The Impact of On-the-job Training on Job Mobility of Migrant Workers in China

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The effect of on-the-job training on job mobility is an important topic in labor economics. Based on a sample survey data of migrant workers in Liaoning Province China, this paper has statistically described job mobility of migrant workers and then used a multinomial Logistic model to analyze the effect of on-the-job training on job mobility. We found, firstly, migrant workers have high-level job mobility; secondly, inter-firm/city occupational mobility is the major type of migrant workers' mobility, and then followed by the inter-firm mobility and inter-regional mobility that without occupation change; thirdly, on-the-job training has a significant impending effect on interregional mobility and occupational mobility, while has insignificant effect on inter-firm mobility.

Keywords: on-the-job training, job mobility, migrant workers, multinomial logistics model

Introduction

The long-term stability of employment is very important for migrant workers' permanently civilization. But the real facts are that they rarely have long-term contracts with employee, job turnover frequently (Huang, 2010) and the employment duration of new generation migrant workers are becoming shorter (Kou & Liu, 2013). And these mean migrant workers' employments are unstable, facing with high uncertainty. Therefore, we need to analyze their job mobility in-depth, and find the key to reduce their job turnover.

In labor economics theory, on-the-job training is the main investment of human capital after people have graduated from school and enter the labor market. Because it can increase the stock of human capital, it plays an important role in job mobility. Becker (1964), in a perfect competition framework, made the first theoretical

discussion of the relationship between on-the-job training and mobility. In this research, he classified on-the-job training into two types: general training and specific training. Due to the fact that the human capital from general training can rise the labor productivity equally in many firms and the human capital from specific training can only have value in the training firm or in a specific occupation, he inferred that specific training could impede the mobility, while general training has not impact on mobility (Becker, 1964; Mincer, 1993; Zweimuller & Winter-Ebmer, 2003; Asplund, 2005). Since then, scholars have further discussed the theoretical problems as training cost sharing (Hashimoto, 1981), and the mechanisms why firms provide general training under imperfect competition (Katz & Ziderman, 1990; Stevens, 1994; Acemoglu & Pischke, 1998), and concluded that general training has multidimensional effect on labor mobility. It may be an increasing effect, an inhibiting effect, and even may be no effect. In empirical, the studies with data from EU and US have provided many evidences of the impact on-the-job training on mobility. In summary, these evidences have solidly confirmed the impending effect of specific training (Mincer & Jovanovic, 1981; Weiss, 1984; Mincer 1993; Light & Ureta, 1992; Farber, 1994; Parent, 1999), and the impact of general training varies widely (Lynch, 1991; Korpi & Mertens, 2003).

For Chinese rural migrant workers, under the situation that they are homogeneous in formal education and all are lower education level (Chen, Jiang, & Zhang, 2015), the attainment of on-the-training in their urban employment would widen the human capital gap among them, which therefore would have differentiated impact on their job mobility. However, the effect of on-the-training on migrant workers mobility is unclear, only little few literatures have discussed it. Having concluded these studies, we found that they only analyzed the impact of on-the-job training on the overall incidence of job turnover (Xie, 2009; Chen et al., 2011; Zhang & Shen, 2013; Jiang, Zhang, Qi, & Zhou, 2016; Jiang & Chen, 2016). But, there are types of job mobility, so we need to further explore the effect of training on each type of mobility and find the differences of its effects. In this paper, we classify job mobility with spatial and occupation dimensions together and then use a multinomial logistic model to study the impacts of on-the-job training on different types of mobility.

The remainder of the paper is structured as follows. The next section provides a brief description of the data, the multinomial logistic model and its variables. And a detail illustration of the empirical results follows. Finally, some conclusions and comments are provided.

Data, Model, and Variables

The Classification of Job Mobility

Job mobility manifests itself as job change or job turnover in the labor market. From the theory of labor economics, job mobility has been classified into three kinds by jobs' spatial and occupational characteristics. The first that workers change their employee, while their occupation and working area unchanged, is an inter-firm mobility. The second category that workers change their working area and employee while their occupation unchanged, is an inter-regional mobility. The last category that workers either change occupation in their working unit, or change occupation from one employee/area to another employee/area, is inter-occupational mobility (Borsch-Supan, 1987; McConnell, Brue, & Macpherson, 2003).

Following these classifications of job change, we classify the job mobility of migrant workers by the change of employee, area and occupation from their first job to present job into three kinds: inter-firm mobility, inter-regional mobility, and inter-occupational mobility.

Data

The data used in this paper come from a sampling survey of migrant workers' employment in six cities in Liaoning province of China. The survey was completed in 2014, and conducted by Sannong Institute, Shenyang Agricultural University. The data are obtained by stratified sampling. Specifically, we first, according to the geographic location, level of economic development, and city size, selected one large city (Shenyang), two medium cities (Fuxin and Jinzhou) and three small cities (Taian, Changtu, and Kaiyuan) as the survey area, and then, according to the industrial distribution of migrant workers in the monitoring survey conducted by the National Bureau of Statistics of China and regional distribution of migrant workers in Liaoning Province, we determined the sample size in each industry and city, and finally obtained a population of 1,242 observations.

Prior to analyze, we do some data cleanings. Firstly, we drop these observers that their first jobs are self-employment. Secondly, we drop these observers that they begin their urban employment in 2014. And finally, we delete the observers that they have missing value in their first job survey data. After data cleaning, there are 751 observations in the following empirical analysis.

Model and Variables

As previously mentioned, this paper focuses on the impact of on-the-job training on different types of labor mobility of migrant workers. According to value characteristics of the variable of job mobility, we establish equation (1) as the regression model and use a multinomial logistic method to estimate:

$$\text{prob}(\text{jmobtype} = j | \text{cztrain}, X, \varepsilon_2)$$
$$= \frac{\exp\left(\alpha_j + \beta_j \cdot \text{cztrain} + \sum_{ji} \gamma_{ji} X_{ji} + \varepsilon_{j2}\right)}{1 + \exp\left(\alpha_j + \beta_j \cdot \text{cztrain} + \sum_{ji} \gamma_{ji} X_{ji} + \varepsilon_{j2}\right)} \quad (j = 0, 1, 2, 3) \tag{1}$$

In equation (1), the dependent variable jmobtype is the job mobility, which includes four values: non-mobility, inter-firm mobility, inter-regional mobility, and inter-occupational mobility. The explainable variable cztrain is on-the-job training. Judging from the existing research, there may be simultaneous causal relationship between on-the-job training and job mobility[1] (Mincer, 1989; Wolter & Aarau, 2001; Weng, 2006), and it will lead to estimation bias. To eliminate this bias, we use the training in their first job to indicate on-the-job training. Furthermore, in the previous studies, scholars usually classified the training into general training and specific training[2]. However, in this article, such distinction of training ia seldom to be achieved, because there are very few workers who have general training. And there are three groups of control variables. The first group is the characteristics of workers' first job, such as the occupation, working duration and its square term, wage, and city size. The second group is the demographic characteristics of workers, such as intergenerational attribution and gender. The third group is human capital other than training, such as education level, skills, and off-farm working experience before migration. The definition and description of variables are listed in Table 1.

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[1] If workers change jobs frequently in their previous working career, once such information is known to the firms, there is a high probability that firms are unable to offer training for them, because these people have a very high risk of quit after training, and the training cost which firm spends may be unrecoverable. In addition, those people who often change job will be marked with the label of disloyalty, and therefore firms are reluctant to provide training to them. Due to the above two reasons, job mobility is an important explanatory variable for on-the-job training attainment.

[2] In general, there are two ways to distinguish the general training and specific training in empirical studies. First, scholars distinguish training by the supplier of training. If training is provided by workers, government, or other commercial organizations, it should be classified into general training. If training provided by the company, it should be identified as specific training. The second is to differentiate according to the sharing of training costs. If the trained workers share a very low proportion of cost, the training is defined as specific training; and it should be viewed as general training when trained workers share a high percentage of the total cost.

Table 1

Variables Definition and Description

Variables	Definition and value code	Mean	S.d
Jmobtype	Job mobility types: 0 non mobility, 1 inter-firm mobility, 2 inter-regional mobility, 3 inter-occupational mobility	1.683	1.162
Cztrain	Whether has on-the-job training or not: 0 no,1 yes	0.406	0.491
Gender	Gender types:1 male, 2 female	1.520	0.500
Newge	The generational attribution: 0 older generation, 1 new generation	0.507	0.500
Occupa	The occupation classification of first job: 1 waiters/clerks, 2 low-skill workers, 3 high-skill workers, 4 managers	1.934	0.843
Wdurat	The duration of first job	4.622	5.716
Wdurat^2	The square term of first job's duration	53.990	137.798
Wage	The hourly wage of first job	6.124	5.508
City	The city size of first job: 1 small city, 2 medium city, 3 large city	2.164	0.804
Eduyear	Years of education	8.905	2.144
Skill	Whether has skills before migration: 1 yes, 2 no	1.770	0.421
Ofarm	Whether has off-farm employment before migration: 1 yes, 2 no	1.772	0.420

The Empirical Results

The Status of Job Mobility

Table 2 is the statistical description of job mobility of migrant workers. From the results in Table 2, we find that job mobility of migrant workers is very common, and 78.47% of the overall workers' present job is different their first job. Among the workers whose job has changed, the proportion of inter-occupational mobility is largest, followed by the inter-firm mobility, and the inter-regional mobility is the least. The percentage of these three kinds of workers in the overall population are 35.02%, 23.64%, and 19.8% respectively.

As for group workers with gender and age for a more detail investigation, we found that male migrant workers have higher mobility than female. Among those female and male workers have job turnover, inter-occupational mobility accounts for the highest proportion of 30.24% and 40.21% in both group, and larger percent in male than female; and less than inter-occupational mobility is inter-firm mobility in female and inter-regional mobility in male; the last is inter-regional mobility in female and inter-firm mobility in male. The percentage of inter-firm mobility and inter-regional mobility in female group are 27.14% and 17.38%, and 19.85% and 22.42% in male group. From the results in two age groups, we consider that job turnover is more obvious in new generation group, nearly 85% of this group workers have changed their job, and this percentage is higher than the old generation 12 points. Furthermore, in each age group, inter-occupational mobility is the largest part in job changing workers. Especially for new generation group, this percent is very large, and has reached 43.66%. For inter-firm mobility and inter-regional mobility, the former has larger percent than the later in both age groups, and they are high in the old generation group.

Table 3 provides a brief description of the relationship between on-the-job training and job mobility through the comparison of training and non-training groups. We find migrant workers who have received training in their first job have an obvious decline in mobility. The mobility incidence has decreased from 82.29% in the non-training group to 72.87% in the training group, about 10 percent decreasing. Moreover, for three kinds of mobility, the proportion inter-occupational mobility in the training group is indifference from the

non-training group, all about 35% in these two groups. The proportion of inter-firm mobility in training group is slightly lower than the non-training group. There is a 2.3 percent distance between these two groups. Migrant workers in the training group have significant less inter-regional mobility than non-training workers, up to 7.7 points decline in percentage. And these mean the inhibition effect of on-the-job training on mobility is mainly from its effect on inter-regional mobility.

Table 2

Job Mobility of Migrant Workers (%)

Group	Non mobility	Inter-firm mobility	Inter-regional mobility	Inter-occupational mobility
Overall	21.53	23.64	19.8	35.02
Female	25.24	27.14	17.38	30.24
Male	17.53	19.85	22.42	40.21
Old generation	27.39	25.38	21.11	26.13
New generation	15.85	21.95	18.54	43.66

Table 3

On-the-job Training and Job Mobility (%)

Employment mobility type	Non-training	Training
Non mobility	17.71	27.13
Inter-firm mobility	24.58	22.26
Inter-regional mobility	22.92	15.24
Inter-occupational mobility	34.79	35.37

The Effects of On-the-job Training on Mobility

In this section, we use a multinomial logistic method to estimate the migrant workers' job mobility model in equation (1) for identifying the impact of on-the-job training. The regression results are shown in Table 4. The value of Wald Chi^2 test is 200.58, which passes the statistical test at the significance level of 1%. This shows that the independent variables in equation (1) as a whole have strong explanation on migrant workers' job mobility.

Then we give a detailed illustration of the impact of on-the-job training. First, for the inter-firm mobility, on-the-job training, even it has a negative coefficient, failed to pass the variable significance test. Therefore, we believe that training is helpless to impede inter-firm mobility. For the inter-regional mobility and inter-occupational mobility, on-the-job training not only has a negative coefficient in these types of mobility, but also passes the significance tests at 5% level. And this means training has significantly inhibited effect on inter-regional mobility and inter-occupational mobility of migrant workers. Having calculated the marginal effect of training, we found that the probability of inter-regional mobility and inter-occupational mobility would drop by 4.69% and 6.57% respectively, for those workers who had been trained in their first job. From the results in three kinds of job turnover, we consider that, from the view of firms, providing training as an investment of human capital to migrant workers does not meet their economic interests, because the return of training has strong spillover effect in an industry, and training supplying firm cannot gain the total benefits of training. But from the standpoint of local governments, encouraging firm to train migrant workers is very helpful to enhance the overall stock of human capital in local area, and it would improve the local labor productivity.

Table 4

The Multinomial Logistic Outcome

Variables	Value	Inter-firm mobility	Inter-regional mobility	Inter-occupational mobility
Cztrain	Have	-0.347	-0.706**	-0.677**
		(0.267)	(0.286)	(0.277)
Occupa	Low-skill worker	0.017	-0.506	-0.039
		(0.301)	(0.313)	(0.302)
	High-skill worker	-0.125	-0.740	0.179
		(0.439)	(0.472)	(0.418)
	Manager	-0.215	0.205	0.335
		(1.120)	(1.103)	(0.888)
Wdurat		-0.424***	-0.316***	-0.386***
		(0.065)	(0.066)	(0.064)
Wdurat^2		0.010***	0.009***	0.010***
		(0.003)	(0.003)	(0.003)
Wage		-0.185***	-0.280***	-0.184***
		(0.044)	(0.068)	(0.043)
Newge	New generation	-0.117	0.048	0.699**
		(0.318)	(0.353)	(0.305)
Gender	Female	-1.115***	-1.712***	-1.462***
		(0.338)	(0.348)	(0.340)
Eduyear		-0.019	0.032	-0.036
		(0.061)	(0.064)	(0.061)
Skill	No	-0.346	-0.632*	-0.747**
		(0.386)	(0.381)	(0.357)
Ofarm	No	-0.831**	-0.720*	-1.109***
		(0.373)	(0.392)	(0.359)
City	Medium city	0.354	1.806***	1.124***
		(0.345)	(0.369)	(0.342)
City	Large city	0.262	1.243***	1.088***
		(0.322)	(0.372)	(0.320)
Constant		4.850***	4.144***	4.733***
		(0.867)	(0.940)	(0.865)
Wald Chi^2		200.58***	Pseudo R2	0.192

Notes. *, **, and *** represent the significance level of 10%, 5%, and 1%; The value in bracket () is standard error; Non mobility group is the references in the regression.

Except on-the-job training, the results of control variables show that the duration of first job and its square term, wage of first job, gender, and off-farm working experience before migration are the common factors that they all pass the significance explanation in three kinds of mobility. For their impacts, we found that the probability of mobility would decline and then turn to increase promptly along the duration extending. The wage of first job is negative related with migrant workers' job turnover, and this means that those workers with high wage in their first job are less likely to change job. Female migrant workers have less job change than male migrants. And the workers without off-farm job experiences before migration have lower probability to turnover.

In addition, the variables of occupation and city size of first job have substantial impact on inter-regional mobility of migrants, while the variables of skills and city size of first job have strong influences on

inter-occupational mobility. Specifically, these workers who engaged in low-skilled jobs and high-skilled jobs have low-level mobility incidence than those who engaged in waiters/clerks, but workers who engaged in management workers are indifference from those engaged in waiter/clerk jobs. Workers that have skill before migration are more likely to change their occupation. And those workers who have their first job in medium city and large city have a higher probability of inter-regional and inter-occupational mobility than those who worked in small city.

Conclusions and Comments

Based on the sampling survey data in Liaoning Province, this paper has statistical described job mobility of migrant workers and then used a multinomial logistic model to analyze the effect of on-the-job training on job mobility of migrant workers. The main findings are: (1) High job mobility is an important feature of migrant workers' urban employment. In this survey, 78.47% of the total respondents have changed their jobs. (2) Inter-occupational mobility is the most common type in job mobility, and then followed by the inter-firm and inter-regional mobility. As the percentage of mobility workers in the sample, 35.02% of the migrant workers have inter-occupational mobility, 23.64% of these workers are inter-firm mobility, and 19.8% of these workers are inter-regional mobility. (3) Male migrant workers and new generation migrant workers have more mobility than female and old generation. And the results of mobility type suggest that, inter-occupational mobility accounts for the highest proportion in all subgroups, and there are high-level inter-firm mobility and low-level inter-regional mobility in female and old-generation subgroup, low-level inter-firm mobility and high-level inter-regional mobility in male and new generation subgroup. (4) On-the-job training has a significant inhibitory effect on inter-regional mobility and inter-occupational mobility of migrants workers, but cannot contribute to reduce job turnover from one fire to another counterparts. (5) The duration of first job and its square term, wage of first job, gender and off-farm working experience before migration have significant impacts on three kinds of job mobility of migrants, occupation and city size of first job have substantial impact on inter-regional mobility, and the variables of skills and city size of first job have strong influences on inter-occupational mobility.

The modern human capital theory indicated that, people can increase their human capital by experience and knowledge accumulation with "learning by doing" and training during a long-term stable job. The change of job may mean the process of human capital accumulation and its effect on production has been broken off. However, there are inconsistent effects of different kinds of job mobility on this human capital accumulation. In general, inter-firm and inter-regional job mobility within a occupation level, although can interrupt this human capital accumulation, due to the human capital from the last job could be continued to have same effects on the next job, so these mobility have very small impact on people's human capital. For inter-occupational mobility, the human capital (especially for that firm-specific or occupation-specific capital) from last job cannot be used in the new job completely, and this means a sinking of human capital. Therefore, inter-occupational mobility has more significant negative effects on human capital than inter-firm and inter-regional mobility. For migrant workers who have few formal educations in school, inter-occupational mobility will be harmful to human capital accumulation, which in turn have more negative effect on employment improvement and wage increasing. From our findings in this paper, inter-occupational mobility is precisely the main form of migrant workers' job mobility. In the new generation and male subgroup, this is even more serious. Therefore, before to resolve the problem of job mobility of migrant workers, we should first understand the real facts that migrant

workers often change their job from one occupation to another and inter-occupational mobility has serious negative effects. If we hope to stabilize employment to promote the civilization of migrant workers and thus accelerate the urbanization in China, we should find effective solution to decrease the inter-occupational mobility of migrants at first.

From the multinomial logistic regression results, we consider that on-the-job training can be used as an effective policy tool to reduce the inter-occupational job changing. At the same time, the result that on-the-job training is ineffective on inter-firm mobility means that there is a significant spillover effect of training providing by the employment in local labor market. Therefore, policy maker should pay full attention to this point. According to the real facts of migrant workers, we suggest building a training supply mechanism that firms provide a list of training needs, then central and local governments bidding and purchase training, and last firms monitor and evaluate the ex-post effects of training.

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