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The Evolution of the Migrant Labor Market in China, 2002-2007*

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I. Introduction

Migration simply did not figure in the first of the China Household Income Project (CHIP) volumes, which was based on a 1988 national household survey (Griffin and Zhao 1993). This was partly because that survey relied entirely on samples drawn from the annual national household survey of the National Bureau of Statistics (NBS), which contained only rural households and urban *hukou* (household registration) households. That sampling procedure in turn reflected the underlying reality: rural-urban migration was restricted, limited, and unimportant. The same is true of the volume based on the 1995 CHIP survey (Riskin, Zhao, and Li 2001), although it contains an analysis of migrants based on the rural sample (Li 2001). The 2002 CHIP survey was the first to include a separate sample of rural migrants to the cities, and migrants were integrated into several of the chapters in the resultant volume (Gustafsson, Li, and Sicular 2008). A sample of rural-urban migrants was again included in the 2007 CHIP survey, on which the current volume is based. The greater emphasis given to migrants and migration in each succeeding CHIP survey reflects an important development in the Chinese economy. What has been referred to as the greatest migration in human history is now critical to an analysis of China's economic growth, income distribution, poverty alleviation, and labor market. Indeed, it is the subject of a separate volume that is also based on the 2007 survey (Meng and Manning 2010), but that volume does not address the question posed in this chapter.

The famous Lewis model (Lewis 1954) provides a good framework for evaluating the success of a developing economy and for explaining the ways in which the fruits of economic

development are spread. Within a competitive market economy, it is only when the economy emerges from the first, labor-surplus classical stage of the development process and enters the second, labor-scarce, neo-classical stage that real incomes generally begin to rise.

Up to that point, the benefits of economic growth can accrue in the form of the absorption of surplus labor, but not in the form of generally rising real incomes. Beyond that point, the scarcity of labor can be a powerful force for reducing inequality in labor income. When the economic reforms commenced, there is no doubt that China was an extreme example of a labor-surplus economy. There was surplus labor both in the rural areas (where it was disguised as underemployment in the communes) and in the urban areas (where it was disguised as underemployment in the state-owned enterprises [SOE]). During the reform period China achieved rapid economic growth, averaging more than 9 percent per annum during the three decades from 1978 to 2008. Nevertheless, during the same period the labor force grew by 380 million, or 90 percent, equivalent to 2.3 percent per annum. Has the surplus labor by now been absorbed productively into the economy?

Reports or data on rising migrant wages, at least in various growth points of the Chinese economy, have led some researchers to argue that China has now reached the Lewis turning point (Cai, Du, and Zhao 2007; Park, Cai, and Du 2010; Wang 2008). However, others argue either that migrant wages have barely increased (Du and Pan 2009; Meng and Bai 2007) or that there is still evidence of widespread surplus labor in rural China (Kwan 2009; Minami and Ma 2009). The issue has become a lively and contentious topic in the Chinese media. For instance, a State Council Councillor Ma Li is reported to have argued that China has a sufficient labor pool for the next forty years (Xin and Shan 2010). The inconclusive nature of the debate reflects both the use of different methodologies and the lack the required data to test these alternative

hypotheses. Nevertheless, it is possible that there is some truth in both arguments. Can the apparently contradictory pieces of evidence be reconciled? In this chapter we explore the light that the CHIP national household surveys of 2002 and 2007 throw on the debate.

Section II briefly provides some background information on trends in the Chinese labor market. Section III describes relevant aspects of the surveys upon which we draw. Section IV analyzes wage functions for the rural-urban migrant subsamples of the surveys in order to examine and explain migrant wage behavior in urban China. An attempt is made in Section V to measure the remaining pool of potential migrant labor in rural China by means of the rural sub-samples and probit analyses of migration functions. Section VI summarizes, reflects, and presents our conclusions

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II. Trends in the Chinese Labor Market

China reached the limits of its land availability decades ago. The total land area sown in 1995 was no more than 6 percent more than that in 1952. Over the same period, the rural labor force increased by 150 percent, reaching its peak in 1995. Surplus labor was present in the communes but it was camouflaged by the work-point system. Numerous attempts to measure the extent of surplus labor in rural China produced a range of estimates, with most economists suggesting that surplus labor represented one-third of the rural labor force in the 1980s (Taylor 1988; Knight and Song 1999, ch. 2).

Reflecting the pro-population policies of the Maoist period, the rural labor force grew rapidly during the next generation, i.e., the 1980s. It was only in the late 1990s that the effects of population control measures, such as the late-sparse-few and one-child family policies, introduced in the 1970s, began to have an effect on the labor market. Table 6.1 shows various

measures of the labor force and employment over the 1995-2007 period. The rural labor force began to decline gently in the mid-1990s. As rural non-farm employment grew (by 1.6 percent per annum), farm employment fell markedly (by 1.4 percent per annum). Urban employment increased rapidly (by 3.7 percent per annum). Formal sector employment, including SOEs and urban collective enterprises (UCE), actually declined (by 2.2 percent per annum), whereas the most dynamic sector was urban informal employment (rising by 10.7 percent per annum).

Table 6.1 about here

The natural increase in the urban-born labor force was far too slow to meet the growing demand for labor by urban employers, thus the increasing shortfall was met by rural-urban migration. According to Sheng (2008), using data taken from the NBS Web site, the number of rural-urban migrants rose from 30 million in 1995 to 132 million in 2006. Migrants accounted for 7 percent of the rural labor force in 1995 but they constituted no less than 26 percent in 2006. It is difficult to measure the number of migrants accurately on an annual basis, but such orders of magnitude are not in dispute: migrant labor was the most dynamic component of labor force activity during the decade, growing by perhaps 14 percent per annum.

The table also shows that average urban real wages rose by 11.2 percent per annum over the 1995-2007 period. This rate of growth was far higher than that of rural real income per capita (6.3 percent per annum). However, official sources report only the wages of urban residents and not those of rural-urban migrants. The pay of the former has been subject to institutional and politically motivated determination and, in recent years, informal profit-sharing associated with a form of efficiency wage theory, whereas the pay of the latter has often been determined separately (Knight and Li 2005; Knight and Song 2005, ch. 7). Thus, without information on

migrant wages, it cannot be inferred from this officially reported wage increase that there has been a shortage of migrant labor.

The 2007 CHIP national household survey shows the ratio of the average monthly wage of urban residents to that of rural-urban migrants to be 1.49. Although migrants are more subject to market forces than urban residents, the migrant wage is greater than the opportunity cost. The 2007 survey also asked rural-urban migrants about their income had they remained in the village. The ratio of the average migrant wage to the average counterfactual village income per month was 2.43. According to probabilistic migration models, this urban-rural income differential should have induced an influx of labor and generate substantial urban unemployment among migrants. However, the restrictions on migrant employment and settlement in the cities imposed by the central and local governments held down migrant unemployment (Knight and Song 2005, chs. 5, 8). According to the 2002 CHIP survey, the unemployment rate of workers in migrant urban households was only 2.8 percent (Li and Deng 2004).

III. The Data

The CHIP surveys for 2002 and 2007 cover three types of households: urban local households, rural households, and rural-urban migrant households. Each type of household was surveyed separately. The sample of urban local households and rural households is a part of the large NBS sample. The 2002 survey for rural households covers twenty-two provinces, with the condition that they are representative of various regions in rural China. The number of sampled households was distributed among the twenty-two provinces roughly in proportion to their populations. The provincial statistical bureaus were given autonomy to choose the number of sampled counties, but there had to be at least fifty households in each selected county, and villages within them had

to be stratified by income level. In all, 9,200 households and 37,969 individuals were surveyed in 120 counties. The 2002 survey of registered urban households was conducted in twelve of the above twenty-two provinces. In all, 6,835 households and 20,632 individuals were surveyed in seventy cities. Income questions were posed with the objective of measuring household disposable income. Households were required to answer questions about wage income and other income of each working member, and also about income from family businesses. Rural households were asked questions on working time inside and outside the township.

The 2002 rural-urban migrant survey sampled a total of 2,000 households: 200 households in each of the eastern and central provinces and 150 households in each of the western provinces. A person is defined as a migrant if he or she holds a rural *hukou* and has been living in an urban area for more than six months. Within each province, 100 households were sampled in the capital city and fifty households in each of the selected middle-sized cities. Within each city, rural-urban migrant households were sampled from residential communities, thus excluding migrant workers living at construction sites, in factories, or outside the city. The sample therefore excluded short-term in-migrants and those not living in households. The questionnaires included questions regarding wage, business income, consumption, and job characteristics of individual members and households.

Each of the 2007 CHIP surveys of rural, urban, and rural-urban migrant households was conducted in the same nine provinces. For the surveys of urban local households and rural-urban migrant households, fifteen cities were selected. For the rural household survey, eighty counties and 800 villages were selected. The samples contained 8,000 rural households, 5,000 urban local households, and 5,000 urban-rural migrant households. As in the 2002 surveys, the 2007 surveys of rural households and urban local households took subsamples from the national household

survey of the NBS, whereas the rural-urban migrant survey was conducted separately. To ensure comparability between the 2002 and 2007 surveys, our analysis is confined to the nine common provinces: Hebei, Jiangsu, Zhejiang, Anhui, Henan, Hubei, Guangdong, Chongqing, and Sichuan. The questionnaires for the 2007 surveys included as many of the questions contained in the 2002 surveys as possible. In addition, some new questions on migration status and behavior were added to analyze the migration.

The two rural-urban migrant surveys employed different sampling methods. In 2007 a migrant household was selected when one of its working members was drawn from his or her workplace, whereas in 2002 migrant households were drawn from residential communities. As a result, the 2002 survey has a higher proportion of self-employed migrants. As migrants living in communities tend to have higher incomes than those living elsewhere, this might also produce some upward bias in the 2002 migrant wages. The best way to correct for this bias was to standardize on the basis of housing: we selected only those 2007 migrants whose living conditions corresponded to those of the 2002 migrants. In both years we included only migrants owning or renting their housing and not those living in dormitories or temporary shelters. The 2007 sample is effectively confined to migrants who have been in the city for at least six months and who live in households. Thus, we again exclude short-term migrants who are likely to regard their households as being in the village. We therefore cover only the fairly settled migrants in each year but as far as possible we are comparing like with like.[1]

IV. Migrant Wage Behavior

The CHIP surveys potentially are a valuable source of information on migrant wages. Our analysis takes two forms. First, we explore the determinants of migrant wages in the 2007

survey. This analysis helps us examine the role that market forces play in migrant wage determination. Second, we combine the two surveys to examine the behavior of migrant real wages over the five years from 2002 to 2007. The purpose is to understand not only whether real wages rose but also, if that was the case, why they did so. Both the migrant and permanent urban resident questionnaires in the 2007 survey contained questions on monthly wage income and on net income from self-employment. We achieve income comparability across cities by means of the PPP-adjusted deflator, as calculated at the province level by Brandt and Holz (2006).

It is possible to show the influence of each city's *hukou* worker income on migrant income. We do so by predicting the income that each migrant -- with his or her particular characteristics -- would have received if it had been rewarded according to the relevant city income function. This variable can be interpreted as a proxy for that city's labor demand. With a perfectly elastic supply curve of migrant labor to any particular city and a segmented labor market within the city, the wages paid to permanent residents of the city have no effect on the market wages of migrants. However, if migrant wages are responsive to city wages, this might reflect competition for jobs between migrants and city residents (i.e., incomplete segmentation) or institutional wage determination that extends also to at least some of the migrants. There is information on the unskilled day wages in the migrants' villages and the income which the migrants reported that they would have received had they remained in their villages. These variables serve as proxies for the migrants' supply price.

The proxies for migrant labor supply and demand can be helpful in interpreting migrant wage behavior. Consider a simple supply and demand model, bearing in mind that migrants and urban workers are imperfect substitutes (Knight and Yueh 2009). A rightward shift of the demand curve elicits a small supply response in the short run, owing to informational lags,

inertia, and transaction costs. We expect the migrant wage will rise and marginal employees will enjoy a wage rent. In the long run, supply responds, the marginal rent is eliminated, and the equilibrium wage is determined by the elasticities of the supply and demand curves; if the migrant supply curve is perfectly elastic, the wage in equilibrium returns to its initial level. If the labor supply curve is not perfectly elastic, we expect the proxy for city labor demand to exhibit a positive coefficient, not only in the short run but also in the long run. If instead the market shock is due to an upward (or leftward) shift of the supply curve, the wage rises only a little in the short term if the supply response is lagged, and indeed there may be a negative marginal rent. With time, the equilibrium wage rises further, and by the full amount of the supply shock if the supply curve is perfectly elastic. In that case, our proxy for labor demand does not influence the equilibrium wage.

The relative importance of the proxies for supply and demand thus provides a pointer to the market forces influencing migrant wages. If our proxy for migrant labor demand has a relatively high coefficient, it suggests that demand is important in the determination of the wage level and of wage increases. If our proxy for the migrant supply price has a relatively high coefficient, it is likely that supply conditions are more influential in governing migrant wage behavior. However, caution is required because our cross-sectional data cannot deal with lags or distinguish equilibrium and disequilibrium situations.

Table 6.2 presents the estimates of the functions for migrant wage income and for migrant self-employment income in 2007, both variables in log form. The variables representing the migrant supply price have significantly positive coefficients: 0.161 for the reported opportunity cost and 0.046 for the village unskilled wage rate. Owing to possible co-linearity between these variables, we also estimated the coefficient on opportunity cost when the unskilled

wage is excluded from the specification (the final row in the table): the effect was a small rise in the coefficient, to 0.165. When the function was estimated with income expressed in levels and not logs (estimates not reported), this coefficient implied that an increase of 100 yuan in opportunity cost would alter migrant behavior in such a way as to raise the migrant wage by a significant 33 yuan. Precisely equivalent exercises for self-employment income showed the rural supply price to have larger effects (0.197 for the opportunity cost and 0.173 for the village unskilled wage, both significant). When the latter variable is excluded from the equation, the coefficient on opportunity cost implied that migrants with a rural supply price that was higher by 100 yuan would earn self-employment income in the city that was higher by 73 yuan. The evidence suggests that migrants with higher village opportunity costs will only be found in city jobs that pay more. The implication is that a rise in the rural supply price will indeed result in higher migrant wages.

Table 6.2 about here

The predicted migrant city wages of the migrant were introduced as a potential proxy for pressures of demand for labor in the city. The coefficient for wage earners is positive (0.086) and significant but lower than the coefficient on the proxy for the migrant opportunity cost (0.165). This might reflect influences other than urban demand. The effect of variations among the cities in the cost of living in principle should be eliminated by our use of the PPP-adjusted deflator, but the provincial-level deflator has limitations, as acknowledged by its compilers (Brandt and Holz 2006, p. 83), and inaccuracy for a particular city within a province cannot be ruled out. Wages might be affected by institutional factors -- because migrants are concentrated at the lower end of the city wage distribution – in particular by implementation of city minimum wage regulations. Therefore, it is relevant that the coefficient is not positive or significant for the self-employed

(-0.006).

We conducted robustness tests on our proxy for the urban demand for migrants. We tried replacing the predicted city wage/income variable with two alternative proxies: the average wage/income of urban residents in the city with no more than a middle-school education, and the urban wage/income of urban residents in the city, weighted by the occupational composition of migrants employed in the city. Whichever proxy was used, the coefficient on the predicted city income of self-employed migrants was small and not significantly different from zero. However, in the case of the predicted migrant wage, the occupation-based proxy had a coefficient of 0.148 and the education-based proxy had a coefficient of 0.300, both significant at the 1 percent level. Our evidence is therefore mixed: according to the proxy chosen, the demand side of the city labor market for migrants (coefficient varying from 0.086 to 0.300) might be more or less important than the supply side (coefficient varying from 0.046 to 0.165).

Several control variables -- interesting in themselves -- are also included in the migrant income functions: we briefly discuss those that have both significant and substantive coefficients. The return to a year of education is positive and significant but low (2.0 percent per annum) in wage employment, and the wage is insensitive to the reported performance in school. These results might reflect the low quality of jobs that migrants generally take. The education variables are not significant at all in the self-employment equation. The possession of training, however, is rewarded both in wage employment and in self-employment. Similarly, city employment experience (years since migrating) has the usual inverse-U shaped relationship in both forms of migrant employment. The fact that men and construction workers receive more wage income and self-employment income than women or workers in the residual sectors (mainly sales and other services) is consistent with the arduous or unpleasant nature of some of

the work performed by migrants and, in the case of self-employment, with the possibility of skill or capital barriers to entering certain activities.

Table 6.3 combines the 2007 migrant survey with the 2002 migrant survey in order to examine the change in the logarithm of the wage over time. Sampling procedures were different in the two surveys: the 2002 sample was drawn from residential areas and thus contains only migrants living in households, whereas the 2007 sample was obtained by tracking all rural-urban migrants working in randomly selected areas. Because some of the latter were living in dormitories or workplaces provided by the employer, the coverage is broader. For comparability, we included 2007 migrants in the analysis only if they were living in their own houses or houses that they had rented. The Brandt-Holz PPP-adjusted deflator (2006) is used to correct both for differences in city price levels and for their rates of change.

Table 6.3 about here

The specifications differ from those in Table 6.2. The key variable is the year dummy, with 2007 taking a value equal to 1 and 2002 taking a value equal to 0. Columns 1 and 5, both including only this dummy and an intercept term, show the raw increase in migrant real income: implying growth of 10.4 percent and 12.7 percent per annum for wage- and self-employment income respectively. Columns 2 and 6 add to this specification by introducing the set of individual variables available in both years. It is noteworthy that the proportionate increases in wage- and self-employment income fall only a little, to 9.7 percent and 12.1 percent per annum respectively, when personal characteristics are held constant. This represents an income change for migrants whose characteristics make them likely to be among the least skilled. We also standardize the urban predicted wage in columns 3 and 7: the increases come down further, to 8.9 percent and 11.7 percent respectively. Our best indicator of the rural supply price is the

income that the migrant would have earned in the village: its addition, in columns 4 and 8, reduces the increases to 6.1 percent and 8.5 percent respectively. Nevertheless, there remains a substantial rise in wage- and self-employment incomes which cannot be accounted for by the explanatory variables at our disposal.

It is possible that changes in the supply of and demand for different worker characteristics altered the migrant wage structure. In particular, if there was a growing scarcity of young and educated migrants, this might have provided them with larger wage increases. We explore this possibility by distinguishing "young" (up to 35 years of age) and "old" (over 35 years of age) workers, and workers who were "more educated" (having completed middle school) and "less educated" (not having completed middle school). Accordingly, we re-estimate the wage functions corresponding to columns 2-4 of Table 6.3, now excluding the years of education but including a young worker dummy, plus a "young worker x 2007" interaction term and a more educated worker dummy, plus a "more educated worker x 2007" interaction term. The hypothesis is that the coefficients on the interaction terms are positive. The estimates (not reported) show the coefficients on the interaction term for young workers to be significantly positive in each specification (ranging from 0.08 to 0.11). By contrast, the coefficients on the interaction term for more educated workers are not positive and indeed are significantly negative in two of the three specifications. Whereas the wage premium on migrant education fell, young workers gained relatively to old workers over the five years. However, this does not necessarily indicate a growing scarcity of young migrants. A minimum wage was introduced in some cities in the mid-1990s, and in subsequent years its coverage was broadened to more cities and its level was raised (Du and Pan 2009). In principle, it applies to all wage employees including migrants.

It is plausible that young migrants in particular, as the lowest-paid workers in the cities, benefited the most from this development.

Over time, the average migrant worker could be expected to become more educated and to have been working in the city for a longer period: both education and work experience are productive characteristics that are rewarded by the market. A more direct way of measuring the contribution of a change in characteristics to migrant wage growth is by means of decomposition analysis -- permitting changes in the coefficients as well as in the characteristics. A standard decomposition of the change in the average migrant wages between 2002 and 2007, summarized in Table 6.4, shows that of the gross mean log wage increase (0.649), a minority (less than 30 percent) is due to differences in the coefficients of the two wage functions and a majority can be explained by changes in the mean characteristics. However, less than 5 percent is due to an improvement in the educational composition of the migrants and there is no contribution due to a change in the length of their city experience. The main contributions come from the increase in the city demand price (32 percent or 42 percent, according to the weights being used) and the rural supply price (32 percent or 35 percent), both adjusted for price changes and for differences in provincial price levels. Labor-market forces were indeed largely responsible for the wage increase. The pattern is very similar for self-employment income, also shown in the table.

To summarize what can be learned from these wage regressions: in Table 6.2 our proxies for rural supply (the rural opportunity cost) and urban demand (the employers' valuation of the migrants) were indeed associated with a higher migrant wage. The rural proxy had a similar effect in the case of self-employment income, whereas the urban proxy did not. There was only a slight reward for education, probably reflecting the fact that most migrants perform menial jobs. We saw in Table 6.3 that the proportionate increase in the migrant real wage/income during the

period from 2002 to 2007, both actual and standardizing for personal characteristics, was rapid. Table 6.4 indicates that the two variables most likely to reflect the contribution made by market forces to migrant wage behavior over time -- the proxies for rural supply price and urban demand price -- could together account for about two-thirds of the actual increase in migrant wages.

Table 6.4 about here

The CHIP surveys provide some evidence suggesting that the market for migrants is becoming more integrated spatially. Table 6.5 reports the dispersion of the average city migrant wage for the seven cities that are common to the two surveys, the twenty-three cities in the seven common provinces, and for all cities in each survey. In the first of these cases, the Gini coefficient of the average city wage fell from 0.107 to 0.067, and the standard deviation of the log wage fell from 0.323 to 0.129. A similar dramatic reduction can be found for all the cities in the two surveys and for all twenty-three cities in the seven common provinces, as well as for the migrant self-employment income. However, both of these measures of dispersion are mean-dependent -- falling as the mean increases, other things being equal -- and the mean wage rose over the period. The standard deviation of the average real wage rose in each case. It is not clear which is the more appropriate measure of wage dispersion, but we assume that the sources of the wage differences, and their costs, are likely to rise along with incomes. On that basis, these results suggest that either minimum wages became more standardized across cities and more effective or, more likely, market forces were responding to the growing spatial mobility of migrants.

Table 6.5 about here

Finally, using the CHIP urban and migrant surveys, we note that the average rural *hukou* wage in urban China was 70 percent of the average urban *hukou* wage in 2002, but it fell to 63

percent in 2007. Thus, migrant wages rose less rapidly than the wages of urban workers, although part of this was due to the changing returns to education -- rising in the case of urban workers and falling in the case of migrants.

V. The Pool of Potential Migrants

Our main concern in this section is to gauge the size of the pool of rural labor available to migrate to urban employment. Our method is to estimate the migration functions using the CHIP rural subsamples for 2002 and 2007, and then to assess how many non-migrants have high probabilities of migration. Our cut-off probability in the probits is chosen to ensure that the number of rural workers who are predicted to migrate is set equal to the number of workers who do migrate. We use the nine provinces that are common to both surveys. In 2002 the proportion of workers who actually migrated was 23.4 percent and in 2007 it was 27.3 percent. In 2002 14 percent of the non-migrants were predicted to migrate and 46 percent of the migrants were predicted not to migrate; the corresponding figures in 2007 were 13 percent and 36 percent.

Table 6.6 reports the probit equations, the dependent variable being migrant status and the omitted category being non-migrant status. Several of the coefficients are not only statistically significant but also economically substantial. The marginals show the effect of a unit change in a variable on the probability of migration. They imply being male increased that probability by 15 percentage points in 2002 and by 12 percentage points in 2007. Marriage reduces the probability of migration, especially if there are children. The probability peaks for the 21-25 age group in both years. It fell sharply after age 25 in 2002 and after age 31 in 2007, and thereafter it declined more sharply in 2007. This is surprising: we would expect the

probability of older workers to rise as migrant labor becomes scarcer. Age has a greater effect on the probability of migration than any other personal characteristic.

Table 6.5 about here

With primary education or below as the omitted category, the probability of migration after middle school is 6 and 2 percentage points higher in 2002 and 2007 respectively. High school enrollment is not significant in 2007. Although it is significant in 2002, its marginal effect on the probability of migrating (5 percent) is smaller than that of middle school enrollment. Consistent with the low returns to education reported in Table 6.3, education is not an important determinant of migration in 2002 and becomes even less important over the next five years. Good health increases migration in both years and poor health decreases migration in 2007. The greater the area of arable land per member possessed by the household, the less chance there is of members migrating. Province dummy variables are included but not reported: the province of rural residence is a notable determinant of migration.

Of great importance is the proportion of migrants among workers in the village. The mean proportion is 0.13 in 2002 and 0.22 in 2007; the standard deviations are 0.10 and 0.14. A one-standard-deviation increase in this proportion raises the migration propensity by 5.2 and 5.5 percentage points respectively. This result has several possible interpretations. One is that migration from the village sets in train a process of cumulative causation as information and support networks increase and the monetary and psychological costs of migration and job searches fall. In that case, the many villages still with low proportions of migrants might be ripe to become future migration villages.

What keeps the non-migrants from migrating? The 2007 survey contains a specific question asking the reason. The distribution of the replies is shown in Table 6.7. Three reasons

were stressed: being too old, being unable to find an outside job, and needing to care for the elderly or for children. Each of these might prove to be flexible in the face of a rising demand for migrant labor. Older workers and care-givers might well be willing to move if policy is revised to meet the changing circumstances, such that family migration and urban settlement are made easier. Workers will find it easier to obtain outside jobs if the demand for migrants grows, especially if migrant networks are strengthened in the process.

Table 6.7 about here

The table also shows the results of an OLS regression equation for non-migrants in which the dependent variable is the estimated probability of migrating, estimated from Table 6.6, and the reported coefficients are those for the dummy variables representing the different reasons for not migrating. The coefficients cannot be interpreted as denoting a causal effect: they are merely associations which indicate which subjective reasons for not migrating are associated with a high probability of migrating, as predicted by the objective variables reported in Table 6.6. The higher the positive value of a regression or partial correlation coefficient, the more closely the reason is associated with a high probability of migration. This suggests that such a reason is important in explaining why rural workers with a high potential to migrate fail to do so. We see that the highest regression and partial correlation coefficient is the one for workers over age 40 who reported that they are too old. Over and above the effect of actual age (which is already incorporated into the estimated migration probability), the perception of being too old appears to be important in deterring migration. It is an important issue whether such a perception will be adjusted in response to improving migration opportunities and migration policies.

It was possible to use the probit estimates of Table 6.6 to predict the probability of migrating for each worker -- whether in fact a migrant or a non-migrant -- in both 2002 and

2007, and from that to calculate the frequency distributions of workers by predicted probability. These can be expressed in millions of workers by using estimates of the number of migrants and non-migrants in the two years. Calculated on this basis, Table 6.8 and Figure 6.1 show that in both years there were more migrants than non-migrants among those rural workers with a predicted probability of migrant status exceeding 0.5. The disparity was small in 2002 but it increased in 2007. There were many migrants (33 million in 2007) with a probability of between 0.3 and 0.5, indicating that migration was quite possible in that range of probabilities; there were even more non-migrants (45 million). Indeed, there were over 80 million non-migrants with a migration probability of 0.3 or higher. This figure is actually slightly higher than the 77 million in the same category in 2002.

Table 6.8 about here

Figure 6.1 about here

Another method of assessing the potential pool of migrants is to find the "expected value" of migration by non-migrants, i.e., to multiply the number of non-migrants in each migration probability range by that probability (taken to be the mid-point of the range). These estimates are also shown in Table 6.8. The total expected value of migration is 74 million in 2002 and 71 million in 2007.

Because age is such an important determinant of migration, it is interesting to distinguish "young" and "old" non-migrants (the dividing line again being set at age 35). In both years 67 million young non-migrants had a probability of migrating higher than 0.3 (most old non-migrants had probabilities lower than 0.3), and the expected value of migration by young non-migrants fell over time from 44 million to 41 million.

Our results are based on binary probit equations distinguishing migrants and non-migrants. As a robustness test, we also estimated multinomial logit equations for the two years. The base category was farming and the alternatives were local non-farming and migration. The determinants of local non-farm employment and migration employment are similar, but education is more important and age is less important for local non-farm activities. Local non-farm employment is better rewarded than farming (Knight and Song 2005, ch. 8), and it might be more attractive than migration for those with access to full-time local employment. The question that we seek to answer concerns the choice between migrating or not migrating rather than between migrating or farming, but the number of rural workers available to migrate in the future is likely to depend inversely on how rapidly rural non-farm employment grows.

A different approach to examine the extent of the rural labor surplus is to measure the number of days that are actually worked in relation to the number of days available for work. Although the 2007 CHIP rural survey does not contain this information, its 2008 continuation panel does record the number of days worked. Rural workers were asked to state their main economic activity. For those who said they were farmers, the average number of days worked was 183 (of which only 25 days were not in farming), with 49 percent of the farmers working fewer than 200 days. The corresponding figures for all rural workers (including those who classified themselves as local non-farm workers and migrant workers) were 226 days and 32 percent respectively. Clearly, rural people who obtain non-farm jobs are more fully employed than farmers. Assume that 300 days in the year are available for work. On that basis, the amount of surplus labor is 39 percent in the case of farmers -- the group from which most potential migrants are likely to be drawn -- and 25 percent in the case of rural workers as a whole.

Our various measures illuminate different aspects the potential to migrate. However, whichever measure is considered, it appears that a substantial supply of migrants is still available in rural China. Moreover, the potential pool of migrants barely declined over the five years. In any case, there are two reasons why the probabilities of migration are likely to rise as the urban economy grows. Rural workers will have better opportunities to migrate for employment, and older workers in particular will have a stronger incentive to move with their families as central and local governments respond to the economic need for a more settled urban labor force.

VI. Conclusions

We have produced evidence of simultaneous surplus labor in rural areas and rising rural migrant wages in urban areas. The two phenomena appear to be inconsistent with the hypothesis of the Lewis model, and yet they are both observed in China. Our interpretation of the puzzle is that there is segmentation in the labor market -- the result of constraints on rural-urban labor migration (Knight and Song 1999, chs. 8-9; 2005, chs. 5-7). The institutional constraints create difficulties for migrants living in urban areas in terms of good and secure jobs, housing, and access to public services and these difficulties deter or prevent migrant workers from bringing their families with them to the cities. This in turn makes many rural workers reluctant to leave their villages, at least for long periods. Although there is evidence that the Chinese market for migrant labor is becoming more integrated, it is possible that the two phenomena will continue to co-exist for several years: there will not necessarily be a neat Lewis turning point in a country as large and as regulated as China. In their revision of the Lewis model, Ranis and Fei (1961) formally incorporate a turning stage that reflects a gradually rising marginal product of rural labor. We envisage an even longer turning stage -- the result not only of rural sector

heterogeneity but also of China's labor-market institutions. Nevertheless, with evidence of sharp increases in migrant real wages since 2007 and projections of continuing rapid growth of urban employment over the next decade, on the one hand, and stagnation and then decline in the labor force, on the other, the turning stage cannot be far off and might even have already begun (Knight, Deng, and Li 2011).

We adduced evidence that migrant wages indeed rose in real terms over the 2002-2007 period, and that migrant wages are sensitive to urban labor-market conditions and to rural supply prices. Much of the increase can be explained by rising rural household incomes, although it is not possible to distinguish the increases that were exogenous (such as the abolition of the agricultural taxes and fees for basic education) and the increases that were endogenous to the migration process. We had expected that the increased migrant wage was partly due to the improving human capital of migrant workers -- both their educational attainment and their urban work experience -- but this effect turned out to be surprisingly small over the five years.

Our analysis of the 2002 and 2007 CHIP rural surveys shows that there is a large pool of non-migrants with fairly high probabilities of migrating. Much depends on how far the three main perceived reasons for not migrating -- being too old, needing to care for dependents, and failing to find migrant work -- will fade as work opportunities for migrants improve and labor-market policies adjust endogenously.

Future trends in the labor market are likely to encourage both the urban settlement of migrants and the weakening of the *hukou* system. As more of the skilled jobs become vacant and migrants accordingly move up the job ladder, there will be an economic imperative for their permanent settlement. Skills and the associated training costs necessitate long-term employment. The Chinese system of “floating” temporary migration increasingly will become economically

inefficient. The solution to this problem adopted by employers in many countries has been to try to stabilize the labor force by improving the rewards for staying. If long service becomes economically more efficient, governments have an incentive to permit and encourage staying, employers have an incentive to reward staying, and migrants have an incentive to stay. Long service in turn encourages migrants to settle with their families.

Long-term residence in the city leads to the adoption of urban attitudes and also to the transfer of the migrants' social reference groups from the village to the city (Knight and Gunatilaka 2010). This process may well give rise to feelings of relative deprivation in relation to residents with urban *hukou*. As more former peasants make the transition from migrant to proletariat, the pressures on Chinese central and local governments to treat them on a par with urban-born residents is likely to grow, and *hukou* privileges will likely erode.

The general scarcity of unskilled labor is probably the most powerful market force to reduce Chinese income inequality -- inequality that has increased inexorably during the period of economic reform. It is likely to be the main market mechanism for narrowing the still widening income divide between rural and urban China. Rapidly rising returns to unskilled labor will also require a change in development strategy toward more skill-intensive and technology-intensive economic activities, and this will require long-term planning and investment in human capital. There is little evidence that these changes are yet taking place, other than the remarkable expansion of higher education enrollments that has occurred since 1998. However, given the continued rapid growth of urban employment and the rapid demographic transition that has been predicted, it is likely that these changes will occur increasingly over the coming decade.

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Table 6.1. *Labor force and employment in China, 1995-2007*

	Million			%	% p. a.
	1995	2007	95-07	95-07	95-07
Rural areas					
Labor force	490	476	- 14	-2.9	-0.03
Employment	490	476	-14	-2.9	-0.03
TVEs, PEs, and self-employed	165	200	35	21.2	1.62
Household farming	325	276	- 49	-15.1	-1.36
Employment in primary industry	355	314	-41	-11.5	-0.01
Urban areas					
Labor force	196	325	131	66.8	4.43
Employment	190	294	104	54.7	3.70
Formal sector	149	114	-35	-23.5	-2.21

Informal sector	41	180	139	339.0	13.12
Unemployment	6	31	25	416.7	15.55
Rural-urban migrants	30	132	102	340.0	13.14
Yuan per annum, average (1995 prices)					
Urban real wage	5348	19904	14556	272.2	11.16
Rural real income per capita	1578	3289	1711	108.4	6.31

Sources: NBS (2008, Tables 4-2, 4-3, 4-5, 4-8, 10-2) (and earlier versions of the same tables where necessary). For rural-urban migrants, see Sheng (2008).

Table 6.2. *The determinants of migrant log wage income and log self-employment income, 2007*

	Mean value		Coefficient	
	Wage	Self-empl. income	Wage	Self-empl. income
ln income if stayed in village	6.277	6.233	0.161***	0.197***
ln village unskilled wage	6.958	6.977	0.046**	0.173***
ln predicted city wage	7.107	7.333	0.086***	-0.006
Education (years)	9.522	8.431	0.020***	0.004
Average performance in school	0.656	0.710	-0.021	0.066
Poor performance in school	0.077	0.074	-0.038	0.070
Possession of training	0.267	0.148	0.037*	0.096*
City experience (years)	6.366	10.024	0.024***	0.022***
City experience squared	73.218	141.523	-0.001***	-0.001***
Male	0.554	0.646	0.102***	0.173***

Manufacturing sector	0.263	0.038	0.063***	0.158
Construction sector	0.072	0.022	0.165***	0.237*
Constant term			4.714***	4.677***
Adjusted R-squared			0.212	0.098
Observations			2026	980
Mean of dependent variable	7.007	7.362		
Income if stayed in village (when				
village unskilled wage is omitted)			0.165***	0.215***

Source: 2007 CHIP national household survey, rural-urban migrant subsample.

Notes: The sample is confined to migrants who rented a house or owned a house in the city. The omitted categories in the dummy variable analyses are good performance in school, no training, female, and "other" sectors. Certain explanatory variables relating to the employer, including firm size, contract type, and ownership type, were eliminated because their coefficients were found to be generally small and insignificant. The "predicted city wage" is the wage predicted for each migrant on the basis of her individual characteristics and the city wage (or self-employment income) function estimated for the sample of urban-*hukou* residents. Nominal wages and incomes are corrected for provincial variations in the cost of living, by means of the PPP-adjusted price indices calculated by Brandt and Holz (2006). Statistical significance at the 1, 5, and 10% levels are denoted by ***, **, and * respectively.

Table 6.3. *The determinants of the proportionate change in the migrant wage and self-employment income, 2002-2007*

	Wage				Self-employment income			
	1	2	3	4	5	6	7	8
Year 2007	0.643***	0.589***	0.531***	0.342***	0.819***	0.771***	0.737***	0.506***
Education (years)		0.042***	0.030***	0.021***		0.032***	0.032***	0.019***
City experience (years)		0.025***	0.023***	0.023***		0.040***	0.038***	0.038***
City experience squared		-0.001***	-0.001***	-0.001***		-0.002***	-0.002***	-0.002***
Possession of training		0.075***	0.064***	0.050***		0.066*	0.078**	0.081
Male		0.212***	0.170***	0.148***		0.168***	0.159***	0.125***
Manufacturing sector		0.120***	0.118***	0.096***		0.363***	0.325***	0.275***
Construction sector		0.086***	0.098***	0.099***		0.208***	0.215***	0.199***
Urban predicted wage			0.098***	0.085***			0.036***	0.041***

Wage if stayed in village			0.158***					0.186***
Constant	6.362***	5.733***	5.254***	4.648***	6.539***	6.093***	5.855***	5.026***
Observations	3254	3254	3254	3254	2478	2478	2478	2478
Adjusted R-squared	0.302	0.409	0.418	0.459	0.290	0.343	0.344	0.385

Source: 2002 and 2007 CHIP national household surveys, rural-urban migrant subsamples.

Notes: Columns 1 and 5 contain only the dummy variable year 2007 (with year 2002 the omitted category). Columns 2, 3, and 4 add progressively to column 1, as do columns 6, 7, and 8 to column 5. The same explanatory variables as those in Table 6.3 are included, except for performance in school and the unskilled wage in the village, which were not available for 2002. The omitted categories in the dummy variable analysis are female, no training, and "other" services. Significance at the 1, 5, and 10% levels is denoted by ***, **, and * respectively.

Table 6.4. *Decomposition of the increase in the average real migrant wage, 2002-2007: Selective summary*

Contribution of change in the mean characteristics to the gross mean wage increase: Percentage

	Wage		Self-employment income	
	2002 weights	2007 weights	2002 weights	2007 weights
Education	3.3	4.1	1.3	1.9
Length of city experience	-0.4	-0.4	-0.5	-0.9
Predicted log city wage	31.6	42.0	8.0	30.3
Log income if stayed in village	35.4	32.2	36.2	26.4
Other	0.4	4.8	-0.3	2.9
Total	70.3	82.7	44.7	60.6

Source: 2002 and 2007 CHIP surveys.

Notes: The estimates are based on a standard Oaxaca-Blinder decomposition, using the coefficients for 2002 and 2007 as weights. The contribution of education as a whole is based on the change in composition among four levels: primary, middle school, high school, and college education. The contribution of length of city experience is based on the change in composition among five experience groups: 0-5, 6-10, 11-15, 16-20, and 21+ years. The omitted categories in the dummy variable analyses are the same as those in Tables 6.3 and 6.4, plus primary education and 0-5 years of city experience. The income if stayed in the village and the predicted city wage are as used in Tables 6.3 and 6.4.

Table 6.5. *Dispersion of migrant average city wage across cities, 2002 and 2007*

	Common cities		Cities in common provinces		All cities	
	2002	2007	2002	2007	2002	2007
Gini coefficient	0.167	0.067	0.203	0.103	0.260	0.261
Standard deviation of log wage	0.323	0.129	0.441	0.194	0.508	0.194
Standard deviation of wage	75	134	85	165	132	170

Source: 2002 and 2007 CHIP, migrant samples.

Table 6.6. *Probit equations predicting the probability of migrant status, 2002 and 2007*

	2002		2007	
	Coefficient	Marginal	Coefficient	Marginal
Male	0.552***	0.145	0.456***	0.119
Married without children	-0.457***	-0.101	-0.337***	-0.079
with children ages 0-6	-0.513***	-0.113	-0.401***	-0.094
with children ages 7-12	-0.540	-0.122	-0.365***	-0.086
with children ages 13+	-0.526***	-0.136	-0.413***	-0.108
A parent older than 70	0.049	0.013	-0.130***	-0.034
Age group 21-5	0.172***	0.049	0.111**	0.031
26-30	0.041	0.011	-0.021	-0.006
31-35	-0.116	-0.030	-0.437***	-0.099
36-40	-0.301***	-0.073	-0.737***	-0.152

41-45	-0.530***	-0.116	-1.051***	-0.198
46-50	-0.719***	-0.150	-1.443***	-0.214
51+	-1.022***	-0.196	-1.853***	-0.298
Schooling: middle school	0.217***	0.058	0.081**	0.022
high school	0.168***	0.047	0.014	0.004
college	0.041	0.011	-0.097	-0.025
Health: good	0.181***	0.046	0.072*	0.019
poor	-0.089	-0.023	-0.271**	-0.064
Arable land per household member	-0.043**	-0.012	-0.046***	0.012
Propn migrants in village	2.021***	0.541	1.493***	0.401
Pseudo-R-squared	0.195		0.289	
Number of observations	9321		16094	

Source: 2002 and 2007 CHIP, rural samples.

Notes: The omitted categories in the dummy variable analysis are female, not married, no parent older than 70, 16-20 age group, primary schooling or none, normal health. The symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively. Province dummy variables are included in the specifications but are not reported.

Table 6.7. *Reasons given by non-migrant workers for not migrating: Distribution of the replies and the relationship of the replies to the probability of migrant status*

	Reason given (%)	Regression explaining the probability of migrating	
		Regression coefficient	Partial correlation coefficient
Too old, under 40	17.3	-0.118***	-0.107***
Too old, 40 or over	7.3	0.195***	0.161***
Sick or disabled	3.2	0.000	
Cannot find a job outside	22.6	0.021*	0.019*
Care of the elderly or children	26.0	0.021*	0.019*
Has a local business	10.4	0.006	0.004
Other	13.3	-0.006	-0.020

Source: 2007 CHIP, rural sample.

Table 6.8. *Frequency distribution of the number of migrants and non-migrants by predicted probability of migrating, and "expected value" of migration by non-migrants, 2002 and 2007 (million)*

Predicted probability range	Migrants 2002	Non-migrants 2002	Migrants 2007	Non-migrants 2007	"Expected value" of migration by non-migrants 2002	2007
0-0.1	7.8	153.3	8.7	185.9	7.7	9.3
0.1-0.2	14.6	104.6	11.3	72.0	15.7	10.8
0.2-0.3	19.4	57.8	13.8	41.5	14.5	10.4
0.3-0.4	20.4	30.9	14.0	26.4	10.8	9.2
0.4-0.5	18.1	19.5	17.4	19.1	8.8	8.6
0.5-0.6	15.8	14.2	19.6	14.2	7.8	7.8
0.6-0.7	12.1	8.6	23.2	11.0	5.6	7.2
0.7-0.8	7.5	3.6	21.4	7.8	2.7	5.9
0.8-1.0	1.3	0.6	11.3	2.2	0.5	2.0
Total	117.0	393.1	140.7	380.1	74.1	71.2

Total with		
p>0.3	77.4	80.7

Source: 2002, 2007 CHIP, rural samples.

Note: The methods of estimation are explained in the text.

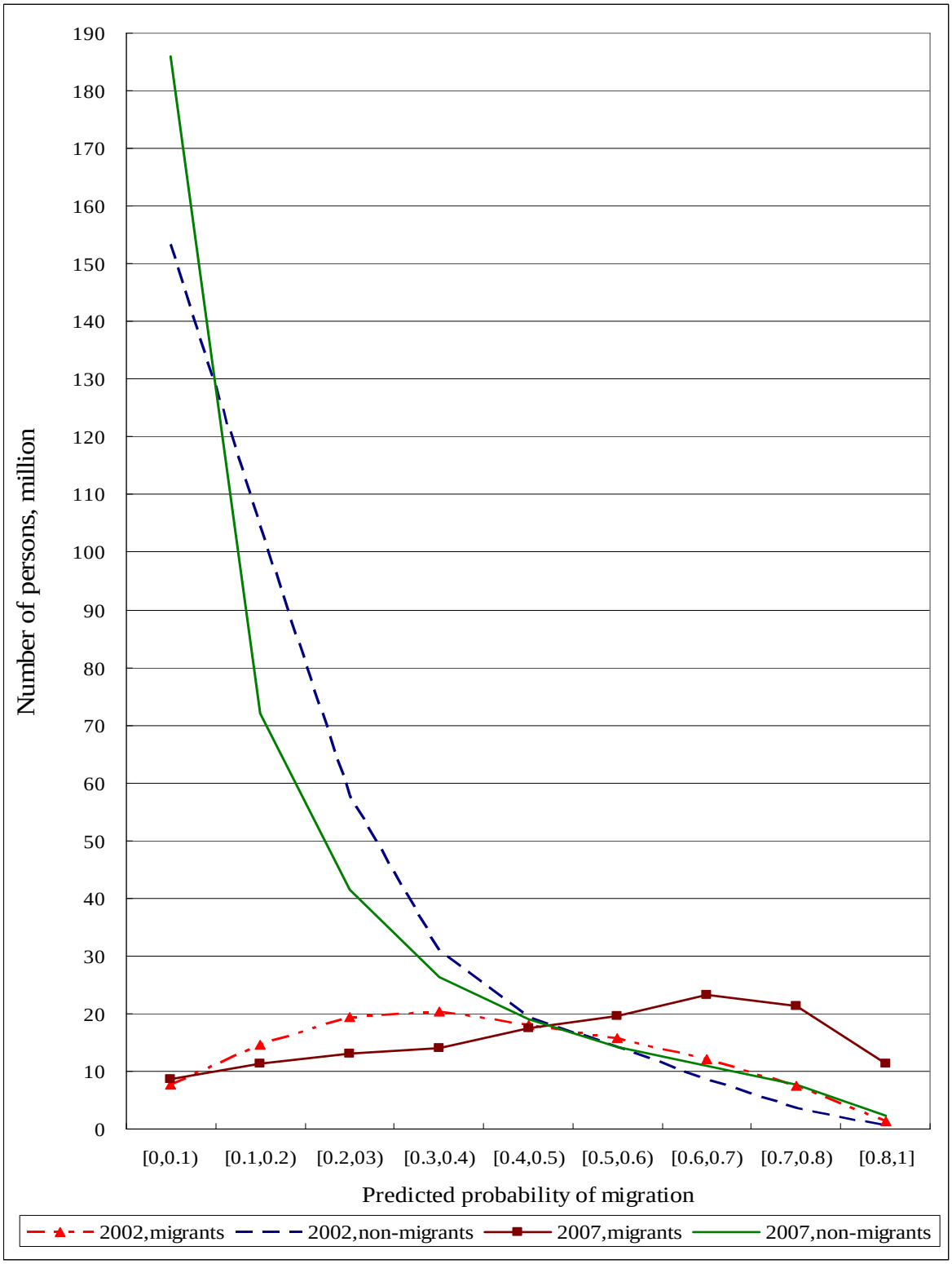
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Number of persons, million
[0,0.1)
[0.1,0.2)
[0.2,03)
[0.3,0.4)
[0.4,0.5)
[0.5,0.6)
[0.6,0.7)
[0.7,0.8)
[0.8,1]
Predicted probability of migration
2002,migrants
2002,non-migrants
2007,migrants
2007,non-migrants

Figure 6.1 The Distribution of the Number of Migrants and Non-migrants by the Probability of Migrating (million)

[*] This research was conducted while John Knight was visiting Beijing Normal University. We are grateful to Simon Cox, Fung Kwan, Gus Ranis, and Adrian Wood for helpful comments. We draw on our longer paper (Knight et al. 2010) which extends beyond an analysis of the CHIP national household surveys.

[1] More discussion on the rural-urban migrant samples in 2002 and 2007 is provided in Chapter 1 and in Appendix I and Appendix II. Note that our approach to delineating the migrant sample differs from that mentioned in Chapter 1 and the appendices, which is based on the concept of "long-term, stable migrants" and is designed to address potential double-counting of migrants when the rural and migrant CHIP samples are combined. A different approach is warranted in this chapter, as our analyses do not combine the rural and migrant samples.