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To Stay or to Move?
Chinese Migrant Workers in Cities[1]

by

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Abstract: This paper looks at the "stay-move" choices faced by Chinese migrant workers after they initially move to cities. A sequential migration decision model is developed to illustrate three possible choices. By using survey data on migrant workers of Xiamen, Fujian Province, a binominal logit analysis estimates major factors influencing the probabilities of the migrant workers' decisions to stay, return or move on. The empirical results confirm that the most significant factors affecting "stay-move" decisions are the migrants' education level, location of vocational training, migration experience, post-migration income levels, and non-farm work experience. Our results predict that nearly half of migrant workers are likely to stay in cities. The simulation results point to a need to reconsider policies on human capital investment and the consequences of human capital brain drain from rural to urban areas.

I.   Introduction

Since the 1980s, China has witnessed a considerable amount of rural to urban migration. For years economists have argued that China's 900 million-strong rural population would provide a near inexhaustible pool of cheap labour to work in the country's coastal factories. They described how endless streams of poor migrants from the countryside, prepared to work long hours for minimal wages, would ensure that the prices of Chinese-made goods would remain low on the world's markets. That unbeatable competitive advantage would secure foreign investment for years to come and fuel decades of rapid growth (Holland 2004).

The myth of unlimited supply of cheap migrant labour to urban economies is now being challenged. An increasing number of reports mention a shortage of migrant labour in the urban sector. In October 2004, the city of Beijing and the government of Heilongjiang province signed an unprecedented deal guaranteeing the legal rights of migrant workers in order to recruit 50,000 rural workers to help ease the capital's labour shortage. At the other end of the country, cities in South China's Pearl River Delta also were experiencing an acute shortage of migrant workers. The situation is getting worse, as one region after another reports labour shortages, from Guangdong and Fujian up to Zhejiang province, south of Shanghai (Asia Pacific Foundation Canada 2004). Beijing's Ministry of Labour and Social Security reported in September 2004 that there was one position unfilled for every 10 positions openings in the southeast coastal regions (Ministry of Labor and Social Security of China 2004).

What happens to Chinese migrant workers after they enter cities? Do they stay in cities or keep moving, either returning home or moving on to a third place? Who is more likely to stay in cities or to return home? What are the forces that lead to different choices, if these choices actually exist? What are the policy implications of the various decisions made by migrants? These are major questions that this research will try to investigate.

The decision to migrate can be made independently by individuals, or jointly by members of a family.[2] Individuals and families react to ambient socio-economic conditions differently, but it is important to single out the factors that influence the peasants' decision to migrate. At the micro level,[3] we must determine the impact of the individuals' characteristics on their decision to move or not to move when other conditions are held constant.

Migration in developing countries is becoming recognized not only as a one-dimensional movement from rural to urban, but as one that can be a repeated and/or revised. This is particularly true for China with its well-known *hukou* – household registration – system, and a dual institutional arrangement primarily caused by this system. What impact does this dual setting have on migrants' decision to migrate after they have entered a city and lived in a city?

Sequential decisions to migrate have important policy implications. First, what are the consequences of "stay-move" decisions on the redistribution of human capital among rural and urban sectors, and the subsequent impact on regional development? Second, would the provision of vocational training either at home or the city affect the workers' decision to migrate?

To answer these questions, this paper is organized as follows: in section II, we provide a brief literature review, particularly on return migration in China, which highlights the migration decisions; next we present our methodology in section III as a sequential migration model; then, we describe the data and define variables in section IV; in section V we present the empirical results and a policy simulation followed by our conclusions.

II. Literature Review

For the specific phenomena of repeat and return migration, two broad conceptual frameworks prevail. On the one hand, migration is perceived as an investment decision that maximizes the present value of an individual's lifetime earnings. Within this framework, economic and labour market factors in

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[2] In this paper we focus on individuals to keep the argument simple and because of survey data constraints that will be discussed in section IV.

[3] There are definitely factors at work at the macro level as well. However, this paper focuses on factors affecting individuals, and assumes the macro factors as given conditions that will not be included in the model estimation.

the migrants' place of origin and at their destination, as well as the demographic characteristics of individual migrants (or non-migrants) play crucial roles in the migrants' decision to return home (DaVanzo 1983; Basu 1997; Dustmann 1999; DeVoretz & Iturralde 2001; Ma 2001& 2002).

The other theory considers multiple migrations as a process of re-selection. In this context, experiences following an initial move may serve as an important determinant of the subsequent propensity to migrate. A skill-sorting mechanism determines if there is positive selection, i.e., the return migration of the "worst of the best", or negative selection, i.e., the return migration of the "best of the worst" (Borjas & Bratsberg 1996). Human capital factors and migration experiences are obviously central to this argument.

In recent years, return migration in China has also been the focus of a number of studies. Murphy (1999) describes the local government policies designed to attract migrants back to two counties in Southern Jiangxi province, and examines the potential contributions that returnees make to economic diversification. Ma (2001 & 2002) uses a sample of returnees collected in 1997 and finds a significant effect of urban employment duration on non-farm employment and entrepreneurship upon return. Zhao (2002) examines the causes of return migration and the impact of return migrants on their home communities using household survey data collected in 1999.

Beyond this extensive literature on repeat or return migration, a more specialized group of studies centres around a triangular typology of migration, with place of origin, *entrepot,* and final destination forming a migration path (DeVoretz & Zhang 2004; DeVoretz, Ma & Zhang 2003). Previous studies had focused on one of the three types of migration, i.e., primary, return or onward (DaVanzo 1983; Hou & Beaujot 1994; Newbold 1995).

To our knowledge, there are very few studies including all three types of migration in the recent migration literature on China. To bridge this gap, the present study will follow the emerging triangular typology of migration, which include demographic and economic arguments.

III. A Model of Sequential Decisions to Migrate

Figure 1: Sequential-Decisions-to-Migrate Tree
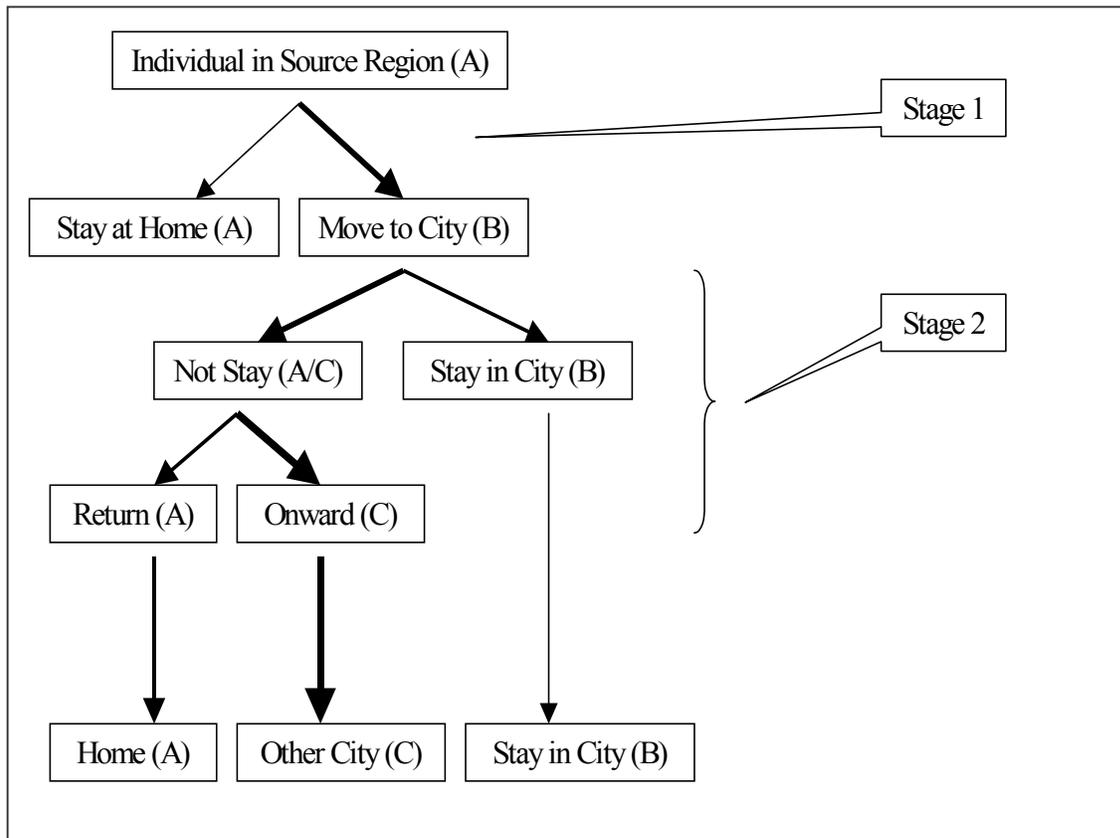
Figure 1 presents the migrant's decision tree. It includes all possible decisions to migrate over a long time horizon.

We argue that there are at least two stages in the decision-making process surrounding migration. Since our survey unit in this paper is the individual migrant worker in Xiamen, we assume that the decision to migrate is made by individuals only. At stage 1 of the decision-making process, the initial choice is made between staying at home (non-migration) and moving to a city (migration). This decision is made in the source region (home). This stage of the migration process has been extensively documented in the literature (Zhao 1999a & 1999b; Liang, Chen & Gu 2002).

The focus of this paper is however on stage 2 of the decision-making process. Once migrant workers have entered cities, i.e., are at (B) in the beginning of stage 2, they soon face a new choice – to stay or not to stay in B. If they remain in city (B) at the end of stage 2. If they choose not to stay, they need to further decide whether to return home (A) or move on to other cities (C). Combining the two decision stages, therefore, there are three possible paths: A-B-A (return migration), A-B-B (stay in city) or A-B-C (onward migration to a new city).

Given these binary sequential decisions, we choose a binominal logit analysis to understand the effects of individuals' attributes on their migration decisions. We use the same model to estimate the probability of migrant workers to stay in a city ($y_1 = 1$) or not stay ($y_1 = 0$); and the probability to return home ($y_2 = 1$) or move on to other places ($y_2 = 0$) respectively. The logistic distribution function is given:

$$p_i = E(y = 1 \mid X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

where X_i is a vector of explanatory variables. Similarly, probability of $y = 0$ can be expressed as follows:

$$1 - p_i = \frac{1}{1 + e^{\beta_1 + \beta_2 X_i}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Now, $p_i / (1 - p_i)$ is the odds ratio in favour of $y = 1$, and can be written,

$$\frac{p_i}{1 - p_i} = \frac{1 + e^{\beta_1 + \beta_2 X_i}}{1 + e^{-(\beta_1 + \beta_2 X_i)}} = e^{\beta_1 + \beta_2 X_i} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. \quad (3)$$

If we take the natural log of (3), we obtain the log of the odds ratio, namely,

$$L_i = \ln\left(\frac{p_i}{1 - p_i}\right) = \beta_1 + \beta_2 X_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots... \quad (4)$$

L_i is the logit, or the log-of-the-odds ratio, and thus the model is a termed the logit model.[4] It is not only linear in *X*, but also linear in the parameters.

Based on a human capital model, as well as findings from the above literature review, we assert the following:

1. Demographic factors:

    1.1. Males are more likely to stay than females;

    1.2. The likelihood of staying increases over age, but the magnitude of age effect declines;

    1.3. Marital status has an impact on staying decision; but the direction is unclear.

2. Human capital factors:

    2.1. Highly-educated migrant workers are more likely to stay than less-educated ones;

    2.2. Vocational training in cities increases the chance of staying.

3. Migration history:

    3.1. A previous migration experience increases the probability of staying;

    3.2. The longer the time spent in cities, the more likely the possibility of staying, but the magnitude of time effect declines over time.

4. Labour market and income factors:

    4.1. Pre-migration non-farming work experience increases the chance of staying;

    4.2. A high level of difficulty finding a job in the city has negative impact on the decision to stay, while better working conditions have a positive impact;

    4.3. The higher the income received from the city job, the higher the probability of staying.

We also make the following hypotheses on the peasants' migratory decision to return home or to move on to other places **conditioned on a previous decision of leaving Xiamen**:

5. Demographic factors:

    5.1. Gender has an impact on the decision to return home, but the direction is unclear;

    5.2. The likelihood of returning increases over age, but the magnitude of age effect declines;

    5.3. Marital status has an impact on returning; but the direction is unclear.

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[4] Gujarati 1995:554.

6. Human capital factors:

    6.1. Level of education has an impact on returning, but the direction is unclear;

    6.2. Location of vocational training has an impact on returning, but the direction is unclear.

7. Migration history:

    7.1. Previous migration experience has an impact on returning, but the direction is unclear;

    7.2. The longer the time spent in cities, the more likely the possibility of returning, but the magnitude of time effect declines.

8. Labour market and income factors:

    8.1. Pre-migration work experience has an impact on returning; but the direction is unclear;

    8.2. Greater difficulty in finding a job in the city has a positive impact on the decision to return, while better working conditions have a negative impact;

    8.3. The level of income received from the city job has an impact on returning, but the direction is unclear.

IV. Data and Definitions of Variables

Our data source is from a survey of migrant workers of Xiamen, Fujian province of China. The survey was developed by Xiamen University and conducted from April to September of 2001. The total sample included 1,352 individual cases, and 1,298 valid ones were available for this study. A detailed description of the sample and the survey is available from Li (2001) upon request.

We define a migrant worker as someone who is living or working in Xiamen at the time of the survey, but was **neither** born, **nor** had *hukou* registration in Xiamen. Since workers were still in Xiamen and had not yet made a decision concerning further migration, we used their declaration of "future intentions" about staying in Xiamen as a proxy for their future migration decision. First, we classify workers according to their intention to stay or not to stay. We further divide those workers who do not intend to stay between those who intend to return home and those who want to "move on to other places. These two binary choice levels allow us to enter models 1 and 2 separately as dependent variables. Results of our regression analysis conducted for each model are reported in the next section.

To capture the various effects on an individual's decision to migrate, we classify explanatory variables into four major categories, namely, demographic factors, human capital factors, migration factors, and labour market and income factors. A description of independent variables is provided in Table 1. The last two columns in Table 1 list the expected sign associated with each variable of models 1 and 2 respectively. The predicted effect of the variables, positive or negative, was derived from an analysis of Devoretz and Ma (2002), and will be rejected or accepted based on our empirical results below.

Table 1: Explanatory Variables for Migration Decisions

Factor	Variable	Definition	Reference group	Expected sign	
				Model 1	Model 2
Demographic	Gender	Male=1; Otherwise=0	Female	+	+/-
	Age	Continuous variable	Mean	+	+
	Age Squared	Continuous variable	Mean	-	-
	Marital Status	Married=1; Otherwise=0	Not married	+/-	+/-
Human Capital	Primary School	Primary school=1; Otherwise=0	Illiterate	+	+/-
	Junior High	Junior high=1; Otherwise=0	Illiterate	+	+/-
	Senior High	Senior high=1; Otherwise=0	Illiterate	+	+/-
	Post-Secondary	Post-secondary=1; Otherwise=0	Illiterate	+	+/-
	Vocational Training at home	Yes=1; Otherwise=0	1 vs 0	-	+/-
	Vocational Training in Xiamen	Yes=1; Otherwise=0	1 vs 0	+	+/-
Migration	Urban Experience	Experience in other large cities before migrating to Xiamen. Yes=1; Otherwise=0	1 vs 0	+	+/-
	Other Experience	Experience in other provinces before migrating to Xiamen. Yes=1; Otherwise=0	1 vs 0	+	+/-
	Years in Xiamen	Continuous variable	Mean	+	+
	Years in Xiamen Squared	Continuous variable	Mean	-	-

Labour market and income*	Farm work	Farm work at home pre-migration, Farm work=1; Otherwise=0	1 vs 0	-	+
	VTE work	Village or township enterprises at home pre-migration, VTE-job=1; Otherwise=0	1 vs 0	+	+/-
	Business	Doing business at home pre-migration, Business=1; Otherwise=0	1 vs 0	+	+/-
	Difficult Finding Job in Xiamen	Difficult finding job in Xiamen, Yes=1; Otherwise=0	1 vs 0	-	+
	Working conditions in Xiamen	Working conditions better in Xiamen, Yes=1; Otherwise=0	1 vs 0	+	-
	Income: Covers Daily Expenses Only	Income covers daily expenses only, Yes=1; Otherwise=0 (low income)	Not enough income for daily living (lowest)	+	+
	Income: Sends Money Home Sometimes	Sends money home sometimes, Yes=1; Otherwise=0 (moderate income)	Same as above	+	+
	Income: Sends Money Home Often	Sends money home often, Yes=1; Otherwise=0 (high income)	Same as above	+	+
	Income: Sends Money Home Regularly	Sends money home regularly, Yes=1; Otherwise=0 (highest income)	Same as above	+	+

* Because of the difficulty of obtaining reliable income figures, we use frequency of sending remittances home as a proxy measuring the migrant workers' income level received from their city jobs. In other words, we assume that the more frequently money is sent home, the higher the income.

V. Empirical Results and Policy Simulation

1. Migrant Workers' Profile

Descriptive statistics of our sample of migrants in Xiamen are presented in Table 2. These statistics are consistent with profiles of migrants elsewhere in China (Liang, Chen & Gu 2002; Zhao

2002 & 1999b; Zhang 1998). The majority of migrants (66%) are male, tend to be young (73% under 30 years old), and most of them (62%) are unmarried.

Table 2: Descriptive Statistics of Migrant Groups: Stay, Return and Move On (%)

		Stay (N=504)	Return (N=292)	Move On (N=502)	Total (N=1298)
Sex	Male	67.5	75.0	60.2	66.3
	Female	32.5	25.0	39.8	33.7
Age	< 21	6.0	4.5	12.0	7.9
	21 - 30	69.6	55.1	66.1	65.0
	31 - 40	18.5	31.8	17.3	21.0
	41 - 50	6.0	8.6	4.6	6.0
Marital Status	Married	33.5	50.3	30.5	36.1
	Unmarried	64.5	48.3	67.5	62.0
	Divorced	1.6	1.4	1.6	1.5
	Widowed	0.4	0.0	0.4	0.3
Education	Illiterate	2.4	4.8	3.6	3.4
	Primary School	12.1	23.3	10.0	13.8
	Junior High	38.7	43.8	44.2	42.0
	Senior High	40.5	25.3	34.3	34.7
	Post-Secondary	6.3	2.7	8.0	6.2
Vocational training	Trained in Xiamen	53.0	43.8	32.7	43.1
	Trained at home	13.9	20.2	27.7	20.6
	No training	33.1	36.0	39.6	36.3
Work experience	In big cities	10.1	5.5	8.6	8.5
	In other provinces	35.3	36.3	29.3	33.2
	None	54.6	58.2	62.2	58.3
Years in Xiamen	1 year	25.8	28.8	47.8	35.0
	2 years	24.2	19.5	19.9	21.5
	3 years	19.0	13.7	14.7	16.2
	4 years	9.1	19.9	4.8	9.9
	5 years or more	21.8	18.2	12.7	17.5
Pre-migration work	Farm work	54.6	68.5	57.0	58.6
	Village or Township Enterprises	12.3	7.2	9.2	9.9
	Business (self-employed)	11.1	11.6	6.2	9.3
	Other	22.0	12.7	27.7	22.1

Ease in finding work	Easy	12.1	8.9	9.4	10.3
	Difficult	87.9	91.1	90.6	89.7
Working conditions	Better than at home	94.4	92.5	90.2	92.4
	Worse than at home	5.6	7.5	9.8	7.6
Monthly Income	Sends money home regularly	11.5	15.8	6.6	10.6
	Sends money often	23.4	11.0	9.0	15.0
	Sends money sometimes	34.7	46.6	42.4	40.4
	Covers daily expenses only	21.0	14.0	25.7	21.3
	Not enough for daily living	9.3	12.7	16.3	12.8
Future intentions	Settle down in Xiamen	63.5			24.7
	Do business in Xiamen	36.5			14.2
	Return home to do business		66.1		14.9
	Return home for farming		33.9		7.6
	Move on to other place to work			16.7	6.5
	Move on to study			18.7	7.2
	Other/Undecided			64.5	25.0

With regard to human capital, 59% of migrants had a junior high school education or less, 43% had received vocational training in Xiamen while 21% trained at home. Table 2 also reports that the majority of migrants (58%) had no previous migration experience and that 57% of them had been in Xiamen less than 2 years.

The majority of migrant workers (59%) engaged in farm work prior to moving to Xiamen. Once in Xiamen, most of them (90%) felt that they had difficulty finding employment. However, 92% of them commented that working conditions were better in Xiamen than at home.

Thirty-nine percent of all migrants intend to stay in Xiamen, 22% planned on returning home, and 39% expressed an intent to move to other places to prolong their migration experience.

To capture the factors underlying the decision to migrate further, we conduct a two-level sequential binomial multivariate logit analysis of the survey data. The first level of the regression, in model 1, is to examine migrants' decision to stay or not to stay in Xiamen. The second level in model 2 is to estimate migrants' decision to return home or to move on to other places once they have decided to leave Xiamen.

2. Decision to Stay or Not to Stay

Table 3 reports binomial logit regression results for the Chinese migrants' decision to stay or not to stay. The results generally support our hypotheses in terms of the direction of effect. With respect to coefficients, marital status is the most significant among demographic variables. Most human capital variables and migration history variables are statistically significant. The pre-migration working experiences in a village and township enterprise (VTE) and in business, as well as higher income levels, also have significant impact on the decision to stay.

Table 3: Binomial Logit Model of Migrant Workers' Choice (Dependent variable: Stay =1; Not stay = 0)

	β		S.E.	Mean
Constant	-2.963	**	1.318	-
Demographic Factors				
Gender	0.012		0.139	0.66
Age	0.036		0.083	27.88
Age Squared	-0.001		0.001	821.70
Marital Status	-0.390	**	0.179	0.36
Human Capital Factors				
Primary School	0.493		0.399	0.14
Junior High	0.566		0.382	0.42
Senior High	0.871	**	0.389	0.35
Post-Secondary	0.964	**	0.451	0.06
Vocational Training at home	-0.511	*	0.180	0.21
Vocational Training in Xiamen	0.327	**	0.140	0.43
Migration Factors				
Urban Experience	0.389	***	0.220	0.08
Other Experience	0.267	***	0.141	0.27
Years in Xiamen	0.452	**	0.227	2.53
Years in Xiamen Squared	-0.056		0.037	8.62
Labour Market & Income Factors				
Farm work	0.024		0.173	0.59
VTE work	0.449	***	0.238	0.10
Business	0.454	***	0.242	0.09
Difficulty Finding a Job in Xiamen	0.057		0.205	0.90
Working conditions in Xiamen	0.158		0.251	0.92
Income: Covers Daily Expenses Only	0.226		0.225	0.21

Income: Sends Money Home Sometimes	0.042		0.214	0.40
Income: Sends Money Home Often	1.096	*	0.250	0.15
Income: Sends Money Home Regularly	0.562	**	0.272	0.11
N	1298			
N=1	504			
Log likelihood	1605.92			

Note: "*", "**", and "***" indicate statistical significance at the 1%, 5%, and 10% levels respectively.

β is estimated coefficient; S.E. refers to Standard Error; Mean is the mean value of independent variables.

More specifically, according to our model's estimated coefficients, male migrants are slightly more likely to stay in the city than females. As individuals age, the probability of staying in the city increases but is a convex function since the effect of age squared is negative. Married migrants are significantly less likely to stay in the city than singles.

Some human capital variables have significant effects on the migrants' choice. A rise in education levels increases the log odds of staying in the city on the one hand, and increases the significance level of the coefficient as well. It is interesting to note that the location of vocational training matters for the migrant worker's choice. Those who have received vocational training in the city where they work are more likely to stay in the city. In contrast, the negative effect of vocational training at home suggests that migrant workers trained at home were less likely to stay in the city.

Some migration factors also significantly influenced the migrants' decision to further migrate. Previous migration and work experiences in big cities such as Shanghai and Beijing, increase the log odds of staying in Xiamen by 0.389. If migrants had moved to, or worked in, other provinces, the probability of staying in the city also increased. Moreover, the greater the time workers spent in the city, the more likely they were to stay. Each additional year of residence in the city yields an increase in the log odds of staying by 0.452, but this function is convex in shape because the effect of years in Xiamen squared is negative.

Labour market and income variables both yield positive impacts on the probability of staying in the city. Previous work for a village and a township enterprise (VTE) significantly increased the log odds of staying by 0.449. Likewise, pre-migration business activities yielded a significantly

higher likelihood to stay in the city. The greater the disposable income as measured by ability to remit, the more likely migrants were to stay.

3. Decision to Return or to Move On

Table 4 reports the binominal logit regression results for workers who were not going to stay in the city but return home or move on. Our estimations suggest that the estimated signs derived from the migrants' individual characteristics on their decision mostly support our hypotheses. Moreover, several demographic variables showed a significant correlation with the decision to return or move on at this stage.

Table 4: Binomial Logit Model of Migrant Workers' Choice (Dependent variable: Return =1; Move On = 0)

	β		S.E.	Mean
Constant	-7.430	*	1.847	-
Demographic Factors				
Gender	0.506	**	0.202	0.656
Age	0.283	**	0.116	27.948
Age Squared	-0.004	**	0.002	827.820
Marital Status	-0.167		0.245	0.378
Human Capital Factors				
Primary School	0.957	**	0.449	0.149
Junior High	0.130		0.431	0.441
Senior High	0.023		0.445	0.310
Post-Secondary	-1.160	***	0.602	0.060
Vocational Training at home	-0.299		0.227	0.249
Vocational Training in Xiamen	0.138		0.200	0.368
Migration Factors				
Urban Experience	-0.284		0.338	0.074
Other Experience	0.480	**	0.193	0.262
Years in Xiamen	0.548	***	0.307	2.384
Years in Xiamen Squared	-0.059		0.051	7.827
Labour Market & Income Factors				
Farm work	0.178		0.248	0.612
VTE work	-0.033		0.361	0.084
Business	1.311	*	0.344	0.082

	β	S.E.	Mean
Difficulty Finding a Job	0.438	0.289	0.908
Working conditions in Xiamen	-0.044	0.317	0.911
Income: Covers Daily Expenses Only	-0.448	0.301	0.214
Income: Sends Money Home Sometimes	0.033	0.269	0.440
Income: Sends Money Home Often	0.226	0.349	0.097
Income: Sends Money Home Regularly	0.604	0.372	0.099
N	794		
N=1	292		
Log likelihood	895.23		

Note: "*", "**", and "***" indicate statistical significance at the 1%, 5%, and 10% levels respectively.

β is estimated coefficient; S.E. refers to Standard Error; Mean is the mean value of independent variables.

In particular, the effects of demographic factors on the decision to return or to move on are statistically more significant than they were for the decision to stay or not to stay. At this stage, males are more likely to return home than females. The probability of returning home increases with age but is also a convex function since the effect of age squared is negative. The negative coefficient for the marital status variable may suggest that married migrants are less likely to return home than their unmarried counterparts.

A few human capital variables also yield significant effects on the migrants' decision. The decision to return home is significantly associated with primary school education, while a significant negative coefficient (-1.16) for migrants having a post-secondary education reveals a higher propensity to move on than to return home. In contrast to the regression results for model 1, the place where vocational training is received does not significantly affect migration choices. However, the signs of the coefficients may suggest that workers who received vocational training at home are less likely to return home, while those who had vocational training in the city were more likely to move on.

The migrants' migration history also revealed the expected effects on the return or onward migration decision. Previous migration and work experience in big cities decreased the log odds of returning home by 0.284. Workers who had previously moved to, or worked in, other provinces were more likely to return home. Time spent in a city also mattered: each year spent in the city yielded an

increase in the log odds in favour of returning by 0.548, but is also a convex function because the effect of years in the city squared is negative.

The sign of each coefficient reveals the direction of their effect on the decision to migrate, but only one labour market and income variable is statistically significant. Migrants employed on farms were more likely to return home, unlike those who had previously worked in a village or a township enterprise. Workers who had engaged in pre-migration business activities were significantly more likely to return home. Workers who felt it was difficult to find employment in the city were likely to return home, while a preference for working conditions in the city made workers less likely to return home. Moreover, the probability of returning home increased concurrently with their income levels.

4. Simulation of probabilities

Another way of interpreting logit results is to conduct a simulation experiment. With this technique we use the estimated logit coefficients and the associated mean values of the explanatory variables to simulate probabilities of staying in the city (Xiamen), returning home or moving on to other places at different ages. The simulation results are presented in Figures 2 to 4 and simulate possible policy effects on migration probabilities.

Figure 2: Predicted Probabilities of Staying in City, Returning Home or Moving on by Age
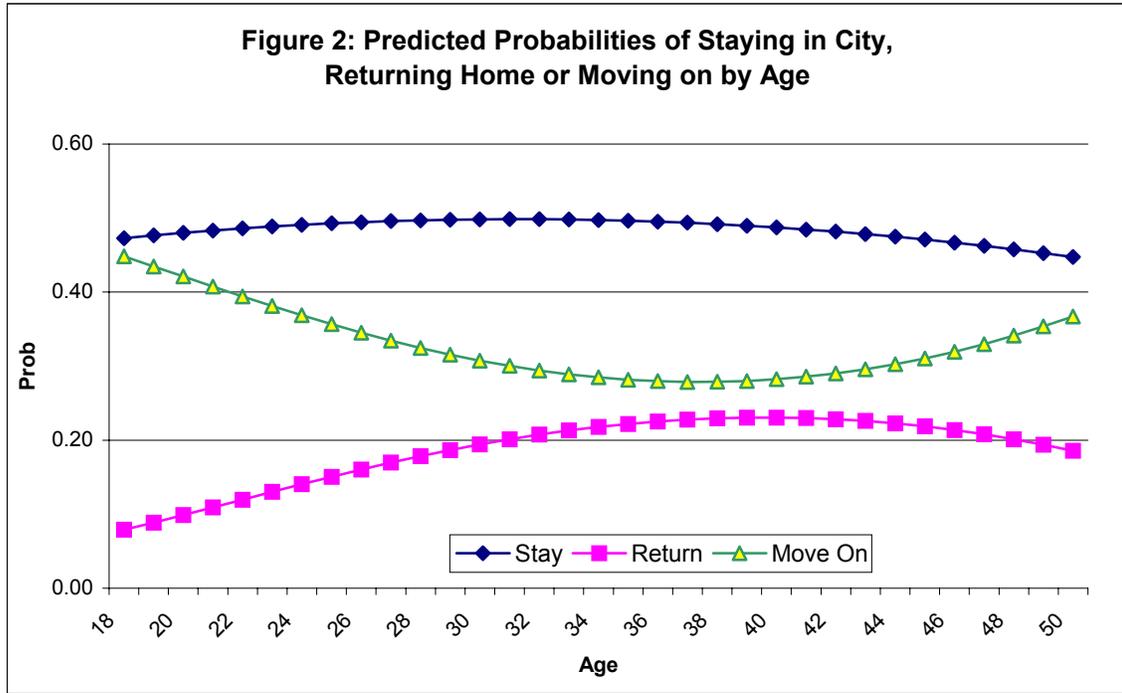
As shown in Figure 2, our model predicts that the average migrant worker in Xiamen has a 45 to 50% chance of staying in Xiamen, an 8 to 23% chance of returning home, and a 28 to 44% chance of moving on, across the age continuum.

We further test the effect of educational levels on these probabilities, holding everything else constant. Figure 3 shows that education levels yield significantly different probabilities of staying in the city: the higher the education levels, the greater the chance of staying in the city.

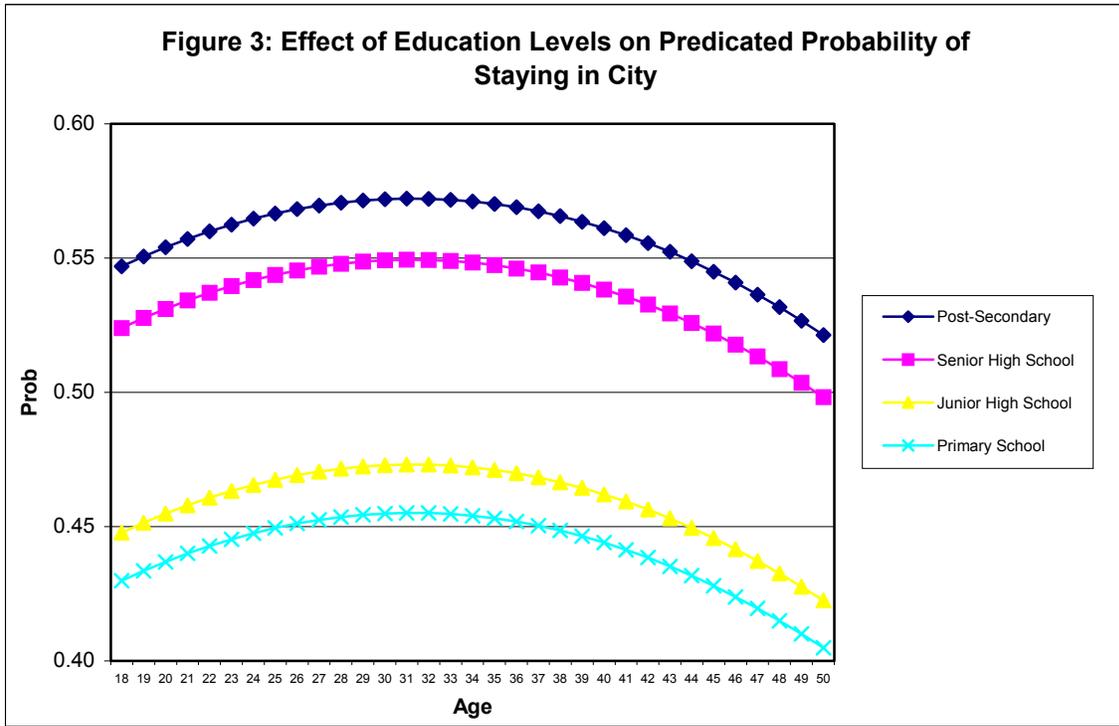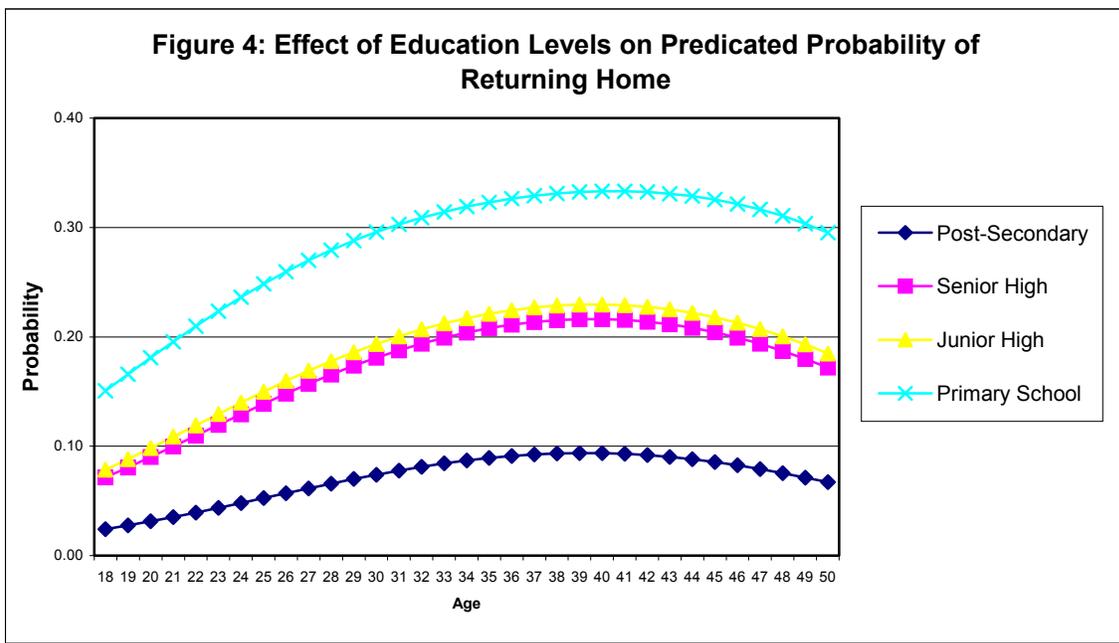**Figure 3: Effect of Education Levels on Predicated Probability of Staying in City**


Figure 4 clearly illustrates the effect of education levels on probabilities of returning home: the higher the education levels, the lower the likelihood of returning home.

Figure 4: Effect of Education Levels on Predicated Probability of Returning Home

We finally test the effect of vocational training received at home or in the city on the decision to migrate. As shown in Figure 5, the location of vocational training matters. On the one hand, the vocational training received in the city yields a higher probability of staying in the city. This effect is independent of age, as the variation across age groups is minor. On the other hand, if they decided not to stay, migrants trained in the city are more likely to return home than their home-trained counterpart. However, the difference between the two groups is small, and the effect varies widely across age groups.

Figure 5: Effects of Vocational Training Locations on Predicted Probabilities of Staying in City or Returning Home
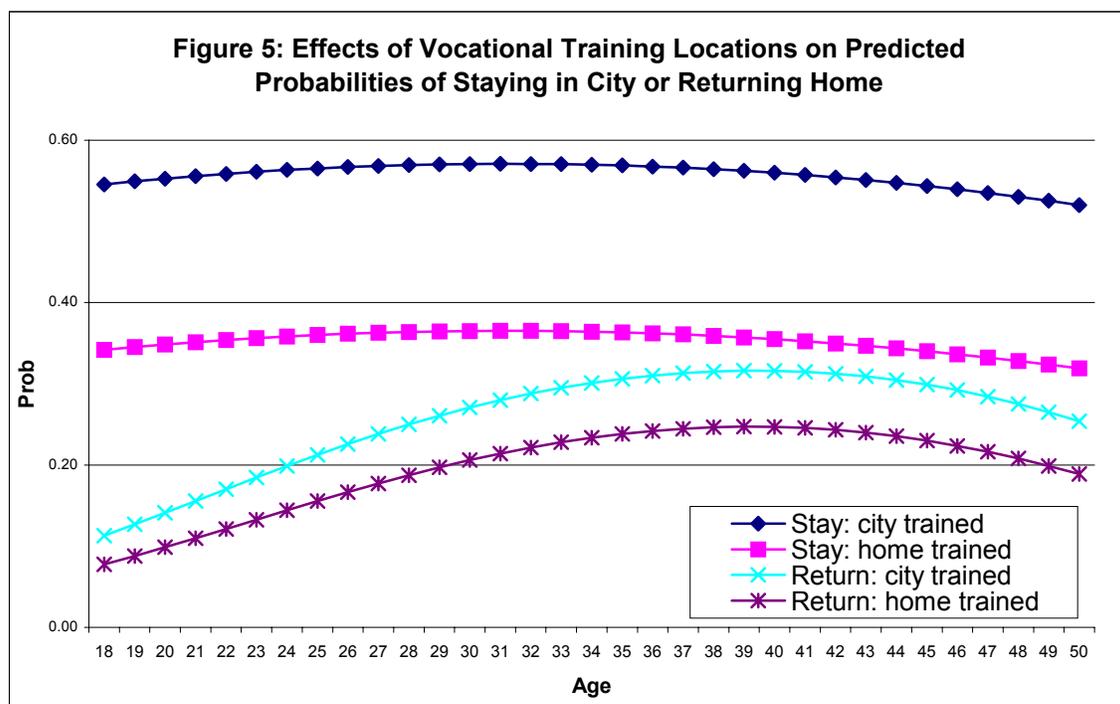
VI. Conclusions

In this paper we examined the choices faced by Chinese migrant workers after they move to the cities. A sequential decision model was developed to illustrate three possible migration choices, namely, to stay in the city, return home, or move on to other places. A binominal logit analysis was performed on survey data to estimate major factors influencing the probabilities of migrant workers' decision to

stay, return or move on. Further, simulations of predicted probabilities provided evidence on the effects of educational levels and the location of migrants' vocational training on their decision to migrate.

The empirical results confirm that some of the selected demographic, human capital, migration, labour market, and income factors have significant impacts on the decision to stay or to move on after migrants have arrived in the city. The most significant factors affecting "stay-move" decisions are education levels, location of vocational training, previous migration experience, post-migration income levels, and non-farm working experiences, particularly the experience of doing business.

Since we observe that only 45 to 50% of migrant workers are likely to stay in cities, but 8 to 23% possibly return home, while 28 to 44% of workers may move on, we conclude that the 100 million migrant workers constituting China's floating population is an outgrowth of this decision process. It also explains why there is a shortage of migrant labour supply in certain urban regions while there simultaneously exists a huge floating population in general.

Furthermore, our simulations reveal an important phenomenon that requires more attention from policy makers. It is obvious that a significant brain drain occurs from rural to urban regions. Figures 3 and 4 showed a positive selection for staying in the city and a negative selection for returning home. In the long run, the migration process in China will result in a redistribution of human resources among rural and urban areas detrimental to rural development. Cities will eventually attract more human capital while the countryside will lose human capital essential to its development. Therefore, the current pattern of migration will widen rural-urban gaps instead of narrowing them, not only in terms of human capital distribution, but also in productivity, income distribution, and development potential.

The apparently ambiguous effect derived from the location of the migrants' vocational training reveals the nature of the rural-urban brain drain issue mentioned above. First, rural training is less transferable to the urban labour market than city training, as indicated by a lower probability of

staying. This lower transferability of training can be attributed to the problems of home training, e.g., lower quality, emphasis on irrelevant skills, etc. Greater investments in rural vocational training programs will more likely encourage trained workers to stay move from rural areas. On the other hand, migrants trained in the city reap many benefits. The urban labour market demands a diversified skill set, thus migrant workers are more likely to stay if the skills acquired in the city yield rewards.

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