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Rural-Urban Labor Migration Process in China: Job Search, Wage Determinants and Occupational Attainment

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Comments are welcome.

I. Introduction

One of the major consequences of the economic reforms in China has been a rapid rise in population mobility, especially labor flows from the countryside to cities. Large numbers of peasants since the early 1980s have flocked from the countryside to coastal cities to engage in non-farm work. As will be explained below, the urban labor market has not been fully opened to rural labor migrants, but the current situation is quite different from that of the Mao (pre-1978) era. During the pre-1978 period, rural-urban migration was strictly regulated and discouraged. One of the major administrative measures used to control population mobility was the *hukou* (household registration) system.[1] In brief, rural residents (people with rural *hukou* status) were not allowed to move to cities; nor could they work in the urban areas. The approach was premised on the differential treatment of two separate economic and social sub-systems (Chan, 1994; Whyte, 1996). In order to carry out a heavy-industry oriented development strategy and maintain industrial profits in the context of a capital-scare economy, the urban industrial sector was given priority and capital mobility was also highly restricted (Naughton, 1992, Lin *et al*, 1992). To keep this imbalance, administrative controls were necessary to prevent migration from the countryside. Restrictions on labor and capital mobility stemming from the *hukou* system induced permanent differentials in the factor rewards between urban and rural sectors. The *hukou* system, working in conjunction with other policy means, resulted in a clear socioeconomic dichotomy based on the rural-urban divide.

Since the late 1970s, under Deng's reforms and open policy, a series of marketization policies have been launched. Rural residents (rural *hukou* holders) are allowed to move to the cities and work in mostly low-skilled jobs or be self-employed in small businesses, though many other urban jobs remain closed off to them (Chan, 1994; Solinger, 1999). These migrant workers are often called "*minggong*" (rural migrant labor) since they do not have urban *hukou* status. Estimates of the size of this migrant workforce vary; the consensus seems to fall between 50-64 million for the mid-1990s (Chan, 1999). The present Chinese rural-urban labor migration presents an interesting case to study the interaction of institutional constraints and migrants' behaviors and processes at a relatively micro-level, especially by applying of models developed for market-type economies. Present rural-urban labor migration in China is different from the conventional, planned migration. The former is a market-based process while the later is controlled and arranged by the government. Contrast to urban native workers, rural migrants' job search process is determined largely by market mechanisms (Knight and Song, 1995).

This paper analyzes rural-urban migrants' job search process and occupational attainment in China in the 1990s. In studying migration process in this period, one needs to consider the multiple factor market failure, the institutional barrier brought by the *hukou* system and differentials of labor and capital

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[1] See Cheng and Selden (1994), and Chan and Zhang (1999) for a detailed treatment of the *hukou* system and the various related policies.

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rewards between urban and rural sectors in China. Based on the segmented labor market theories, and insiders (native urban workers) and outsiders (rural migrants) disequilibrium competition, this paper attempts to explain the unique phenomenon in the Chinese urban labor market that are not predicted by existing migration models, such as the two-sector unemployment equilibrium models (UE) first developed by Todaro (1968) and by Johnson (1971). In particular, we want to explain the role of the informal sector as a permanent employment sector for rural-urban migrants and the emergence of the self-employed as the best choice for rural migrant labor. This is very different to one finds in other developing countries where employment in free-entry "informal" activities is a transitional phase during which migrants are actively searching for formal sector employment (Todaro, 1968; ILO, 1972).

This paper will proceed as follows: Section II presents a discussion of the relevant literature; Section III describes the data used in the analysis; Section IV outlines the key econometric methodology used. In Section V, we test the hypothesis that the self-employed sector is the rational choice of rural migrant labor given the various conditions in China. Section VI concludes with a discussion of the empirical results and the policy implications.

II. Theoretical Considerations in the Context of China

The best known literature in migration in market economies is those by Lewis (1954); Fei and Ranis (1961); Greenwood (1975, 1979); Todaro (1969), and Stark and Taylor (1989). Obviously, no Western models should be mechanically applied to China, given that serious urban labor market segmentation and incomplete factor market exist in that country. Instead, one must go beyond the standard neo-classical model to find a better analytical framework. Ideally, the interactions at the level of the migrant family, historical background and institutional setting, social factors at the receiving community and the sending community of the migrants, and the continuing links afterwards all need to be included in the study of migrants' behaviors in China.

This paper studies the rural-urban labor migration process in the transitional era in China, a period that is characterized by increased labor mobility but also by continuing segmentation in the labor market. We treat rural-urban (labor) migration as a process of equilibrium allocation of the labor force between different labor markets. Our basic premise is that the same kind of forces that explains the choices of workers between the rural and urban sectors can also explain their choices between one labor market and another within an urban area. These are outcome of informed, rational responses to an environment filled with uncertainty and incomplete markets. Both of their searching strategies will inevitably be heavily shaped by the Chinese institutional settings. In the UE model, the probability of obtaining an urban job is defined as the number of urban jobs divided by the urban labor force. Implicitly, this specification assumes that persons living in rural areas have no chance whatever of finding urban

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jobs and no job turnover at all. Furthermore, existing models do not take the institutional obstacle preventing the transfer from the informal to formal sectors into consideration. Allowance for more generalized job-search behaviors, an urban traditional sector, preferential hiring by educational level, and labor turnover considerations, unemployment rate could be much lower than UE model would predict (Fields, 1975). This resembles more closely the actual situation in China.

One notable characteristic of the urban economy in the developing world is the co-existence of a formal sector and an informal (bazzar-type) sector based on their functional characteristics of the sectors (ILO, 1972; Piore, 1979). In China, generally one can consider state enterprises and large urban collective-owned enterprises as the formal sector and the self-employed and small private (mostly family) businesses as the informal sector. In pre-reform urban China, however, this duality was hardly significant as almost all urban jobs, both high-skilled and low-skilled, were exclusively in the formal sector. The size of the informal sector was miniscule as urban self-employment and small family businesses were largely illegal and mostly forbidden. Since the reform self-employment (*getihu*) in cities has expanded rapidly to become one of significance. From a more analytical perspective and taking into account the functions of the Chinese *hukou* system (which defines one's urban citizenship), a more useful division of the formal-informal division is based on occupation instead of the traditional sectoral approach based on firms. There are the "formal" occupations that are relatively stable and with many employee benefits, and with opportunities of promotion for most of them. Then, there are "informal" occupations, consisting of jobs basically, if not totally, devoid of those benefits and opportunities (see Table 1). In the last two decades, urban informal jobs are not only confined to self-employment and family businesses; instead, with ongoing marketization, large numbers of jobs in the state sector have also been informalized in this sense. State jobs are contacted out to the self-employed, or if they stay in the state sector, outside migrants are hired to do the jobs but these employees are not given the same kind of benefits and job security offered normally to regular state employees.

As a result, there is still a fair amount of overlap between the formal/informal sectors and occupations. Informal occupations are now found in both formal and informal sectors. State enterprises now hire many rural migrants, but this does not mean that these rural workers are in formal occupations. Rather, they are treated as "temporary contract workers" and are not entitled to most, if not all, the benefits enjoyed by their urban counterparts; they simply do the same informal jobs like housecleaning and other petty service jobs. This is the mass of workers who exist outside the formal economy of legal contracts, government regulations, tax collections and employee benefits in China. We will call all of these informal occupations no matter what ownership sector they are in. The formal occupations are only open to those with local *hukou*, which means that rural migrants, those without local *hukou*, can only look for informal occupations. To these rural migrant workers, their ultimate choice is either returning to their sending communities after a period of time in urban labor market or staying in informal occupations

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permanently. In this sense, if they get employed in the urban labor market, there is only a low level of attachment to the locations where they find work. This is expected by both employers and these (rural) employees.

Because of the barrier erected by institutional mechanisms, different sectors reward labor productivity and human capital investment differently. To study the impact of the *hukou* system on the urban labor market, we will analyze the impact of sectoral ownership on informal occupational attainment in the context of heavy market segmentation in China. This segmentation means that there are the urban native and formal jobs on one side; then, the rural migrants and informal jobs on the other. They exist side by side with little mobility. Our interest in this paper is to examine the wage determination of informal occupations by different ownership -- the state-owned, the self-employed and others.[2] We argue, under the current context of constraints and opportunities imposed by the *hukou* system, the self-employed sector will attract rural migrants who have more job-specific human capital and true ability, and as a consequence, their earnings profile should be sharper than wage earners attached to whatsoever ownership.

Two reasons support our argument. First, because of the strong occupational discrimination against rural migrants in cities, their real wages can never surpass those of the native workers. Moreover, the mobility from informal to formal occupations is severely constrained. This situation leaves little scope for rural migrants to reap personal benefits from greater individual work efforts in the state and other sectors. On the other hand, self-employed rural migrants may be able to turn greater efforts into higher wages. Second, the employers have no incentive to raise wage for the "temporary" rural labor because of a weaker link between stability and efficiency in work. In this paper, we consider the possibility of generation and sustaining three informal labor markets associated with different ownership for rural migrants as a result of the institutional setting. In order to test our hypothesis on the self-employed sector, we will analyze the determinants of wage and occupational attainment, especially whether or not education and work experiences are rewarded at the same rate among informal occupations in the three sectors.

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[2] Informal occupations in the state sector include all kinds of petty service jobs in state-owned enterprises and government institutions. The self-employed sector includes those who run small businesses, such as restaurants, shoe repairs, tailors, street vendors. The "other" ownership sector refers to those who provide low-skill services in collectively-owned, privately-owned or joint-venture owned enterprises.

Table 1 Formal and Informal Occupations

Characteristics	Formal	Informal
Hukou status	Local (usually non-agricultural)	Non-local (usually agricultural)
Legal residency status	Permanent	Temporary
Employment type	Permanent	Temporary or self-employed
Job-related fringe benefits	Yes (such as housing and medical)	Nil or very limited
Career advancement opportunity	Yes	Nil or very limited

III. Description of the Data

The data used in this study were collected in the summer of 1995 in Jinan municipality, the capital city of Shandong Province. Located on the eastern coast, the municipality covers 8,227 square km. and includes 5 urban districts (Lixia, Shizhong, Tianqiao, Huiyin and Licheng) and 4 rural counties (Zhang Qiu, Changqing, Pingyin, Jiyang and Shanghe). The total population in Jinan is 5.3 million, of which 1.7 million are classified as "non-agricultural" (Jinan Statistical Bureau, 1994). The latter figure can be used as a general indicator of the city permanent population.[3] The net income per capita in Shandong rural areas in 1990 is 801 yuan ranking the 13th among 30 Chinese Provinces (SSB, 1991). Jinan Municipal Public Security Bureau reported that there were 100,500 rural migrants in Jinan municipality in 1994. This figure represents about 6 percent of the total no-agricultural population. In a broad sense, Jinan is relatively typical of an eastern city in a province where agriculture still has a significant share of the economy. In this study, we put particular focus on self-employment. Shandong is the province that had the largest self-employed sector in the country, the size of which numbered 2.6 million in August 1998 (*Singtao Daily*, 1998).

The survey was conducted by the Institute of Population Studies of the Chinese Academy of Social Sciences in collaboration with the Shandong Statistical Bureau. The survey covers those aged 15 and above who had migrated from the rural areas to Jinan and were actively employed at the time of the survey. All of them did not have the local *hukou* status and they were called the "floating population." Through a two-stage proportional stratified sampling method based on geography and occupations, a sample of size 1,504 was generated.[4] Responses were double-checked in the field to eliminate errors and omissions. The quality of data entry was strictly controlled by logical checks and double data entry.

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[3] For a detailed treatment of the complexity of urban population definitions in China, see Chan (1994).

[4] In the first stage of sampling, four urban districts (Lixia, Shizhong, Tianqiao and Huiyin) were chosen to represent the different patterns of development within Jinan city proper. Based on a proportional sampling method, 3 residential committees were selected in each district from a total of 68 residential committees in the four districts. As a result, a total of 12 residential committees were chosen and the sample size in each committee was calculated. In the second stage, from these 12 residential committees, sub-samples based on migrants' occupational structure were chosen (using the occupational structure of rural migrants in Jinan as a whole as a reference). The sample size in each occupation was fixed and then independent subsamples were selected for each occupational stratum by random sampling.

These methods of data processing resulted in a high quality data set which can be interpreted as well representative of rural-urban migrants in Jinan city proper.

Generally, rural migrants to Jinan can be regarded as relatively well educated (83.1 percent rural migrants attended at least junior middle school) and with relatively good family economic background (more than 70 percent migrants came from the family with yearly net income greater than 2,000 *yuan).* Appendix 1 provides some descriptive statistics about this pool of migrants. Those better educated are likely to be migrants than the less educated ones. This could speak to the importance of information in generating migration. The more educated are presumed to be better informed about alternative earnings opportunities elsewhere outside their villages. The finding that migrants are less likely to be from the poorest families in the origin area suggests that migration in rural China is likely to be constrained by income. The average age of migrants is 26.9 with 27.2 for males and 21.45 for females, and male migrants account for 71.3 percent and female migrants, only 28.7 percent. For comparison, a survey of 12,673 households in 442 counties nationwide conducted in 1993 and 1994 found that 82 percent of the 3,603 persons who reported moving out of their households for work elsewhere were males (Hare, 1996). We also found migrants with non-agricultural employment (including students) background account for 42.91 percent. The average rural agriculture experience is about 7.8 years and non-agriculture is about 1 year. Labor mobility was restricted at the inter-regional level and migrants from rural areas within Shandong account for 93.2 percent. Statistics about migrant's occupations provide another opportunity to compare this sample with the national survey mentioned above. In our sample, less than half (41 percent) were employed in construction, about 18 percent were employed in industry, and about 38 percent were in various food and service types of employment. In the nationwide sample, 33 percent of the migrants were employed in construction, 22 percent in industry, and 31 percent in combined category of food, service, and commerce (Cai et al, 1996). The broad shapes of the occupational structures of the Shandong sample and the national sample are quite similar.

Although rural migrants are officially referred to as "temporary residents" in urban areas, they are actually not so "temporary" at all. In Jinan, the average or length of stay of rural migrants is two and half years. Rural migrants retain their official rural *hukou* status and maintain their permanent homes in back in the villages. In many cases, their families remain behind in the villages too. It is therefore common for rural migrants to visit home periodically: in Jinan, 95.6 percent of the rural migrants went back home at least once a year (mostly during the Spring Festival or Lunar New Year period). About half of them went home during the busy harvest season (late summer/fall) when labor was needed. This kind of ongoing rural-urban exchange promotes close interaction between migrants and their rural families.

IV. Econometric Methodology

1. *Job Search Process and Occupational Attainment: Logit and Multinomial Logit Analysis*

      The determinants of job change can be analyzed by a logit model, which predicts the probability of observing a job-change event among the rural migrants in the sample during the survey period. A multinomial logit job attainment model is specified to capture how the variables affect demand decisions for a job and how an individual's supply decision affects the probability of an individual *i* working in position *j*. The model is given as

$$P_{ij} = prob(y_i = occ_j) = \frac{e^{x_i'\beta_k}}{1 + \sum_{k=1}^{J} e^{x_i'\beta_k}} \quad \textit{i=1, ..., N; j=1,...,J.} \qquad (1)$$

where   *N*= sample size,
                   J= number of job groups
                   x_j=a vector of exogenous variables affecting supply and demand decision

The coefficients in this model are difficult to interpret. By differentiating (1), we find that the marginal effects[5] of the continuos repressors on the probabilities are

$$\frac{\partial P_j}{\partial x_i} = P_j \left[\beta_j - \sum_k P_k \beta_k \right] \qquad (2)$$

It is relatively obvious that impact effects can be computed in an analogous fashion to the logit model with the various probabilities computed on the basis of (1).

2. *Wage Equation: Multimonal Logit Selection Model and Oaxaca Decomposition*

      As far as wage equations are concerned, firstly, we use the Chow tests to show whether or not data splitting decisions by different groups are supported by the data. The Chow tests are employed to test this validity of a number of sample splits (Callan and Reilly, 1992). The initial null hypothesis is a full sample model with a ownership dummy. This model, which implicitly assumes common parameters across three wage equations, is rejected by the alternative of three separate wage equations. So, separate wage equations are estimated for different ownership groups. The estimated results from these regressions will enable us to judge if the wage determination pattern is different among these groups. Separate wage equation estimation involves the problem of sample selection bias. Following Lee (1983), the wage equations to be estimated may be modified to take into consideration the effects of this selection bias. The information obtained in estimating Equation (1) is used to correct the

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[5] For convenience, we suppress the i subscript

occupational wage equations for the potential effects of selection bias. As Lee (1983) shows, the wage equation conditional on category j being chosen is

$$W_j = Z_j \beta_j - \sigma_j \rho_j \frac{\phi(J(X_j \gamma_j))}{F(X_j \gamma_j)} + \zeta_j \tag{3}$$

Where ϕ is the standard normal density function, J is a strictly increasing transformation that transforms the random variable associated with the occupational attachment equation into a standard normal variant where $J = \Phi^{-1}F$ with Φ the standard normal distribution function and F the probability distribution function. σ_j is the standard error of the disturbance term in the wage equation and ρ_j is the correlation between the wage equation's error term and that of the occupational attachment equation.

The two step estimation is as follows (Lee, 1983): First, estimates of the occupational equation's coefficient vector, β_k, are obtained through the maximum likelihood estimation of Equation (1). These coefficient estimates are then inserted in Equation 5 and the equation to be estimated can be rewritten as

$$W_j = Z_j \beta_j + \theta_j \hat{\lambda}_j + \xi_j \tag{4}$$

where $\theta_j = \sigma_j \rho_j$ and $\hat{\lambda}_j = -\frac{\phi(J(X_i \hat{\beta}_j))}{F(X_i \hat{\beta}_j)}$ and ξ_j is an error term

Consistent estimates for the j sector's wage equation can then be obtained by the application of OLS to Equation (4). The role of the predicted $\hat{\lambda}$ term is to control for the effects of selectivity bias. The standard errors are corrected using the heteroscedasticity consistent procedure outlined in White (1980).

Identification is a potential problem in Lee's method. In order to identify the estimated coefficient on the selectivity term, we need variables that influence occupational attainment but not wage equation. In this paper, whether one has a pre-arranged job is an ideal instrument.   The Oaxaca (1973) decomposition approach is then used to detect how much of the wage differentials between the three informal occupations can be explained by an individual's personal characteristics, how much of such can be explained by the difference in market evaluation of individual endowments.

The average unadjusted logarithmic differential in occupational wages ($W^1 - W^2$), may be decomposed respectively into explained and unexplained parts as

$$\Delta W = [X^1 - X^2] \beta^1 + X^{2'} [\beta^1 - \beta^2] \tag{5}$$

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where W^1 and W^2 are average logarithmic wage in group1 and group 2, respectively, β^1 and β^2 are the vectors of estimated coefficients for group 1 and group 2 respectively, and Δ is the difference operator. The index number problem is evident here. The differing coefficient effect could be evaluated using the mean characteristics of group 1 or 2 or take the geometric average (Oaxaca, 1973, Reilly, 1987).

V. Empirical Results and Discussion

1. *Job Search Process and Determinants of Turnover*

70.4 percent of the migrants in the sample reported that they had arranged their job before migration, and 75 percent reported that relatives, friends, and co-villagers served as migration information providers. Table 2 reports the relevant findings of our study. While the frequency of different job-search methods varies somewhat by sex and occupation, the general profile is almost the same across different groups (by sex, by occupation, and by ownership sector). A job seeker may find a job through social networks because this is less expensive. Moreover, the quality of information from relatives and friends is also very important. It is likely that chain migration based on employment information from friends and relatives is the most cost-effective method. Under this circumstance, , the cost of migration is no longer a constant, but a function of the stock of migrants. The large the size of the migrants, the less the cost of migration for a perspective migrant.

Another reason pointed out by Wanous (1980) is that through social networks, job seekers receive "realistic job preview" from their relatives and friends and hence they have superior knowledge of their match quality. The self-selective mechanism can explain the success of job application simply because those who expect to be poorly matched will not bother to apply. The job search methods we have found also display some similarities to those reported by Hare (1996) for a sample of 309 randomly selected households from three townships in Xiayi County in Henan Province of China in 1995. In that survey, 87 percent reported that they either had a pre-arranged job prior to departure or had received a suggestion to migrate from an urban contact, and 83.1 percent reported that they had friends or relatives who served as "urban-based contacts".

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Table 2. Job Finding Methods Used By Rural Migrants

	Percentage of jobs found using each method				
	Relatives /friends	Employment agency	Direct Application	Other	Sample size
By Sex					
Male	72.24	23.09	1.66	3.03	1023
Female	81.25	14.9	0.96	2.88	416
By Occupation					
Contract worker in construction industry	63.54	32.37	1.53	2.56	587
Contract worker in enterprises	82.38	16.48	0.38	0.77	261
Contract worker in government department university and hospital	87.32	10.24	0.49	1.95	205
Contract worker in restaurant hotel or other service sector	79.75	16.46	1.90	1.90	158
Domestic helper baby sitter	89.29	10.71	0.00	0.00	56
Small restaurant owner	72.09	16.28	4.65	6.98	43
Street vendor	76.74	4.65	2.33	16.28	43
Tailor	77.27	2.27	6.82	13.64	44
Other self-employed sectors	85.71	4.76	2.38	7.14	
By ownership					
Self-employed	75.44	9.94	3.51	11.11	171
State-owned	84.63	13.64	0.43	1.30	462
Others	69.11	27.05	1.61	2.23	806
Total	74.84	20.71	1.46	2.99	1439

Actual mobility from the self-employed informal sector was low. Slightly less than 5 percent self-employed workers had moved to an informal occupation in another sector, although entry to informal occupations in other sectors is open. A simple turnover binary logit model was employed to measure the turnover level among the three ownership groups (Table 3). The variables we chose for this model include a set of human capital variables, city work experience, ownership of the original job, whether going back to rural home every year and whether one had a pre-arranged job. The explanatory power for the model is relatively poor (Pseudo R^2=0.13). This is partly because there are random hidden reasons for job search among informal occupations in different sectors. The phenomenon is just what the segmented labor market theories have predicted. Some variables are still worth mentioning: educational attainment variables were found to be of little, if any, importance in turnover. The self-employed group is found to be much less mobile than the state-owned informal group. The probability of changing job is 2 percent lower than the state-owned informal group (Table 3).

The most robust explanatory variable for job change is city work experience, whether going back rural home every year, and whether one has a pre-arranged job. The positive effect of city work experience could be explained by the fact that firm-specific on-job training is rare for migrants, because of the loose attachment relationship expected by both employers and employees. The significant negative effect of pre-arranged job could be explained that those who had a pre-arranged job were expected to have a strong attachment to their employers.

Table 3. Logit Estimates for Turnover

	coefficient	T-ratio	impact effect	marginal effect
Constant	-3.7676	-3.126**	-------	---------
City work experience	0.0209	7.808**	-------	0.0028
Educational Attainment				
Primary school	0.5985	0.553	0.0311	
Junior Middle school	0.6967	0.654	0.0380	
Senior middle school and above	0.8223	0.758	0.0476	
Training before migration	0.8959	4.672**	0.0537	
Training after migration	0.1794	0.861	0.0077	
Ownership of original job				
Self-employed	-0.7100	-2.594**	-0.0204	
Other ownership	-0.0610	-0.346	-0.0023	
Whether going back rural home every year				
Dummy for yes	1.3764	2.471**	0.1037	
Whether having a pre-arranged job before migration				
Dummy for yes	-1.1802	-7.232**	-0.0280	
Log-Likelihood value		-544.03		
Pseudo R^2		0.13		
Observations		1432		

Note: **denotes statistical significance at 0.05 level or better based on a two-tailed test

2. *Determinants of Sector of Entry*

As we have argued in previous section, almost 100 percent of the migrants began their urban employment in informal occupations. 12.4 percent of the migrants in the sample worked in the self-employed group, 32.5 percent in state-owned group and 55.1 percent in other ownership group. We want to identify the factors which are empirically important in explaining the sector of entry, by estimating a multinomial logit model. The maximum likelihood estimates of the multinomial logit model based on observations for the entire sample are presented in Table 4. In the estimated model we have set coefficients for the state-owned group to zero for the purpose of normalization. Thus the estimated coefficient for the self-employed and the other ownership group indicate the change in the log of odds of entering these two groups, respectively, instead of the state-owned group. A convenient interpretation for these coefficients is in terms of their marginal and impact effects (see Table 4).

The coefficients on the education dummies indicate that the education is not important in determining occupational attachment. There are two reasons for that. First, it can be argued that for formal occupations, the employer may uses educational qualifications as screening for prospective candidates, but this is not the case for informal occupations. Second, in the presence of multiple market distortions in China, in order to spread the risk and to minimize the search cost, migrants usually use kinship networks for locating the job in the urban labor market. This may results in a segmented market even in the informal labor market in China. Under such circumstances, kinship may play a more important role than education in occupational choice. It has been found that migrants from the same village tend to work in the same occupation in the same city. For example, it is widely known that migrants from Leqing of Zhejiang are engaged mainly in garment marketing in Beijing, that the domestic

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serviants market is dominant by Anhui female migrants in Beijing, migrants from Henan mainly engage in solid waste recycling in Nanjing, and migrants from Lu Country of Sichuan mainly engage in construction in Guangdong. This points to the importance of kinship and village-based networks, instead of educational qualifications in getting informal occupations.

Another issue we want to address is work experience. In this study we divided the work experience into three categories, rural agricultural work experience, non-agricultural experience, and student. This division has very clear economic meanings in the context of China. Rural agricultural work experience is an indication of "negative" ability of potential migrants, given the fact that return to agriculture is much lower than returns to rural non-agricultural industries (in "township and village enterprises"). Working in the agricultural sector is the last choice for farmers who have other opportunities. Conversely, non-agricultural experience before migration can be used as a crude proxy for migrant's hidden characteristics, such as ability, adaptability, trainability, congeniality, pliability etc. Work experience after migration will be a proxy of the judgment of success for migrants and stability of attachment to the urban location. Our results show that migrants with high potential hidden characteristics are more likely in the self-employed group or other ownership group i.e. the longer the rural non-agricultural work experience, the more likely for a prospective migrant to be in the self-employed group or other ownership group.

Results from another set of interesting variables, the expected wage and reservation wage, which are also proxy variables for hidden potential abilities, are telling. The results are robust and positive for self-employed sector with effect 0.34 and 0.07 respectively. Furthermore, we have found that those having a pre-arranged job are more likely to be in the state-owned than in the self-employed sector. This reflects that the cost of job search is relatively higher in the self-employed group and relatively more competitive in this group. Distance may be used as another proxy for potential ability in the sense that those who traveled long-distances must overcome capital and information constraints, and they are likely to be risk takers. Our results show that those who choose self-employed employment are likely to be migrants from other provinces far away from Jinan city, while those who got employed in the state-owned sector are more likely to be those who lived in Shandong province. Another argument is self-employed employment may need more special skills than other informal jobs. The explanatory variable "training before migration" is found positively significant in the case of self-employed migrants.

Table 4. Multinomial Results of Occupational Attainment
(State ownership sector as the reference group)

	Self-employed		Other Ownerships	
	Coefficient	T-ratio	Coefficient	T-ratio
Constant	-0.3503	-0.321	0.6147	0.900
Sex	-0.8427**	-3.094	-0.1669	-1.103
Number of children	-0.3313*	-1.775	0.0005	0.004
Marital Status				
Dummy for married	1.8675**	5.518	0.2836	1.300
Educational Attainment and training				
Primary school	1.0409	0.962	0.5171	0.806
Junior middle school	0.6373	0.596	0.2816	0.446
Senior middle school	0.1422	0.128	-0.1471	-0.225
Training before migration	0.9331**	3.434	-0.0997	-0.511
On-the-job training	-1.7000**	-4.539	-1.1976**	-6.529
Expected and Reservation Wage				
Dummy for expected wage	1.9839**	6.638	0.6820**	2.765
Dummy for reservation wage	0.9149*	1.734	0.7584*	1.801
Work Experience				
rural non-agri. work experience	0.0171*	1.777	0.0072**	2.183
Whether holding a registration card				
Dummy for yes	-0.1041	-0.457	-0.3715**	-2.782
Whether having a pre-determined job				
Dummy for yes	-0.8306**	-3.570	0.2891**	
Origin				
Dummy for yes	-1.8227**	-4.698	-0.0449	-0.127
Number of observations			1432	
Log Likelihood			-1123.1	
Pseudo R²			0.176	

Note: **denotes statistical significance at the 5% level or better using a two-tailed test
       *denotes statistical significance at the 10% level or better using a two-tailed test

Table 5. Marginal Effect and Impact Effect for Multinomial Results of
Occupational Attainment

	State-owned	Self-employed	Other Ownership
Marginal effect			
Number of children	0.0079	-0.0247	0.0167
Rural non-agri work experience	-0.0013	0.0010	0.0014
Impact effect			
Dummy for male	0.0757	-0.1037	0.0280
Dummy for married	-0.1747	0.3850	-0.2103
Dummy for primary school	-0.1272	0.1425	-0.0153
Dummy for middle school	-0.0788	0.0891	-0.0103
Dummy for senior middle school	0.0095	0.0425	-0.0520
Dummy for origin in Shandong	0.0796	-0.1788	0.0992
Dummy for expected wage	-0.1961	0.3440	-0.1479
Dummy for reservation wage	-0.1404	0.0745	0.0658
Dummy for training before migration	-0.0767	0.2011	-0.1244
Dummy for on-the-job training	0.3193	-0.1401	-0.1792
Dummy for holding a registration card	0.0613	0.0191	- 0.0804
Dummy for having a pre-determined job	0.0024	-0.1187	0.1163

3. *Occupational Wage Differentials Analysis*

The earnings functions for all migrants in the sample are separately estimated by OLS for three groups by the ownership (Table 6). The dependent variable is the natural logarithm of monthly earnings. The dependent variables include the conventional human capital variables, inclusive of training. Again, the expected and reservation wages as well as three kinds of work experiences and their quadratic

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terms are included as a proxy for a set of variables capturing potential hidden abilities. Marital status is usually interpreted as an index of stability, one of the attributes of productivity, and married workers are generally believed to have greater attachment to the labor market because of their family obligations (Banerjee, 1983). The region of origin dummy variable is a measure of family and environmental background factors, but could represent the influence of potential ability as well. It is often claimed that those from other provinces may have higher expectations and potential abilities, because of the higher cost of search associated with longer distances. Similarly, migrants from far-away regions may be associated with possessing greater motivation and drive, or other desirable qualities.[6] Given that they are many non-wage benefits (in kind) besides wages are a compensation for migrant labor, a set of dummy variable is included to capture this effect. When an earnings function is estimated for all wage employees with a set of dummy variables indicating employment in the three groups, it implicitly assumes common parameters across three groups. Earning functions estimated separately for three groups indicate that the wage determination process is different in the three sectors. The Chow test for the equality between sets of coefficients in the three regressions yields an F test value of 9.88 (critical value: $F_{0.01}$ =2.21): the earning functions for the three sectors are significantly different at the 0.01 level.

Thus, the data support the division of the sample into three different groups. However, the preceding analysis implicitly assumes that allocation of workers among the three groups is exogenously determined. Lee's Critique (1983) was employed to control potential sample selectivity bias. Table 6 reports the selectivity bias corrected result and we could see that selectivity effect emerges for the other ownership group.

The very interesting finding we have is that the return to education is only significant in the self-employed group, and rural agricultural experience and quadratic terms are only significant in the state-owned and other sectors. At this stage, the picture of advantage of the self-employed sector is pretty clear. Take the return to education for example, for those self-employed, the expected net return to education from no schooling to primary school level is increased by 81 percent;[7] from primary level to junior middle level, by 8.2 percent; and from junior middle level to senior middle level, by 34 percent. We also found that sex discrimination in terms of wage does not exist in the self-employed group[8] but only exists in the state-owned and other ownership groups. In the state-owned group, male workers on average earns 22 percent more in wage than females, while in the other ownership group, the gender mark-up effect is 43 percent. Local social network may also play an important role in the self-employed sector. Other things being equal, migrants from Shandong are expected to earn 17.8 percent more wages than those from other provinces. Expected wage is all significant among three sectors.

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[6] International migrants are a good example.

[7] $e^{0.594} - 1 = 0.81$

[8] The proportion of female migrants in this group is around 40 percent.

Table 6. Wage Equation Estimates Corrected for Selectivity Bias

	State-owned		Self-employed		Others	
Constant	5.531	(20.91)**	5.490	(13.32)**	5.491	(37.60)**
Sex	0.197	(5.373)**	0.020	(0.241)	0.361	(8.825)**
Number of Children	0.003	(0.098)	-0.079	(-1.08)	-0.054	(-1.97)**
Marital Status						
Dummy for married	0.057	(1.113)	0.124	(0.899)	0.205	(4.797)**
Educational Attainment						
Primary school	0.193	(0.401)	0.594	(1.420)	-0.216	(-2.32)*
Middle school	0.135	(0.635)	0.673	(1.612)*	-0.118	(-1.24)
Senior middle school and above	0.187	(0.707)	0.969	(2.245)**	0.081	(0.795)
Training						
Training before migration	0.008	(0.189)	0.192	(2.386)**	-0.016	(-0.20)
Training after migration	0.083	(2.221)**	-0.083	(-0.58)	0.087	(1.664)*
Expected and Reservation Wage						
Dummy for expected wage	0.201	(2.502)**	0.2795	(3.441)**	0.222	(5.317)**
Dummy for reservation wage	-0.003	(-0.05)	0.213	(1.575)	0.155	(2.317)**
Work Experience						
Agriculture experience	0.13E-02	(2.497)**	0.68E-03	(0.460)	0.15E-02	(3.713)**
Agriculture experience squared	-0.32E-05	(-2.59)**	0.14E-05	(0.384)	-0.12E-05	(-1.50)
Rural non-agri. experience	0.14E-02	(0.971)	0.44E-04	(0.015)	0.24E-02	(1.557)
Rural non-agri. expe. squared	-0.11E-04	(-1.34)	0.58E-05	(0.291)	-0.73E-05	(-0.92)
City work experience	0.96E-03	(0.460)	0.30E-05	(0.001)	0.21E-02	(2.109)**
City work experience squared	-0.87E-04	(-0.45)	0.38E-04	(-1.29)	-0.53E-05	(-1.04)
Benefits other than wage						
Free house	-0.092	(-1.43)	--------		0.032	(0.485)
Free meal	-0.076	(-1.48)	--------		-0.253	(-6.77)**
Free medical care	-0.158	(-2.04)**	--------		-0.135	(-2.61)**
Bonus for new year	0.022	(0.599)	--------		0.068	(1.904)*
Free ticket for returning rural home	0.052	(1.185)	--------		-0.106	(-2.89)**
Bonus for some festivals	-0.120	(-3.06)**	--------		0.035	(0.929)
Origin						
Dummy for origin in Shandong	-0.048	(-0.47)	0.164	(1.831)*	-0.062	(-0.92)
LAMBDA	-0.00008	(-0.63)	-0.0001	(-0.64)	0.0002	(3.229)**
R^2	0.31		0.28		0.55	
Observations	466		177		804	

Note: ** denotes statistical significance at the 5% level or better using a two-tailed test
      * denotes statistical significance at the 10% level or better using a two-tailed test
         Results Corrected for Heteroskedasticity by White (1980) procedure

The exercise of decomposition of occupational wage effect shows that the wage difference between those in the self-employed group and those in the state-owned and other ownership is quite large, with the self-employed earning on average slightly more than one and a half time of their counterparts in the other two groups. Table 7 reports explained and unexplained differentials in an attempt to measure how much of the gross differential is explained by characteristics and how much is by differential coefficients. In terms of estimators, 70 percent of an unexplained occupational wage differential exists in both the self-employed-vs-state-owned pair and the self-employed-vs-other ownership pair. In contrast, the state-owned/other ownership differential is very small, suggesting that on average migrants in other ownership group get 4.1 percent more than those in the state-owned group. Furthermore, little evidence of an unexplained occupational wage differential exists in this comparison. The results show that the wage differential only occurs between the self-employed and any other ownership.

Table 7. Decomposition of Occupational Wage Effect

Self-employed vs. State-owned	State-owned as base		Self-employed as base	
	Value	Proportion (%)	Value	Proportion(%)
Total differential	0.9921	100	-0.9921	100
Explained portion	0.2832**(0.0564)	28.5	-0.2190**(0.0585)	22.1
Unexplained portion	0.7089**(0.0730)	71.5	-0.7731**(0.0718)	77.9
Other ownership vs. State-owned	State-owned as base		Other ownership as base	
Total differential	0.0411	100	-0.0411	100
Explained portion	0.0398**(0.0146)	96.8	0.0041 (0.0146)	-10.2
Unexplained portion	0.0013 (0.0238)	3.2	-0.0453**(0.0211)	110.2
Self-employed vs. Other ownership	Other ownership as base		Self-employed as base	
Total differential	0.9510	100	-0.9510	100
Explained portion	0.2553**(0.0469)	26.8	-0.2033**(0.0886)	12.4
Unexplained portion	0.6957**(0.1020)	73.2	-0.7477**(0.0673)	78.6

Notes: Stand errors are in parenthesis and statistical significance is based on use of White (1980)standard errors

Table 8. Occupational Wage Differentials

	Self-employed vs. state-owned		Self-employed vs. Others		Others vs. state-owned	
Mean	0.7089**	(0.0730)	0.6957**	(0.1020)	0.0013	(0.0238)
Base	-0.0370	(0.5058)	-0.0448	(0.4548)	-0.0057	(0.3018)
Deviations from the base						
Personal Characteristics						
sex	-0.2120	(0.5135)	-0.3857	(0.4619)	0.1601	(0.2957)
married	0.0328	(0.4885)	-0.1271	(0.4360)	0.1464	(0.2988)
Educational Attainment and Training						
Primary school	0.3715**	(0.1805)	0.7577**	(0.1705)	-0.3997**	(0.1553)
Junior Middle school	0.5079**	(0.1728)	0.7376**	(0.1620)	-0.2433	(0.1587)
Senior middle school and above	0.7637**	(0.2296)	0.8442**	(0.2086)	-0.0940	(0.1824)
Training before migration	0.1439	(0.5120)	0.1606	(0.4802)	-0.0302	(0.3284)
on-the-job training	-0.1853	(0.5245)	-0.2002	(0.4708)	0.0014	(0.3079)
Expected and reservation wages						
Expected wage	0.0396**	(0.5109)	0.0093	(0.4524)	0.0168	(0.3090)
Reservation wage	0.1725	(0.5219)	0.0050	(0.4704)	0.1540	(0.3173)
Origin						
Origin in Shandong	0.1758	(0.5033)	0.1844	(0.4488)	-0.0221	(0.3011)
Benefits other than wwages						
Free house	0.0555	(0.4999)	-0.0770	(0.4483)	0.1191	(0.2823)
Free meals	0.0397	(0.5140)	0.2063	(0.4521)	-0.1801	(0.3117)
Free medical care	0.1205	(0.5213)	0.0878	(0.4585)	0.0192	(0.3323)
Bonus at the new year	-0.0589	(0.5096)	-0.1156	(0.4511)	0.0432	(0.3030)
Free tickets for returning the rural home	-0.0887	(0.5050)	0.0610	(0.4545)	-0.1631	(0.3004)
Money in kind at some festivals	0.0825	(0.5011)	-0.0769	(0.4538)	0.1459	(0.2924)

Notes: The base differentials are calculated on the basis of an individual with the mean number of children and working experience, who is female and single, has no formal educational qualifications and training, with a lower expected and reservation wages, came from provinces other than Shandong, has not enjoyed any benefits in kinds in addition to wages. The standard errors are calculated as the square root of $\overline{X}'V\overline{X}$, where V is the difference between the variance-covariance matrices of parameter estimates of the compared groups and $\overline{X}$ is the vector of mean characteristics. Deviations from the base occur singly. Standard errors appear in parentheses.
* and ** denote statistical significance at the 0.1 and 0.05 level respectively.

In order to ascertain the extent to which these unexplained effects vary across characteristics a base differential is calculated (explained in the notes to Table 8). Deviations from this base occur singly (Callan and Reilly, 1992). The results are in Table 8. These deviations are only important in the return to

the education. This is a further evidence supporting the segmentation thesis we have argued above with the fact that only return to education rather than the endowment of education is the key issue. The expected wage (proxy of potential ability) is also robust.

VI. Conclusions

This paper has studied rural-urban migrants' job search process, wages determinants and migrants' occupational attainment in China in the 1990s by use of a series of econometric techniques developed to suit the special situation we have encountered. Post-Mao reforms have opened the urban labor market to rural labor migants, but only in a closely regulated and partial way. It is partial not only because urban employment is only permitted in certain sectors, but also because permanent change of residence to urban areas is still extremely difficult for most rural migrant workers. We argue that the employment formality issue is better crouched in terms of occupation than the sectoral division used traditionally. Like those in other developing countries, rural migrant labor can freely move within "informal" jobs, usually of low-skilled nature. The unique institutional setting in China's urban labor market and the reality of multiple factor market failures provide an opportunity to test the main characteristics of migrants in the process of job search and occupational choices using market-based economic models. We have shown that migrants relied heavily on kinship and village networks in the job search process. The job turnover rate is low and it also relates to a number of expected variables. Given the segmentation of the urban labor market resulting from institutional barriers to entry into the formal sector for rural migrants and differential discrimination associated with the *hukou* system among different informal occupations, our results show that the self-employed sector has emerged as the best choice for rural migrant labor. This is different from what has been seen in other developing countries where employment in free-entry "informal" activities is a transitional phase during which migrants are actively searching for jobs in the formal sector.

Three pieces of evidence support this conclusion. First, although we found educational attainments account for nothing in job-attainment, those who are engaged in the self-employed sector are more likely to have higher hidden abilities, as shown by the higher expected wages. Second, the wage differential is statistically significant between this sector (group) and other groups even though all other benefits rather than wages enjoyed by those in the state-owned or other groups are controlled. Third, returns to education and experience were quite different from each other with the highest return to education found in the self-employed sector. The increasing popularity of self-employment nationwide among peasants engaged in off-farm activities further supports our arguments. According to a national-level survey reported in Rozelle *et al* (1996), self-employment was the largest category of the off-farm employment and self-employment grew the fastest between 1988 and 1995 in absolute terms from 26 to 55 million people.

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The urban differential wage situation is reflective of the institutional setting in the Chinese labor market. Fixing wages for rural migrants in state-owned enterprises below the market-clearing wage and the likely discrimination against rural migrants make this sector less attractive for the more able rural migrants (though still attractive to the average rural migrant). In state-owned or other groups, the non-resident status of rural migrants associated with the *hukou* system has often been taken advantage of by employers. These migrant workers have little on-the-job training, promotion opportunities or other fringe benefits. According to a survey in Shanghai done by Zhao (1995), the average real wage of a migrant worker is only about a quarter of that of a native worker when welfare payments and subsidies given to native urban workers are included. Migrant labor has played an important role in reducing costs in the urban state/collective industry considerably. A large part of the social reproduction costs of the industrial labor is passed back onto individual households that comprise it. On the other hand, many migrants may also be well aware of this situation, and in return, provide less individual work efforts as it is not rewarded financially. Conversely, in the self-employed sector, migrants may be able to turn greater efforts into higher wages; they have an incentive to investment in self-training of some sort. This unique disequilibrium predicts the possibility that the self-employed informal jobs may emerge as the rational choice for rural migrants in the future.

The findings of this paper have some important implications. Given the huge rural-urban wage differentials in China, the *hukou* system, working just like a passport system in regulating international labor flows, has served to slow down the rate of rural-urban transfer. From a policy perspective, it has probably made the rate of sectoral shifts more manageable. In the urban labor market, the low wages of migrant labor provide incentives for urban employers to more migrant labor. In part, this would create more jobs and help alleviate the unemployment problem in China. However, the urban state and collective sectors would not attract or keep the brightest from the rural migrant labor given their prevailing reward systems. Instead, the more able migrant laborers would tend to flow to the self-employment sector. From the rural perspective, the *hukou* system is a discriminatory system that privileges urban workers and limits the opportunities of rural labor. In the face of the growing unemployment problems of urban workers under Zhu Rongji's marketization and state enterprise rationalization program, many local governments, in their attempt to re-employ urban laid off workers, have erected more obstacles for rural migrant labor (Cai, 1998). This will further reinforce the present inequalities and is contrary to the objectives of China's marketization reforms.

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Appendix

Descriptive Statistics of the Migrant Sample

Variable Name	Definition	Full Sample Mean (St. Dev)	State-owned Mean (St. Dev)	Self-employed Mean (St. Dev)	Others Mean (Std Dev)
Dependent Variables					
Log of monthly wage		5.913(0.58)	5.769(0.35)	6.761(0.59)	5.810(0.52)
Turnover	=1 if changing job after migration	0.157(0.39)	0.185(0.39)	0.169(0.38)	0.138(0.35)
Independent Variables					
Number of children		0.621(0.89)	0.491(0.86)	0.944(0.91)	0.624(0.89)
Agriculture work experience before migration (in month)		93.76(88.56)	76.062(79.96)	122.97(91.65)	97.581(90.52)
Agriculture work experience squared before migration		16627(33918)	12166(32084)	23473(36122)	17705(34154)
Rural non-agri. work experience (in month)		10.160(27.58)	5.343(18.65)	19.43(29.99)	10.91(30.62)
Rural non-agri experience squared		836.13(4176)	375.76(30.32)	1271.9(3484.1)	1055.6(4817.6)
City work experience (in month)		29.443(26.41)	30.891(25.48)	39.93(32.92)	26.296(24.65)
City work experience squared		1564(3649)	1602(3096)	2672(4553)	1298.1(3679.9)
Monthly wage (in *yuan*)		444(369)	340.49(134.75)	1032.9(711.5)	374.13(190.44)
Demographic characteristics					
Sex	=1 if male	0.713(0.45)	0.702(0.46)	0.718(0.45)	0.719(0.45)
Dummy for married	=1 if married	0.440(0.50)	0.356(0.48)	0.734(0.44)	0.424(0.49)
Origin	=1 if Shandong				
Educational attainment and training					
Primary school	=1 if six years schooling	0.158(0.37)	0.111(0.32)	0.198(0.40)	0.177(0.38)
Middle school	=1 if nine years schooling	0.711(0.45)	0.721(0.45)	0.661(0.47)	0.716(0.45)
Senior middle school and above	=1 if twelve years schooling or above	0.119(0.32)	0.159(0.37)	0.130(0.34)	0.093(0.29)
Training before migration	=1 if individual incurred training costs prior to migration	0.154(0.36)	0.149(0.36)	0.356(0.48)	0.112(.032)
Training after migration	=1 if individual incurred training costs after migration	0.140(0.35)	0.277(0.45)	0.068(0.25)	0.077(0.27)
Expected wage and reservation wage					
Expected wage	=1 if expected monthly wage is more than 400 *yuan*	0.151(0.36)	0.060(0.24)	0.458(0.50)	0.136(0.34)
Reservation wage	=1 if reservation monthly wage is more than 400 *yuan*	0.035(0.18)	0.017(0.13)	0.068(0.25)	0.039(0.19)

Descriptive Statistics of the Migrant Sample (continued)

Variable Name	Definition	Full Sample Mean (St. Dev)	State-owned Mean (St. Dev)	Self-employed Mean (St. Dev)	Others Mean (Std Dev)
Benefits other than wage					
Free house	=1 if free house	0.780(0.41)	0.886(0.32)	------------	0.888(0.32)
Free meal	=1 if at least one free meal per day	0.210(0.41)	0.212(0.41)	-----------	0.255(0.44)
Free medical care	=1 if free medical care	0.085(0.28)	0.105(0.31)	------------	0.092(0.29)
Bonus for new year	=1 if bonus for new year	0.274(0.45)	0.412(0.49)	-----------	0.254(0.44)
Free ticket	=1 if free tickets for returning rural home	0.174(0.38)	0.204(0.40)	------------	0.195(0.40)
Bonus for some festivals	=1 if bonus for some festivals	0.203(0.40)	0.388(0.49)	------------	0.141(0.35)
Whether hold a temporary registration card	=1 if yes	0.516(0.50)	0.620(0.49)	0.599(0.49)	0.437(0.50)
Whether has a pre-determined job	=1 if yes	0.704(0.46)	0.665(0.47)	0.458(0.50)	0.781(0.41)
Occupational Attainment					
Contract worker in enterprise or firm	=1 if yes	0.177(0.38)	--------	--------	--------
Contract worker in government institution university or hospital	=1 if yes	0.142(0.35)	--------	--------	--------
Contract worker in hotel restaurant or other service sectors	=1 if yes	0.109(0.31)	--------	--------	--------
Domestic maid	=1 if yes	0.039(0.19)	--------	--------	--------
Running a small restaurant	=1 if yes	0.030(0.17)	--------	--------	--------
Repairing service	=1 if yes	0.030(0.17)	--------	--------	--------
Street vendor	=1 if yes	0.032(0.18)	--------	--------	--------
Tailor	=1 if yes	0.021(0.14)	--------	--------	--------
Other self-employed sectors	=1 if yes	0.008(0.09)	--------	--------	--------
Ownership					--------
Self-employed	=1 if yes	0.121(0.33)	--------	--------	--------
State-owned	=1 if yes	0.323(0.47)	--------	--------	--------
Others	=1 if yes	0.557(0.50)	--------	--------	--------
Number of observations	=1 if yes	1447	466	177	804