627 (0.393)	1.436** (0.333)	1.721** (0.005)
Age*age	-0.09* (0.005)	-0.021** (0.004)	-0.024** (0.005)
Sex	4.919** (1.315)	12.954** (1.356)	6.675** (1.387)
Marital status	2.745 (2.328)	0.089 (1.636)	-8.193** (2.277)
Human Capital			
Education	0.307 (0.253)	-0.061 (0.196)	1.682** (0.282)
Training	-0.642 (1.595)	0.179 (1.094)	5.716** (1.418)
Apprentice	1.496 (0.987)	1.861** (0.685)	0.785** (1.156)
Rural Institutions			
Land size	-1.040** (0.364)	-0.328 (0.239)	-0.903** (0.332)
Land tenure adj.	-0.357 (0.305)	-0.228* (0.231)	-0.304 (0.385)
Ag. tax burden	-0.538 (0.581)	0.260 (0.390)	-1.887** (0.596)
Rural Infrastructure			
Number of buses	0.075** (0.019)	-0.012 (0.015)	-0.025 (0.020)
Log Likelihood	-1187.27	-1165.02	-1698.85

Note: * and ** indicate statistical significance at the 10% and 5% levels, respectively. Figures in parentheses are standard errors. The category of industry and service includes the following types of jobs: industry, real estate management, health care, public service, education, scientific and research services, banking and insurance services, government and other organizations.

Guanxi has a negative effect on self-employment but a positive effect on industry and service jobs. It seems that people having *guanxi* tend to find well-paid jobs in the industry and service sectors, while those without *guanxi* are more likely to take odd jobs locally. The human capital variables have large positive impacts on the industry and service jobs but insignificant and even negative effects on the other two types of jobs. Construction and transportation jobs require strong physical capability, therefore being young and male may be more important than being educated.

In sum, *guanxi* plays an important role in seeking nonfarm jobs but with a different impact on men and women. The coefficient for education is statistically positive for most model specifications, which is consistent with previous findings. However, the importance of education is mitigated once the social network variables are taken into account. After controlling for the *guanxi* variables, the estimated coefficients for the three human capital variables are reduced, suggesting that the contributions of these factors to nonfarm employment may be smaller than previously thought.

5. CONCLUSIONS

This paper examines the determinants of nonfarm employment in rural China using a rural household survey. Most studies of China's rural labor market have focused on the effects of personal characteristics and human capital in rural labor markets and have overlooked the potential role of social networks. In this paper, we demonstrate the importance of social networks (*guanxi*) in determining employment in nonfarm activities. Social networks help facilitate nonfarm job market information in situations where formal institutions and channels are lacking. In these situations, individual nonfarm employment

behavior depends not only on personal characteristics but also on access to information within social networks.

Guanxi is found to be one of the most important contributing factors to nonfarm employment next to gender. Personal ties to outside their villages have a larger impact on men than on women in providing nonfarm opportunities, while the development of nonfarm activities within a village has a greater impact on women. When *guanxi* is taken into account, the importance of other variables, such as human capital and rural institutions, becomes less significant. With limited nonfarm job opportunities and imperfect market information, social networks play a key role in enabling rural workers to more fully capitalize on their education and skills. These findings help explain the observed clustering of rural migrants in cities who originate from the same rural areas.

Guanxi has a larger influence on male labor than on female labor in determining nonfarm employment, suggesting segmentation of the labor market along gender lines. Marriage has a negligible effect on men's nonfarm activities. However, after women get married, their chance to engage in nonfarm employment will decline to a large degree. This result suggests an apparent labor division between the husband and wife within a household. Under this division, men are more likely to earn cash income from outside while women are expected to take care of the land and family. Providing women more vocational training will enhance their opportunities to work in the nonfarm sector.

Given the importance of *guanxi* in China's labor market, the government might want to consider using it to facilitate a more equitable pattern of nonfarm development across regions. In China, each year, there are hundreds of thousands of veterans retired from the military. Current policy requires veterans to return to their places of their origin, but the

government might want to consider granting veterans more freedom to choose where to live after retirement. If veterans settled in areas where they knew there were reasonable nonfarm job opportunities they might also become useful sources of information and contact persons for workers back in their home areas. Given the broad regional recruitment by the military, such a policy would help spread job market information more generally within the country, including regions that currently have few people working outside, such as Liaoning Province.

Policies to capitalize on *guanxi* could contribute to greater labor market efficiencies. But *guanxi* is not costless and it inevitably excludes many viable workers and hence is second best to more open labor market information systems. In the long run, the government should work towards reducing labor market imperfections by facilitating broader dissemination of market information circulation (e.g. through radio and television, the internet, and credit reference bureaus), and removing barriers to rural-urban and inter-regional migration.

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