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Abstract

The continued transfer of agricultural labor into the industrial sector is crucial to China's transformation into an industrial economy. We argue in this paper that rural industry offers an alternative to urban industry for receiving agricultural labor from areas without off-farm employment opportunities. Characteristics of rural industry differ from their urban counterparts. These characteristics may serve to shape the growth in employment for incoming workers in rural areas, provide opportunities for certain types of workers, and affect the impacts these workers have on the local economy.

In this paper we examine the features of China's rural-to-rural labor movement and the villages where these workers are employed. Using a nationally representative sample of 215 villages, we show that the growth in rural-to-rural labor movement between 1988 and 1995 has been much faster than in rural-to-urban movement or in local off-farm employment. The rapid growth in rural-to-rural commuting and migration has not negatively affected off-farm income earning opportunities for workers living in the receiving villages. Rural-to-rural labor movement also has many positive effects. Labor movement into rural villages provides opportunities for workers generally underrepresented in other parts of the off-farm labor market, appears to dampen upward pressure on wages that allows rural industry to maintain labor intensive practices, and promotes national economic integration.

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The Rise of Rural-to-Rural Labor Markets in China

Rural labor movement in China has increased dramatically in recent years and is now the largest peacetime movement of labor ever known (Solinger, 1999). The migrant labor force has grown from less than 20 million in 1988 to between 40 and 100 million in 1995 (Chan, 1996). Undoubtedly, there is more to come. An abnormally high proportion of China's population is engaged in agriculture when compared to agriculture's share of GDP and other countries with comparable levels of GDP and income per capita (Taylor and Martin, forthcoming). The structural transformation of China into a modern, industrial economy will depend on the continuing movement of labor off the farm.

Most of the labor movement in China has been from the countryside to the city, but it is unclear if urban areas can continue to absorb the predicted volume of rural labor that will leave agriculture. Through the mid-1990s, migration was the fastest growing component of the off-farm labor force (Rozelle, et. al., 1998). The plight of the migrant leaving his or her rural home to find work in China's cities, despite the presence of restrictions against migrant employment in urban areas, is the most studied part of China's labor movement (e.g., Roberts, 1997; Wang and Zuo, 1996; Chan, 1996). Immediate economic problems and reform challenges faced by urban officials, however, may act to limit growth in rural-to-urban labor movement in the future. The prospects of high urban unemployment due to layoffs associated with state-owned enterprise reform, unfinished reforms in urban housing markets and congested urban infrastructure may induce leaders to halt or reverse the liberalization of rules that discourage rural workers from seeking jobs in the city.

At first glance, these problems appear to be formidable obstacles to China's continued economic transformation. But, fortunately, rural workers need not move into urban areas to find off farm employment in China. A feature unique to China's development, when compared to the development experiences of other countries, is the share of industrial output produced by rural industry. Rural industrial output value grew at nearly 35 percent per year between 1980 and 1993 and contributed significantly to China's miracle growth (ZGTJNJ, 1995). While scholars inside and outside China have studied many different aspects of rural industrial development, few have examined the record of, or the potential for, rural workers to move into other rural areas or the impact that incoming workers have on the local economy.

In this paper, we provide one of the first efforts to examine rural-to-rural labor movement in China. Specifically, we address three objectives. First, we give estimates of the size and growth of rural-to-rural labor movement. Second, we identify the types of workers participating in rural-to-rural commuting and migration and the types of rural industries employing workers from other villages. Finally, we take an initial look into the nature of demand for incoming workers and explore the impact that the incoming workers have on off-farm employment and wages of workers in the receiving villages. Understanding the impact incoming workers have on receiving villages will help us gauge how much resistance local leaders in prosperous rural areas may put up in response to increasing numbers of incoming workers in the future.

Village Survey Data

This paper draws on a unique set of data on the emergence of markets in rural China collected by the authors in 1995. The authors and several Chinese and foreign collaborators designed the sampling procedure and final survey instrument with the village as the unit of analysis after more than three years of pretesting. The field work team, made up of two of the authors and fourteen other graduate students and research fellows from Chinese and North American educational institutions (all with PRC citizenship and an average education level higher than a masters degree), chose the sample and implemented the survey in more than two hundred villages in a nearly nationally representative sample.[i] After answering questions about market activities in 1995, relying on recall in most cases because most interviews were conducted in 1996, village leaders also approximated changes since 1988, a year chosen for its comparability. Both 1995 and 1988 had high grain prices and followed several years of rapid economic growth in the rural sector. Township and village accountants also provided information from records about cultivated area, population, quota obligations, village income, and other variables; these data make up a small portion of the project's information.

To get a profile of China's labor market development during the reforms, leaders from each village were asked to place each resident working off-farm in either 1988 or 1995 in one of four non-overlapping categories: out-migrants, out-commuters, the self-employed, and local wage earners. An out-migrant (*changqi waigong*), is a person who leaves the village for at least one month per year for a wage earning job, but retains direct ties to the village by returning during spring festival or annual peak season farm

operations at the very least.[ii] Our migrant category specifically excludes commuters who are also employed outside of the village, but who live at home. Out-commuters, referred to in many areas as those who "leave in the morning and return in the evening" (*zaochu wangui*), are not considered migrants by villagers and leaders, so separating the two categories facilitated data collection. The self-employed category includes all those who work for themselves as "petty capitalists" (*getihu*), most frequently operating in transport, trade, or handicraft production. Local wage earners (*zai bencun na gongzi de*) work either in village or private firms. In addition to estimating the total number of each type of laborer, leaders broke down labor participation by gender, and approximated the proportion within each gender group who belonged to different age, education, job-type, and ownership sub-categories and the average wage earned by each group.[iii]

Leaders also were asked to estimate the number of workers coming into the village for work (in-commuters and in-migrants), the characteristics of these workers and their wages. Since the survey only covers rural villages, and nearly all workers coming into these villages are from other rural areas, the incoming workforce can be designated rural-to-rural labor movement.[iv] To the extent that this sample is nationally representative, we can net out the workers coming into the villages from those leaving the villages to compare the rural-to-rural segment of rural labor movement to those who are not moving into villages (and work in either townships or cities) which we call rural-to-urban.

Finally, the survey includes questions about the types of employers in the village. Leaders were asked to identify whether workers were employed by private or collective enterprises. The category, private enterprise, mainly includes the firms designated as

siying qiye (or privately operated firms). Leaders were encouraged to categorize firms as private if firms were privately-run but "hang a collective sign" (*gua jiti de pai*).

Labor Movement and China's Industrial Structure

Consistent with the economic development experience in other nations, China's modernization has triggered a massive transfer of rural labor into industry and services. Migration has been an important means for many of China's rural workers to find more lucrative off-farm employment. The volume of migrant workers has reached up to 20 percent of the population in some of China's urban areas (Wang , 1997).

China's migration experience is shaped by urban and rural institutions unique to its current economic environment. In urban areas, the household registration, or *hukou*, system effectively prevented massive rural-to-urban migration during the pre-reform period and continues to affect it today (Mallee, 1995). Before the economic reforms, state controlled employment, housing, and food markets denied rural households basic goods and services when they moved into cities. Today, government monopolization of labor, housing and food markets has relaxed, but the state's remaining influence in the urban economy still denies access for most rural-to-urban migrants to the well-paid jobs, comfortable living arrangements, and basic social services that residents of urban registered households enjoy. Remaining restrictions affect the wages and length of stays of rural-to-urban migrants (Wang, 1997).

The emergence of rural industry also distinguishes China's development and gives rural workers an alternative to migrating into cities. Rural industrial output and employment has grown rapidly since the reforms and by 1995 the sector employed over

100 million workers (ZGTJNJ, 1996). Most of the development, however, has occurred in the coastal provinces (Rozelle, 1996). In contrast, inland rural areas still rely on agriculture and do not enjoy the high incomes of their more industrialized coastal counterparts (Yang and Zhou, 1996).

While growth in rural industry initially provided off-farm employment opportunities primarily for local residents (Siu, 1989; Wedeman, 1993, Meng, 1990), the continuing success of rural enterprises has begun to open up local labor and managerial markets (Chen and Rozelle, 1998). Since the beginning of the reform era, the rural industrial sector has faced fewer regulations than its urban counterpart. Despite having reletively more freedom in the 1980s, collective enterprises still favored local workers (Walder, 1995). The rise of private enterprise in the rural economy (Jin and Qian, 1998) and competitive pressures (Naughton, 1995) have induced local leaders to offer contracts with more autonomy for the managers of collective firms, an action that has freed managers to hire with fewer restrictions (Chen and Rozelle, 1998).

The Rise of Off-Farm Employment

China's growing rural labor force has had unprecedented success finding income earning opportunities off the farm in recent years, and this success is partly due to increasing labor mobility. China's rural labor force, totaling 403 million workers in 1988, grew to 446 million workers by 1995 (ZGTJNJ). Over this period, the percentage of workers with non-farm employment also increased, growing from 19 to 33 percent of the rural labor force (table 1, row 2, columns 1 and 4).

Although all categories of off-farm employment grew between 1988 and 1995, some expanded faster than others (table 1). The rise of self-employed and rural-to-urban

migrants accounted for a large part of the increase of the off-farm labor force. The proportion of workers moving from rural to urban areas for employment purposes rose from 3 percent of the labor force in 1988 to 7 percent in 1995 (row 8, columns 1 and 4). The self-employed rose from 6 percent of the labor force to more than 11 percent (row 4, columns 1 and 4). Almost forty percent of all new off-farm jobs belong to the newly self-employed. In contrast, the proportion of the rural labor force that commutes to urban areas and the fraction that works in the village as a wage earner rose more slowly (rows 5 and 7). This represents a slowdown in employment generation in the formal rural industrial sector and a slowdown in the growth of rural-to-urban migration.

These estimates, although from a relatively small sample, are largely consistent with those published by the State Statistical Bureau (SSB) and other social scientists. We estimate that approximately 147 million farmers worked off-farm in 1995 (33 percent of the rural labor force of 446 million) by assuming that neighboring provinces similar to those surveyed have identical rates of off-farm labor participation. Our estimate is about eight percentage points higher than the best guess made by Parish, Zhe, and Li's 1993 national study (1995), but given the slightly broader definition of off-farm labor and the rapid growth of China's economy between 1993 and 1995, the estimates coincide fairly closely. Our results also confirm Parish, Zhe, and Li's tentative finding that off-farm employment opportunities have grown rapidly, despite some claims otherwise. Nineteen percent of the rural labor force worked off-farm in 1988, a figure that agrees with the State Statistical Bureau estimates for that year, 21 percent.

The Growth of Rural-to-Rural Labor

      While China's success at generating off-farm work opportunities for its rural workers is well known, what is less well known is that many of the new jobs are in rural areas and go to workers from other villages. In 1988, only about 1 percent of the rural labor force found employment in another rural village (table 1, row 9, column 4). By 1995, 5 percent of rural workers were employed in a rural village outside of their home village (column 1).

      The increase in the size of the rural labor force, the rapid rise in the proportion of rural workers who leave their home village for work, and the increasing share of those workers heading to other rural villages have contributed to the expansion in rural-to-rural labor movement. Rural-to-rural movement represents the fastest growing off-farm employment sector in rural China, with an annual growth rate of 27 percent compared to 13 percent growth in local employment and 9 percent growth in rural-to-urban movement (table 1, rows 3, 6 and 9, column 7). Growth in rural-to-rural migration was especially high at 38 percent annually (row 11). We estimate that there were 12.9 million rural-to-rural migrants in 1995 up from 2 million in 1988.[v] An additional 9.8 million rural workers in 1995 commuted to other villages, up from 3 million in 1988. The 22.7 million workers who found non-agricultural employment through rural-to-rural labor movement (12.9 plus 9.8) make China's development unprecedented. We are unaware of a development experience in any other country where the rural sector has offered industrial jobs to such a large group of mobile workers.

The Composition of Rural-to-Rural Labor Movement

Migration rarely selects randomly from the population in the sending areas. Specific subsets of the rural population, like the young and better educated, are more likely to join the migrant labor force (Todaro, 1980). Those who do not migrate, unfortunately, often are left reliant on low-income village agriculture and other activities that bring low returns to labor.

Migration in China is no exception. Certain groups tend to participate more in rural-to-urban migration than others. China's urban-bound migrants are more likely to be young and male (Wang, forthcoming). Rural-to-urban migrants also tend to have relatively higher education (Banister and Harbaugh, 1992) and usually come from villages that are home to previous migrants (Meng, 1996; Rozelle et. al., 1999).

Urban migrant worker policy and structural barriers of China's urban economy may cause the inequities by placing migrants in squatter communities with little legal protection, few social services and demanding the service of certain types of workers (Mallee, 1995). The denial of education in public schools to migrant children discourages families from migrating as a unit and the urban environment is often perceived as unsafe for women and the elderly (Wang, forthcoming). The kinds of jobs available in urban areas also affects the types of workers moving there (Solinger, 1999; Zhao, 1998). For example, since the most common jobs available for migrants in urban areas are in construction, the types of workers most commonly used in this work, young males, will have a greater likelihood of finding jobs.

Differences in the nature of urban and rural areas may give rise to distinctly different patterns of rural-to-urban labor movements when compared to rural-to-rural

movement patterns. If rural areas are safer, more "friendly" migration destinations and demand low-skilled and less-strenuous factory labor, the part of the labor force excluded from urban destinations may find off-farm employment opportunities in other villages. In the rest of this section, we describe the inroads made and constraints still faced by women, the less-educated, and the young as they attempt to find off-farm sources of income.

Gender

China's off-farm employment opportunities primarily go to male workers (table 2; Parish; Zhe, and Li, 1995; Zhang, Zhao, and Chen, 1995). In 1988, only 27 percent of the self-employed workers and 34 percent of local village industry workers were female (rows 2 and 3). Female workers were also underrepresented in the rural-to-urban labor movement in 1988 (20 percent female, row 2, column 4) and also in rural-to-rural migration (24 percent female, column 9).

Between 1988 and 1995, female rural workers made inroads into off-farm employment and much of these gains were by commuting and migrating into other rural villages. Migration was the primary means for women to participate in rural-to-rural labor movement in 1995, with 44 percent of rural-to-rural migrants being female (table 2, rows 1 and 2, column 9). While the share of female workers among rural-to-rural commuters declined, female workers still accounted for 43 percent of the workers in 1995, significantly higher than locally employed workers (32 percent) and rural-to-urban commuters (28 percent). These results do not necessarily contradict findings and observations by others who describe considerable female factory and domestic employment opportunities in some urban areas. If our sample is representative, however,

our findings imply that the high profile urban part of the female migrant labor force is less important numerically than those female workers that migrate and commute into rural areas.

The increasing numbers of rural female migrants and the propensity for female workers to move into rural rather than urban areas has greatly expanded the number of female workers engaging in rural-to-rural labor movement. The number of female rural-to-rural migrants rose from less than 1 million in 1988 to more than 5.7 million in 1995. The number of female rural-to-rural commuters also rose sharply (from 1.2 million to 4 million). By 1995, a total of 9.7 million female workers (5.7 plus 4) participated in rural-to-rural movement, up from less than 2.2 million in 1988.

In summary, the survey data point to three factors that explain the large increase in the migration of female workers to China's rural industries. First, overall migration increased by threefold between 1988 and 1995. Second, female workers increased their share of the migrating workforce to nearly a quarter of the total migrating labor force in 1995. Third, female migrant workers are increasingly likely to go to other rural villages rather than urban destinations in 1995 when compared to 1988.

Education and Age

Education serves as an important means of accessing off-farm employment in rural China. Like rural-to-urban migrants and commuters, workers participating in rural-to-rural labor movement tend to have more education than most rural residents, although they tend to be less educated than other off-farm workers. In 1995, only 49 percent of rural-to-rural commuters and 42 percent of rural-to-rural migrants had graduated from middle school (table 2, row 3, columns 8 and 9). In contrast, 59 percent of self-employed

and 57 percent of local workers in village industry had graduated from middle school (columns 2, and 3). Workers participating in rural-to-rural movement also graduated from middle school less frequently than rural-to-urban labor movement (45 percent compared to 59 percent in 1995). While education tends to increase a worker's chances of finding off-farm employment (only 37 percent of the total labor force graduated from middle school), commuting and migrating to other rural villages appears to have provided off-farm employment for many workers who do not have a middle school education.

Off-farm employment also is disproportionately available to young people in China, and this is especially true for migrant workers. Migrants from China's rural villages tend to be significantly younger when compared to their fellow villagers (Zhang, Zhao and Chen, 1995) and this is true in our sample as well. While only 28 percent of the total labor force and 21 percent of locally employed off-farm workers were under age 25 in 1995, 55 percent of rural-to-urban migrants and 40 percent of rural-to-rural migrants were younger than 25 (table 2, row 9, columns 1, 4 and 7).

The gender, education and age profile of the rural mobile workforce shows that it is made up of a segment of the rural labor force less likely to find off-farm employment elsewhere. Our descriptive analysis suggests that rural-to-rural commuting and migration provides a new channel for female and less-educated workers to enter the off-farm labor market and participate in migration. Why do we find more of these types of workers moving into other rural villages than are moving into cities or finding jobs in their home village? In the next section, we examine the characteristics of China's rural industry that may facilitate or restrict the employment of certain types of labor.

The Role of Rural Industry

Differences between rural and urban industry may explain the recent growth of rural-to-rural migration and commuting. Rural industry has a larger private sector and private firms are less influenced by the policies of local leaders, which makes them less bound by community norms that might favor local workers over incoming labor (Jin and Qian, 1998). Light industry also is more commonly found in rural rather than urban areas, and these enterprises have a high demand for inexpensive, low-skilled labor (Chen and Rozelle, 2000).

Our survey results show that rural-to-rural commuters and migrants have become a vital source of labor for rural industry, both private and collective. Rural industry has a far higher percentage of workers from other villages in 1995 than it did in 1988 (table 3). Between 1988 and 1995, the proportion of workers from other villages rose from 40 to 62 percent in private enterprises and from 21 to 46 percent in collective enterprises (table 3, rows 2+3 and 5+6, columns 1 and 4). Even though commuters and migrants comprise a higher percentage of the workers in private enterprises, collectives also have come to rely heavily on incoming labor.

While collectives now hire a significant number of incoming workers, the majority of rural-to-rural commuters and particularly migrants still work in private rather than collective enterprises. In 1988, only 38 percent of village residents with off-farm industrial employment were employed by private enterprises (table 4, row 1, column 1). In contrast, 65 percent of rural-to-rural migrants and 56 percent of commuters worked in private enterprises in 1988 (table 4, column 3). The rise of the importance of the private sector is consistent with the observations made by Oi (1998). The discrepancy is

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strikingly large for female workers; 83 percent of female migrants (versus only 38 percent of female village residents working in village enterprises) had jobs in private enterprises in 1988. By 1995 private firms employed about half of all village residents employed in village industry and a little more than half of all commuters (column 1 rows 2 and 3). Over 70 percent of incoming migrants, however, worked in private firms.

Private enterprises have contributed to the growth of rural-to-rural migration in three ways. First, since private firms have always tended to hire more incoming workers, the rapid growth in the private sector vis-a-vis collective enterprises has itself increased the employment of rural-to-rural migrants and commuters. Second, private firms have increased their reliance on incoming labor in recent years. Third, competition from private enterprises has pressured village level collective enterprises to increase their reliance on incoming labor as well.

The predominance of light industry in rural areas also has influenced the growth and gender composition of the rural mobile workforce. Light industry was by far the largest employer of rural-to-rural migrants and commuters in both 1988 and 1995 (table 4, rows 4 and 5, columns 1 and 4).[vi] In 1995, most migrants, particularly female migrants, worked in light industry (65 percent of all migrants and 78 percent of female migrants, row 5, columns 1 and 3). The preference of light industry for hiring female workers suggests that the rise of the sector may explain some of the increase in rural-to-rural labor movement among female workers.

While the survey clearly shows that rural firms are far more likely to hire workers from other villages in 1995 than they were in 1988, it is still unclear whether they can hire entirely without restrictions imposed by local governments. Rural firms may still be

deterred from hiring incoming labor even in villages where local wages are high. Other

political costs and social obstacles may affect the ability of firms to hire labor from

outside the village. Lower wages paid to incoming workers may pose a threat to the

wages of village residents or may simply reflect returns to lower skill levels and human

capital endowments. In the next two sections, we address the impact increasing

employment of incoming labor has on local workers' off-farm employment opportunities

and the nature of demand for rural workers.

Impact on Employment of Local Workers and Local Wages

Rural workers who seek work in urban areas often take low-paid undesirable

work that urban residents are unwilling to do given their favored access to better-paid

state jobs with full benefits (Wang, 1997b). Rural-to-urban migrants and commuters

rarely compete directly with urban residents for jobs. This may or may not be true in

rural areas where village residents do not have the employment guarantees that urban

residents have and where migrants and commuters are less ostracized by local residents

than they are by urban residents.

To examine if and how rural-to-rural migrants and commuters compete with local

workers for scarce off-farm employment opportunities, we selected the 90 villages that

had at least one enterprise employing industrial workers in 1988 and divided the villages

into two groups (table 5). One group is composed of villages in which the proportion of

incoming workers (both in-commuters and in-migrants) in the village industrial

workforce increased between 1988 and 1995. Villages in the other group did not

experience an increase. If incoming workers replace local workers, we should observe

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slower or stagnant off-farm employment growth for local residents in the villages where the employment of incoming labor has increased.

Employment

Evidence from the survey data suggests that increasing reliance on rural-to-rural migrants and commuters in village industry does not come at the expense of local workers in the receiving villages. Villages in which the proportion of in-migrants and in-commuters increased over the period had significantly higher levels of local off-farm employment participation in 1988 than the villages that witnessed no increase (19.5 percent of the village labor force versus 10.9 percent--table 5, row 4, columns 1 and 3). Off-farm employment participation increased significantly in both groups of villages by 1995, up to 29.3 percent for villages with an increase of in-migrants and in-commuters and up to 17.6 percent for villages with no increase (row 4, columns 2 and 4). By 1995, total off-farm employment, both inside and outside the village, reached over 50 percent of the labor force in the villages where we expect the negative impact of incoming labor to be greatest. In the villages in which there is no increase in the proportion of incoming labor, 37.1 percent of the workers found off-farm employment in 1995 (row 1, columns 2 and 4).

Wages

Residents of villages that have increased their reliance on in-commuter and in-migrant workers have not only increased off-farm employment participation but also not faced any noticeable drop in real wages. Real wages for off-farm workers generally increased somewhat for the villages with more incoming workers, off-farm wages in the other villages saw little or no increase over the period (table 5, bottom 6 rows). Although

we are unable to demonstrate whether off-farm employment levels or wages would have been even higher had the in-migrants and in-commuters not been hired, we can show that off-farm employment participation is still relatively high in villages where the proportion of incoming workers employed in village industry increased. Increasing reliance on migrants and commuters may dampen upward pressure on wages, but there is no sign of decreasing real wages as incoming workers are hired.

The lack of any significant negative employment or wage impact from rural-to-rural labor movement in the villages in which they are hired may explain why fewer barriers to incoming labor have been erected in rural areas. If most residents of the receiving villages consider incoming labor to be a benefit to the local economy, then this would bode well for the future of rural-to-rural labor movement. Unlike the barriers that urban leaders are expected to maintain, rural leaders in prosperous areas may be less inclined to prevent incoming labor from accessing local employment opportunities.

The Demand for Incoming Workers and Determinants of Wages in Rural China

China's continued development and transformation into an industrial economy depends on the ability of farmers to move from agriculture to industry. Given that restrictions to urban migration will likely continue to be widespread in the future, demand for rural-to-rural migrants and commuters could play an important role in facilitating the transfer of labor off the farm. In this section, we examine the nature of demand for incoming migrants and commuters. Our inquiry focuses primarily on identifying the determinants of demand and factors that discourage the hiring of incoming labor.

We also examine the factors that affect rural wages in villages with and without incoming workers.

Demand for Incoming Workers

In our empirical work, we are analyzing the aggregated hiring decisions of collective and private enterprise managers. In the spirit of Chen and Rozelle (forthcoming) and Park and Pan (1998), managers are assumed to be hiring labor to maximize their welfare or profits, subject to technological, economic, and policy constraints. As such, the demand for labor, as postulated in the theory of the firm, is a function of prices (especially the wage rate), other fixed factors, policy and technology.

Hypotheses

If restrictions are relatively unimportant, and rural firms are mostly free to maximize profits, the decision to hire commuters and migrants should be determined by the relative wage rates, and relative efficiency, of local versus incoming labor. Managers also may choose workers with human capital characteristics that match the firm's requirements. For example, enterprises in the light industrial sector demand large numbers of relatively unskilled, low cost workers and should be expected to host large numbers of incoming commuters and migrants.

If there are systematic policy barriers, other factors may affect hiring decisions. One of the most direct channels of enforcing employment rules and regulations is by direct order, a process that may be much easier when a village's firms are collective rather than private. If private owners can hire incoming workers, but managers of collective firms are still constrained by policy, then there should be a positive correlation between a dummy variable for villages with at least one private enterprise and the

prevalence of incoming workers in the village. If communities have even more strict

policies to encourage the employment of village resiedents, and enterprises (either private

or collective) can hire incoming labor only when no village residents are willing to take

the job, we should expect the size of the labor force to be negatively correlated with the

proportion of incoming labor.

Empirical Specification

To examine these issues, we estimate an empirical model of the demand for

incoming labor in village industry. The dependent variable in our model is the percent of

incoming labor among the village industrial workforce. We estimate separate equations

for total incoming labor as a percentage of the village's labor force, commuters, and

migrants. The model is estimated only on the villages with at least one industrial firm,

which in our sample included 87 villages in 1988 and 130 villages in 1995 out of the 215

villages surveyed.[vii]

In our final labor demand specification, we regress a measure of incoming worker

demand on variables that capture the costs of hiring, constraints on local employment

decisions, and provincial dummies. Separate equations are estimated for 1995 and 1988

since a Chow test of structural change indicates firms are behaving differently over time.

In addition to the local wage, we also include a lagged dependent variable in the 1995

equation. We believe that this variable will measure, among other things, the experience

and investments that firms have made in hiring incoming workers in the past, and can

serve as a proxy for the non-wage costs of hiring incoming workers.

In addition to variables measuring the direct costs of hiring, four other variables

are included. If a village has firms producing products in the light industrial category, a

dummy variable is assigned the value one as a way to capture its willingness to hire workers which may have lower human capital characteristics, which also characterize those in the incoming migrant labor force. A dummy variable indicating the presence of private firms is included and is expected to measure the difficulty in imposing hire-own-village-first restrictions on local managers, a factor that should lead to increased hiring of incoming workers. The size of the labor force and the quantity of arable land in the village measure the extent of the village's own resource endowment, and in the presence of restrictions will affect how much labor can be hired out of the one village labor pool and how many workers will be seeking work off the farm.

Results

In general, the equations performed relatively well in terms of the goodness of fit and conformance with a priori expectations (table 6). The adjusted R-square statistics range between 0.23 and 0.41 for the equations estimated by OLS. The coefficients of almost all regressors retain their sign and level of significance when Tobit estimators are used. In addition to examining the demand for *all* incoming workers (columns 1 to 4), tests of differences between hiring incoming commuters and incoming migrants suggest that behavior is different enough that *separate* equations are analyzed for the demand for incoming commuters (columns 4 to 8) and incoming migrants (columns 9 to 12).

Our analysis is consistent with the hypothesis of steadily improving rural labor markets. For the 1988 estimates, the coefficient on local labor costs is insignificant in all specifications (row 1, columns 1, 2, 5, 6, 9, and 10). In the era of high firm profits and restricted labor markets, firm managers did not switch to incoming workers when the local wage rose. By 1995, there are signs that the local wage is becoming a more

significant determinant of the demand for incoming labor, especially for incoming migrants, as indicated by its coefficient which is significant at the 10 percent level for the OLS specification (column 11).[viii]

Restrictions in village labor markets and systematic preferences for hiring own villagers, appear to become less binding over the period. The coefficient on the private enterprise dummy is positive and significant for all incoming labor and for incoming migrants in 1988 (row 3, columns 1, 2, 9, 10). In 1988, villages with a private enterprise were more likely to have incoming labor and tended to have higher concentrations of incoming labor, especially migrants, than villages with only collective enterprises. The coefficient on the size of the village labor force is significantly negative in the 1988 estimates for incoming labor, implying that villages with large labor forces were less likely to hire incoming labor from nearby villages (row 5, columns 1-4). By 1995, rural industries had changed their behavior and were hiring workers more according to economic criteria. The coefficient on the private enterprise dummy is no longer significant in the estimates for 1995 (row 3, columns 3, 4, 7, 8, 11, 12). Because villages with private enterprises do not show significantly different hiring practices from villages with only collective enterprises in 1995, these results indicate that collective enterprises may have abandoned their restrictive hiring practices and were behaving more like private enterprises. The size of the village labor force also was no longer negatively correlated with the proportion of incoming labor (row 5, columns 3 and 4), which provides further evidence that incoming labor was not restricted to villages with an insufficiently small local labor force in 1995.

Enterprises in villages that have a history of hiring workers from other areas continue to increase the extent to which they rely on incoming labor. The coefficient on the lagged dependent variable is positive and significant in the 1995 regressions (row 2, columns 3, 4, 7, 8, 11, and 12).[ix] One interpretation of these results is that villages that have overcome the costs and taboos involved with bringing labor into the village find that hiring incoming labor remains attractive. We will return to this issue and the interpretation of the findings of the labor demand analysis in the conclusion.

The Determinants of Rural Wages

Examining the wage structure facing rural workers provides further evidence of the rapid but still incomplete development of China's rural labor market. Wage data comes from our survey, in which we asked respondents in each village about the wage rate for each labor category (7 categories—e.g., local wage, out-migrant, etc.), for each year (1988 and 1995), and for men and women. Our analysis is carried out by regressing a series of wage observations from each village on the type of job category, human capital characteristics of average workers in the job category , the employment sector, provincial dummies, and whether or not a village has incoming workers. The purpose of our analysis is to test whether wages of workers in villages with incoming workers are higher or lower than in villages that hire only local labor.

The results from wage equations in our survey also perform fairly well and, as in the labor demand analysis, tells a story of gradually improving, albeit still imperfect, labor markets. For example, the human capital variables—education and age—have coefficients that generally display a strengthening of the importance of human capital in wage determination. The wage differential among employment sectors within regions are

also disappearing between 1998 and 1995 (table 7, rows 11 to 17). The convergence of wages among employment sectors, however, does not occur spatially. The provincial dummy variables are all jointly significant and their level of significance is increasing over time (row 18). This could imply increasing wage inequality among provinces, a result that suggests lagging labor market development. The result, however, may be a function of the timing of our survey and normal frictions in labor markets. China's economy was growing at its peak speed in 1995 and the demand for labor was very high throughout the country. The wage premiums offered by those fastest growing areas may reflect temporary rises in wages that will eventually be competed away, a conjecture that can only be tested with additional data collection and analysis.

Most relevant for our study, the wage regressions provide further evidence that incoming labor has not pushed the wages received by local workers down to a level of those villages without incoming workers. Villages with incoming labor (commuters and/or migrants) have significantly higher wages than other villages in 1995 but not in 1988 (table 7, row 1, column 1 and 2). While we can not rule out the possibility that continuing in-migration will not dissipate the wage premium (a possibility that is reinforced by the disappearance of the female wage premium—columns 5 and 6) , at least in the mid-1990s, the average worker (or more specifically, the average male worker) who is a resident of a village that has incoming labor, receives a higher wage than workers in other villages receive. The persistence of higher, or of at least not lower, wages is another reason why barriers to hiring decisions by local firm managers may be weakening.

Conclusion

Scholars and policymakers concerned about low rural incomes and the fostering of institutions that will assist China's transformation into an industrial economy should be interested in the rise in rural-to-rural labor movement. Given increasing urban unemployment and the challenging reforms that remain in the cities, it is unlikely that China's urban areas will become more friendly or fruitful employment environments in the near future. Rural areas with industry and service activities may be one of the most promising sources of off-farm employment growth, a fascinating and unprecedented trend in recent history. If rural industry remains profitable and policy barriers against hiring incoming workers are not re-erected, rising demand for labor in China's rural enterprises may increasingly draw from the immense agricultural labor force in outlying rural areas. An increasingly integrated rural-to-rural labor market also could be a key to keeping rural industry competitive during times when profits are down.

One of the main findings of this paper is that rural-to-rural labor movement is the fastest growing component of the rural off-farm employment and has expanded the occupational choices rural residents face and has provided new opportunities for less-well endowed workers to join the off-farm labor force. Over the period 1988 to 1995, self-employment grew at an annual rate of 14 percent and allows older, more experienced and usually male workers to increase their incomes. Local employment in village enterprises grew at only 6 percent and these jobs go mostly to young men with some education. Rural-to-urban labor movement grew by 9 percent annually, but is also primarily a male phenomenon. Rural-to-rural labor movement, however, grew at an annual rate of 27 percent over the period and has given opportunities to young women and workers with

less education. These workers are less likely to find other sources of off-farm employment.

The importance of rural-to-rural labor market development for workers that have less access to local or urban employment has implications for labor market development and rural industrial policy. Policies that promote rural industrial expansion will provide employment for a wider spectrum of rural workers than an emphasis on urban-to-rural movement or promotion of self-employment will. If industries that arise in small towns have the same employment patterns, this may be an additional argument for those who are promoting investment in small town development. The rise in rural-to-rural labor movement, both commuting and migration, also indicates that a rural labor market is fast developing in China. Policies that allow this development to continue will facilitate more economic integration in rural China and lessen income differences between regions.

The findings presented in this paper also indicate that the development of China's recent labor movement patterns has been driven by private enterprises and firms engaged in light industrial production. These firms, which are more profit-oriented and rely heavily on efficient production from large labor forces, are less willing to favor local residents. The disappearance of the reticence of collective firms to hire incoming labor in the mid-1990s may be another example of Naughton's "gradualism" effect (Naughton, 1995), a process by which gradual liberalization in one sector induces agents in another sector to change out of fear that they will become uncompetitive in the future. The availability of rural-to-rural migrants may be one of the motivating forces for the rise of the private sector described by Oi (1998).

Despite the rapid increase in the demand for incoming labor, we find no evidence that labor coming in from other villages negatively impacts the non-farm employment opportunities of local residents or the wages they receive. Villages where the concentration of incoming workers in village industry has increased are the most successful villages at providing ample and well paid non-farm employment to their residents. Real wages in villages that have experienced an increase in the number of workers coming in from other villages have not changed significantly, as have wages in the villages with no incoming workers. The lack of any noticeable injury to the livelihoods of residents in the receiving villages give reason for optimism that this important source of non-farm employment growth will remain relatively unrestricted.

References

Banister, J. and Harbaugh, C. W.. 1992. "Rural Labor Force Trends in China," China Agriculture and Trade Report. (Economic Research Service. July, 1992).

Carter, C., F. Zhong, and F. Cai. 1996. China's Ongoing Agricultural Reform. (San Francisco: The 1990 Institute)

Chan, K. W.. 1996. "Internal Migration in China: an Introductory Overview," Chinese Environment and Development. v. 7(1-2): 3-13.

Chen, H. and S. Rozelle. "Leaders, Managers and the Organization of Rural Industry Management in China," Journal of Development Economics. 60 (December 1999):529-557

Entwistle, B., G. Henderson, S. Short, J. Bouma, and F. Zhai. 1995. "Gender and Family Businesses in Rural China," American Sociological Review. v. 60: 36-57.

Jin, H. and Y. Qian. 1998. "Public Versus Private Ownership of Firms: Evidence from Rural China." Quarterly Journal of Economics. v.113(3): 773-799

Knight, J. and L. Song. 1995. "Towards a Labour Market in China," Oxford Review of Economic Policy. v.11(4).

Mallee, H.. 1995. "China's Household Registration System under Reform," Development and Change. v. 26: 1-29.

Meng, X.. 1996. "Regional Wage Gap, Information Flow and Rural-Urban Migration," Department of Economics Research School of the Pacific and Asian Studies, Australian National University, Canberra.

_____. 1990. "The Rural Labor Market," in W. Byrd and Q. Lin (eds.) China's Rural Industry. World Bank (Oxford University Press: New York).

Naughton, B.. 1995. <u>Growing Out of the Plan: Chinese Economic Reform, 1978-1993</u>. (New York: Cambridge University Press)

Nyberg, A. and S. Rozelle. 1999. "Accelerating China's Rural Transformation", (Washington, D.C.: The World Bank).

Oi, J.. 1998. <u>Rural China Takes Off</u>. (Berkeley, CA: University of California Press).

Parish, W.; X. Zhe, and F. Li. 1995. "Nonfarm Work and Marketization of the Chinese Countryside," <u>The China Quarterly</u>. v.143.

Park, A. and S. Pan. 1998. "Collective Ownership and Privatization of China's Village Enterprises," Working Paper, Center for Chinese Studies, University of Michigan, April, 1998.

Ranis, G.. 1995. "Another Look at the East Asian Miracle," <u>World Bank Economic Review</u>. v.9(3)

Rozelle, S. L. Guo, M. Shen, A. Hughart, and J. Giles. 1999. "Leaving China's Farms: Survey Results of New Paths and Remaining Hurdles to Rural Migration," <u>The China Quarterly</u>. v.158 (June): 367-393

Rozelle, S. L. Zhang, and A. Hughart. 1999. "Employment, Wages and Gender in Rural

 China," Working Paper, Department of Agricultural and resource Economics,

 University of California, Davis

Rozelle, S., M. Shen, and H. Li. 1997b. "Managers, Leaders, and the Rise of Markets in

 the Organization of Village Enterprises," Paper Presented at the 1997 Annual Meeting

 of the Association of Asian Studies, Chicago, March 13-16, 1997.

Rozelle, S.. 1996. "Rural Industrialization and Increasing Inequality: Emerging Patterns

 in China's Reforming Economy", Journal of Comparative Economics. v.19: 362-391

Siu, H.. 1989. Agents and Victims in South China. (New Haven, CN: Yale University

 Press).

Solinger, D.. 1999. Contesting Citizenship: Peasant Migrants, the State, and the Logic

 of Market in Urban China. (Berkeley and Los Angeles: University of California

 Press)

Stark, O.. 1976. "Rural-to-Urban Migration and Some Economic Issues: A Review

 Utilising Findings of Surveys and Empirical Studies Covering 1965 to 1975."

 Working Paper, World Employment Program, Research Series, International Labour

 Office, Geneva, Switzerland.

Stuabhaar, T.. 1988. "The Causes of International Labor Migrations: A Demand Determined Approach." International Migration Review. v.10(4): 835-855

Taylor, J. E. and P. Martin. forthcoming. "Human Capital: Migration and Rural Population Change." in Handbook of Agricultural Economics, edited by G. Rausser and B. Gardner (Elsevier Science Publishers, New York)

Todaro, M. 1980. "Internal Migration in Developing Countries: A Survey," in Population and Economic Change. R. Easterlin ed. (London and Chicago: University of Chicago Press)

Walder, A. 1995. "Local Government as Industrial Firms," American Journal of Sociology. v. 101: 236-301.

Wang, F.. Forthcoming. 'Gendered Migration and the Migration of Genders in Contemporary China.' In Gender, Household, and the Boundaries of Work in China. B. Entwistle and G. Henderson (eds.). Berkeley and Los Angeles: University of California Press.

_____. 1997. "Invisible Walls Within Cities: Migration and the Emergence of a Dual Society in Urban China," Paper Prepared for the Conference on Social Consequences of Chinese Economic Reform, Harvard University, May 23-24, 1997.

Wang, F. and X. Zuo. 1996. "Occupational Attainment and Adjustment of Rural Migrants in Shanghai", Paper Presented at the International Conference on the Flow of Rural Labor in China, Beijing, PRC. June 25-27, 1996.

Wedeman, A.. 1993. "Regional Protectionism: Editors Introduction," Chinese Economic Studies. v. 26, 5 (Summer): 59-78.

The World Bank. 1997. China 2020, Sharing Rising Incomes. (Washington D.C.: The World Bank)

Yang, D. and Zhou, H.. 1996. "Rural-Urban Disparity and Sectoral Labor Allocation in China," Research Papers in Asian/Pacific Studies, Duke University.

Zhang, X., C. Zhao and L. Chen. 1995. "*1994: Nongcun Laodongli Kua Quyu Liudong di Shezheng Miaoshu*" [1994: A Real Description of Rural Labor's Cross-Regional Flow], *Zhanlue Yu Guanli* [Strategy and Management] v.6.

Zhao, A. Y.. 1998. "Labor Migration and Earnings Differences: The Case of Rural China," Paper Presented at the 1997 Meetings of the American Economists Association, Chicago, January 2-5, 1998.

ZGTJNJ. 1996. *Zhonguo Tainji Nianjian.* [Statistical Yearbook of China]. Beijing, China: State Statistical Bureau Press.

ZGXZQYNJ. 1996. *Zhongguo Xiangzhen Qiye Nianjian.* [Yearbook of Statistics on Township and Village Enterprises in China—in Chinese]. Beijing, China: State Statistical Bureau Press.

Table 1. Composition of China's Rural Labor Force, 1988 and 1995 (Percent of Total Rural Labor Force).

Sectors		1995 Village Labor Force			1988 Village Labor Force			Growth Rates, 1988-1995		
		All Workers	Male Workers	Female Workers	All Workers	Male Workers	Female Workers	All Workers	Male Workers	Female Workers
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Full-Time Agricultural Labor	(1)	67	52	77	81	73	89	-1	0	-1
Non-Agricultural Labor[a]	(2)	33	48	23	19	27	11	12	11	14
Village Residents Locally Employed[b]	(3)	15	22	12	9	13	6	13	11	13
Self Employed	(4)	11	16	8	6	8	4	14	14	17
Village Enterprises	(5)	4	6	4	3	5	2	6	5	7
Rural-Urban Movement	(6)	13	20	6	9	13	3	9	9	11
Commuters	(7)	6	9	4	5	7	3	6	5	7
Migrants	(8)	7	12	3	3	6	0.5	14	13	21
Rural-Rural Movement	(9)	5	6	5	1	1	2	27	29	24
Commuters	(10)	2	3	2	1	0.7	1	18	26	10
Migrants	(11)	3	3	3	0.5	0.7	0.3	38	30	53

Source: Authors' survey.

[a] Many of these workers also contribute labor to agriculture in addition to their off-farm employment

[b] These workers are village residents with off-farm employment in the village.

[c] These workers have off-farm employment outside the village but close enough to commute (daily) from their home village.

[d] These workers have off-farm employment outside the village and must leave for at least one month at a time for their job

Table 2. Gender, Education and Age Statistics for China's Rural Labor Force

		Locally Employed			Rural to Urban Movement			Rural to Rural Movement		
		Local Workers Locally Employed	Self-Employed	Local Village Industry	All R-U Movement	Commuters	Migrants	All R-R Movement	Commuters	Migrants
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gender					*(Percent Female)*					
1995	(1)	32	30	36	22	28	15	43	41	44
1988	(2)	29	27	34	20	26	10	48	60	24
Education					*(Percent Middle School Graduates)*					
1995	(3)	58	59	57	59	58	59	45	49	42
1988	(4)	50	51	49	41	39	45	58	66	43
Age					*(Percent under Age 25)*					
1995	(5)	21	15	36	44	35	55	37	34	40
1988	(6)	24	18	39	35	32	42	50	52	39

Source: Authors' survey.

Table 3. Composition of Rural Industrial Workforce by Ownership

		1995			1988		
		Total	Male	Female	Total	Male	Female
		(1)	(2)	(3)	(4)	(5)	(6)
Private Enterprises				(Percent of Workforce)			
Village Residents	(1)	**38**	43	30	**60**	68	47
Commuters	(2)	**20**	19	21	**25**	16	40
Migrants	(3)	**42**	38	48	**15**	16	12
Collective Enterprises							
Village Residents	(4)	**54**	59	46	**79**	82	73
Commuters	(5)	**23**	20	29	**15**	10	25
Migrants	(6)	**23**	21	25	**6**	8	2

1

Source: Authors' survey.

Table 4. Hiring of Rural-to-Rural Migrants by Private Enterprises and Light Industry

		1995			1988		
		Total	Male	Female	Total	Male	Female
		(1)	(2)	(3)	(4)	(5)	(6)
Industry Ownership		(Percent Working in Private Enterprises)					
Village Resident Workers	(1)	**51**	51	49	**38**	37	38
Commuters	(2)	**55**	58	52	**56**	53	60
Migrants	(3)	**73**	73	74	**65**	59	83
Industry Type		(Percent Working in Light Industry)					
Commuters	(4)	**27**	21	36	**72**	49	86
Migrants	(5)	**65**	55	78	**49**	45	61

Source: Authors' survey.

Table 5. Employment and Wage Impacts of Increasing Non-Village Workers

		Villages with an *Increase* in Non-Village Workers		Villages with *no Increase* in Non-Village Workers	
		1988	1995	1988	1995
		(1)	(2)	(3)	(4)
Off-Farm Employment		*(Percent of Workers with Off-Farm Employment)*			
Total Off-Farm					
All Workers	(1)	33.1	50.4	25.1	37.1
Male	(2)	41.7	60.8	33.2	47.7
Female	(3)	23.3	38.4	15.0	24.7
Employed in the Village					
All Workers	(4)	19.5	29.3	10.9	17.6
Male	(5)	26.1	35.7	13.2	20.9
Female	(6)	12.2	21.9	8.2	13.7
Employed Outside Village					
All Workers	(7)	13.5	21.1	14.2	19.5
Male	(8)	15.6	25.1	20.0	26.8
Female	(9)	11.1	16.5	6.8	11.0
Off-Farm Earnings		*(Yuan per Month, deflated to 1988 Yuan)*			
Out-Commuters					
Male	(10)	244	262	288	286
Female	(11)	198	194	197	209
Out-Migrants					
Male	(12)	246	337	257	256
Female	(13)	154	203	213	231
Self-Employed					
Male	(14)	794	1137	477	561
Female	(15)	609	1073	369	345

Source: Authors' survey.

Table 6. Demand for Commuters and Migrants in Rural Industry

Dependent Variable:	Percent of Incoming Workers among Workers in Village Enterprises				Percent of Commuters among Workers in Village Enterprises				Percent of Migrants among Workers in Village Enterprises			
	1988		1995		1988		1995		1988		1995	
	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Costs												
Local Labor Cost[a] (1)	0.013	0.007	0.013	0.013	-0.0005	-0.03	-0.002	-0.009	0.01	0.06	0.15*	0.015
	(0.42)	(0.14)	(1.16)	(1.02)	(0.02)	(0.48)	(-0.20)	(0.61)	(0.52)	(0.59)	(2.04)	(1.27)
Lagged Dependent Variable (2)	-	-	28.5	32.0	-	-	31.9***	38.8**	-	-	49.8***	69.0***
			(2.91)	(3.02)			(2.95)	(2.90)			(5.71)	(5.10)
Industry Features[b]												
Private Enterprise (3)	17.9**	29.9**	4.3	5.2	3.9	10.6	7.5	6.0	13.9*	70.3**	-4.19	-4.7
	(2.21)	(2.22)	(0.55)	(0.61)	(0.63)	(0.75)	(1.14)	(0.70)	(2.02)	(2.47)	(-0.82)	(0.55)
Light Industry (4)	27.6***	50.5***	13.8*	19.8**	29.2***	60.4***	11.4*	19.8**	-1.6	3.0	1.66	12.3
	(3.06)	(3.68)	(1.87)	(2.44)	(4.19)	(4.10)	(1.83)	(2.47)	(0.21)	(0.13)	(0.35)	(1.49)
Village Features												
Size of Labor Force (5)	-0.03**	-0.05*	-0.01	-0.01	-0.001	-0.02	-0.02**	-0.03**	-0.02	-0.05	0.012*	0.02*
	(2.24)	(2.09)	(1.06)	(-0.86)	(1.09)	(0.81)	(2.40)	(2.59)	(1.65)	(1.18)	(1.69)	(1.90)
Size of Arable Land (6)	0.01*	0.02**	0.0002	-0.001	0.01**	0.02**	0.002	0.002	0.002	0.005	-0.003	-0.004
	(2.08)	(2.39)	(0.05)	(0.21)	(2.21)	(2.50)	(0.80)	(0.46)	(0.43)	(0.39)	(1.09)	(0.95)
F-Stat on Provincial Dummies (7)	1.7	1.9	1.7	1.72	1.9*	1.9*	3.2***	3.1***	1.3	0.8	4.8***	4.3***
Adj. R-Squared (8)	0.38	-	0.24	-	0.41	-	0.36	-	0.23	-	0.43	-

Absolute value of t-stats in parenthesis; *, **, *** indicate significance at 10, 5 and 1 percent respectively

[a] The wage male workers commuting out of the village receive. Female and male workers' wages are highly correlated so cannot be used together. This wage is also not simultaneously determined with village enterprise hiring decisions since it is observed outside the village.

[b] Dummy variable for whether the village has a private enterprise or a light industrial enterprise

Table 7. Explaining Wages in Rural China

		All Workers		Male Workers Only		Female Workers Only	
		1988	1995	1988	1995	1988	1995
		(1)	(2)	(3)	(4)	(5)	(6)
N		(707)	(1143)	(448)	(635)	(259)	(508)
Incoming Labor[a]	(1)	0.08 (1.36)	0.13 (3.02)***	0.04 (0.55)	0.16 (2.59)***	0.18 (1.84)*	0.09 (1.62)
Type of Worker[b]							
In-Migrant	(2)	-0.19 (1.29)	-0.34 (4.20)***	-0.11 (0.64)	-0.31 (2.56)**	-0.38 (1.49)	-0.36 (3.27)***
In-Commuter	(3)	-0.09 (0.73)	-0.32 (4.13)***	-0.02 (0.11)	-0.24 (2.12)**	-0.29 (1.37)	-0.40 (3.75)***
Out-Commuter	(4)	-0.19 (2.60)***	-0.29 (5.34)***	-0.12 (1.36)	-0.23 (3.08)***	-0.34 (2.38)**	-0.34 (4.46)***
Self-Employed	(5)	0.52 (3.09)***	-0.10 (0.91)	0.56 (2.80)***	0.20 (1.12)	0.55 (1.67)	-0.02 (0.15)
Education, Age and Gender							
% High School Graduated	(6)	0.31 (2.14)**	0.30 (2.69)***	0.23 (1.15)	0.23 (1.39)	0.55 (2.32)**	0.41 (2.70)***
% Middle School Graduated	(7)	0.16 (2.02)**	0.22 (3.47)***	0.18 (1.72)*	0.27 (2.81)***	0.18 (1.41)	0.20 (2.48)**
% Under Age 25	(8)	-0.24 (3.15)***	-0.14 (2.24)**	-0.22 (2.17)**	-0.12 (1.22)	-0.24 (1.99)**	-0.20 (2.46)**
% Over Age 50	(9)	-0.24 (1.48)	-0.35 (2.53)**	-0.20 (0.97)	-0.38 (1.99)**	-0.30 (1.10)	-0.33 (1.61)
Female	(10)	-0.22 (4.10)***	-0.28 (6.72)***	-	-	-	-
Employment Sector[c]							
Agriculture	(11)	0.44 (1.75)*	0.31 (1.74)*	0.48 (1.43)	0.22 (0.86)	0.44 (1.05)	0.48 (1.95)*
Light Industry	(12)	0.37 (2.28)**	0.02 (0.18)	0.34 (1.70)*	0.004 (0.02)	0.54 (1.78)*	0.005 (0.04)
Heavy Industry	(13)	0.39 (2.00)**	0.03 (0.22)	0.41 (1.81)*	-0.06 (0.29)	0.34 (0.82)	0.19 (0.85)
Mining	(14)	0.85 (3.93)***	0.14 (0.90)	0.89 (3.65)***	0.21 (1.03)	0.77 (1.36)	-0.11 (0.35)
Construction	(15)	0.50 (3.08)***	0.21 (1.95)**	0.50 (2.63)***	0.24 (1.45)	0.60 (1.77)*	0.24 (1.57)
Transportation	(16)	0.27 (1.41)	0.04 (0.37)	0.24 (0.85)	0.05 (0.23)	0.43 (1.29)	0.003 (0.03)
Commerce	(17)	0.43 (2.13)**	0.12 (0.86)	0.50 (2.12)**	0.30 (1.46)	0.24 (0.59)	-0.36 (1.57)
F-Stat on Provincial Dummies		13.4***	33.9***	7.0***	17.6***	7.9***	19.4***
Adj. R-Squared		0.27	0.30	0.24	0.26	0.33	0.33

Dependent Variable: Log Wage

Absolute value of t-stats are in parenthesis, *, **, *** indicate significance at 10, 5 and 1 percent respectively.

[a] Dummy variable for villages that have in-commuters or in-migrants working in village enterprises

[b] Out-migrants are left out as a base

[c] Services are left out as a base

Endnotes

[i] The sample villages were selected randomly on the basis of a stratified random sampling procedure. The villages all come from nine representative provinces (Zhejiang, Shandong, Hubei, Sichuan, Yunnan, Shaanxi, Hebei/Liaoning, and Guangdong) which were randomly selected from each of China's traditional geographic regions (East China--huadong, North China--huabei, Central China--huazhong, Sichuan, Southwest China--xinan, Northwest China--xibei, Northeast China--dongbei, and South China--huanan). Eight counties were selected from each province, two from each quartile of a list of counties arranged in descending order of gross value of industrial output (GVIO). GVIO was used on the basis of the conclusions of Rozelle, 1994 and Rozelle, 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. Two townships, one above the median GVIO and one below were randomly selected from each county. Two villages in each township were selected in the same manner. Data collection in Guangdong was so expensive that the study was never started. Due to the exclusion of Guangdong, areas with high levels of off-farm employment may be under-represented in the sample.

[ii] The survey also attempted to estimate the number of permanent out-migrants. For the purposes of this study permanent out-migrants are those who leave the village for employment purposes and have no intent to re-establish residence in the village. Leaving the village permanently was such a rare event that the survey tabulated the total number of workers leaving the village in the periods between 1989- 95 and found that the total number of permanent out-migrants amounted to less than one percent of the labor force. For the remainder of the paper, migrants refer only to long-term, not permanent, labor migrants. Due to the survey's focus on emerging markets, we explicitly did not consider those who moved for marriage, education, or retirement.

[iii] Leaders were able to provide information on the average daily wage for most of the categories in which workers typically are paid wages. For the self employed, village leaders estimated the average daily earnings, which incorporates the returns to labor as well as other fixed factors.

[iv] Although all villages in the survey are "rural," some are highly industrialized and in several cases have very little cultivated land.

[v] These estimates come from the percentage of rural labor going into villages (estimated by the survey) multiplied by China's total rural labor force as published by the State Statistical Bureau (SSB). The SSB reports 403 million rural workers in 1988 and 446 million in 1995.

[vi] While only 27 percent of rural-to-rural commuters worked in light industry in 1995, this is a higher percentage than in any other sector.

[vii] Since many villages have no incoming workers, we provide Tobit estimates along with OLS to account for the truncated normal distribution of the dependent variable. Another estimation issue is an omitted variables problem since we do not observe characteristics of laborers in labor markets that could be hired by local firms but are not. As discussed above, rural firms substitute incoming labor for local workers depending on wage differences between incoming and local workers. Hence, we would like to include wages for local and incoming workers in the model, as is done in other studies on the demand for migrant workers (e.g., Struabhaar, 1988). Unfortunately, while we have wage observations for local labor in all villages with enterprises, we only have wage observations for incoming workers in the villages that hire them. One solution might be to predict an in-migrant wage for villages without incoming workers and use these predicted wages in the regression analysis. But, we also do not have human capital characteristics and information on other traits on incoming migrants who are working in the local labor pool. Due to these limitations our specification uses only local wages. Although in theory we have omitted variable bias, the bias is likely not very large. Rozelle, Zhang, and Hughart (1999) have shown that there is no statistical difference in the local off-farm wage rate between any pair of the provinces that migrants in China come from (such as Sichuan, Shaanxi, Henan, and Hubei). Differences among migrants' wages from different areas mostly reflect transportation costs (which are likely to be minimal for workers staying more than a few months) and local costs of living. These differences are largely represented by the provincial dummy variables.

[viii] We also estimated separate regressions for male and female workers and found that the coefficient on local labor costs is significant for both OLS and Tobit specifications of the demand for male migrants.

[ix] A lagged dependent variable is frequently used in regression analysis to hold constant a set of one or more unobserved, village-specific factors that are assumed to be fixed over time and affect the dependent variable in some way beyond the effects of the other regressors in the equation. For example, in our case the lagged dependent variable in the regressions in table 6, columns 3 and 4 is the percent of incoming workers in each village in 1988 (which is used to explain the dependent variable, the percent of incoming workers in 1995).