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AND RURAL LABOUR SURPLUS IN CHINA**

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## **The Puzzle of Migrant Labour Shortage and Rural Labour Surplus in China**

### **Abstract**

The paper examines the contentious issue of the extent of surplus labour that remains in China. China was an extreme example of a surplus labour economy, but the rapid economic growth during the period of economic reform requires a reassessment of whether the second stage of the Lewis model has been reached or is imminent. The literature is inconclusive. On the one hand, there are reports of migrant labour scarcity and rising migrant wages; on the other hand, estimates suggest that a considerable pool of relatively unskilled labour is still available in the rural sector. Yet the answer has far-reaching developmental and distributional implications. After reviewing the literature, the paper uses the 2002 and 2007 national household surveys of the Chinese Academy of Social Sciences to analyse and explain migrant wage behaviour, to predict the determinants of migration, and to examine the size and nature of the pool of potential rural-urban migrants. An attempt is also made to project the rural and urban labour force and migration forward to 2020, on the basis of the 2005 one per cent Population Survey. The paper concludes that for institutional reasons both phenomena are likely to coexist at present and for some time in the future.

*Key words:* China; demographic transition; labour market; Lewis turning point; migrant wages; migrant workers; surplus labour

*JEL classification:* J11; J31; J61; O11; O17

## 1. Introduction

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, labour-surplus, classical stage of the development process and enters the second, labour-scarce, neo-classical stage that real incomes begin to rise generally. Up to that point the benefits of economic growth can accrue in the form of the absorption of surplus labour and not in the form of generally rising real incomes. Beyond that point the scarcity of labour can be a powerful force for the reduction of inequality in labour income. The process by which an economy moves from the classical to the neo-classical stage is well illustrated by the experience of Japan (in the 1950s or 1960s) and Korea (in the 1960s or 1970s). When economic reform commenced there is no doubt that China was an extreme example of a labour surplus economy. There was surplus labour 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). During the reform period China has achieved rapid economic growth, averaging more than 9% per annum over the three decades 1978-2008. Nevertheless, over the same period the labour force has grown by 380 million, or by 90%, equivalent to 2.3% per annum. Has the surplus labour by now been absorbed productively into the economy?

Reports or data of 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 (for instance, Cai et al., 2007; Park et al., 2007; Wang, 2008). However, others have argued either that migrant wages have barely increased (Du and Pan, 2009; Meng and Bai, 2007) or that there is still evidence of widespread surplus labour in rural China (for instance, Kwan, 2009; Minami and Ma, 2009). The issue has become a lively and contentious topic in the Chinese media. For instance, a counsellor to the State Council was reported to argue that China has a sufficient labour pool for the next 40 years (*China Daily*, March 27, 2010). The inconclusive nature of the debate reflects in part the lack of the data required to test these alternative hypotheses. Nevertheless, it is possible that there is truth in both arguments. Can the apparently

contradictory pieces of evidence be reconciled? In this paper we present evidence that offers a solution to the puzzle.

In section 2 we briefly describe the Lewis model. Section 3 provides some background information on trends in the Chinese labour market. In section 4 we review the literature on our research question. Section 5 describes the national household surveys, relating to 2002 and 2007, on which we draw. Section 6 reports existing studies of minimum wage behaviour or migrant wage behaviour, and then makes its own contribution by analysing wage functions for the rural-urban migrant samples in order to examine and explain migrant wage behaviour in urban China. An attempt is made in section 7 to measure the remaining pool of potential migrant labour in rural China by means of the rural samples and probit analyses of migration functions. Section 8 provides illustrative future projections of labour demand and supply. Section 9 addresses the puzzle posed above, and concludes.

## **2. The Lewis model**

The Lewis model is too well known to require formal elaboration here. Recall that the turning point comes from two possible mechanisms. One concerns the marginal physical product of labour in the rural (or agricultural, or informal) sector. As labour leaves this sector, so the ratio of land and natural resources to labour eventually improves sufficiently for the marginal product of labour to rise. The second mechanism is the possible improvement in the terms of trade between agriculture and industry as the demand for marketed food rises or the supply falls, or both, causing the value of the marginal product of labour to rise.

The supply price of rural labour is related to the marginal product or the average product of labour, depending on migrant objectives. Lewis assumed that the average product would be relevant until the marginal product exceeded it. A rising marginal product thus directly or indirectly increases the supply price of rural labour, and this is reflected in an eventually upward-sloping supply curve to the urban sector. Accordingly, further transfer of labour to the urban sector raises the market-determined real wage in that sector.

The process described above assists broad understanding of the way in which several of the currently developed market economies, including Japan, and some recently successful

industrialising economies, such as South Korea and Taiwan, achieved generally rising living standards. However, as a description of the development process of currently poor economies, the Lewis model requires several qualifications and amendments.

First, there is unlikely to be a clear-cut distinction between the classical and the neoclassical stages, for two reasons: spatial heterogeneity and imperfect labour mobility mean that some areas experience labour scarcity before others; and the opportunity cost of migrant labour is more likely to rise gently than to jump sharply, so that the supply curve to the urban sector will curve upwards gradually.

The second qualification is that in many cases it is not possible to equate the agricultural sector with the rural sector and the informal sector, nor industry with urban and formal. Rural industry can be an important source of employment, and the urban informal sector can be an important store of surplus labour.

Third, there can be capital accumulation and technical progress in the rural sector, which raise the average and marginal product and hence the supply price of rural labour before the labour outflow itself has its effect on the supply curve. Such an increase is exogenous and not endogenous to the process of labour transfer.

Fourth, the formal sector real wage may be determined by non-market forces at a level that is above the market-clearing wage. The efficiency wage, labour turnover, and profit-sharing theories of wages, as well as institutional or bargained wage determination, are all contenders. This wage may either be set independently of the market-clearing wage or bear some positive relationship to it.

Fifth, the development of the urban, or industrial, or formal, sector can itself lead to the creation of pressure groups and swing the balance of power towards those in that sector to the detriment of those remaining outside it. The urban bias in economic policies can harm the rural sector and thus delay its benefiting from the fruits of economic growth.

Sixth, insofar as there is reliance on the rural-urban terms of trade as the mechanism for raising rural incomes, in some countries prices may be determined more by government intervention, or

by world prices and the exchange rate, than by relative supplies and demands for rural and urban goods.

Finally, the growth of the urban, or industrial, or formal demand for labour may be inadequate in relation to the growth of the labour force. If the difference between the labour force and formal sector employment increases, the economy moves away from the turning point instead of towards it.

### **3. Trends in the Chinese labour market**

China reached the limits of its land availability decades ago. The total land area sown in 1995 was no more than 6% higher than it had been in 1952. Over the same period the rural labour force increased by 150%, to its peak in 1995. Surplus labour was present in the communes but was camouflaged by the work point system. There were numerous attempts to measure the extent of surplus labour in rural China. They produced a range of estimates but the majority suggested that surplus labour represented 30% of the rural labour force in the 1980s (Taylor, 1988; Knight and Song, 1999: ch. 2).

Reflecting the pro-population policies of the Maoist period, the rural labour force grew rapidly a generation later, in the 1980s. It was only in the late-1990s that the effects of the one-child family policy, introduced in the late 1970s, began to have its effects on the labour market. Table 1 shows various measures of labour force and employment over the period 1995-2007. The rural labour force began to decline gently in the mid-1990s. As rural non-farm employment grew (by 1.6% per annum), farm employment fell markedly (by 1.4% per annum). Urban employment increased rapidly (by 3.7% per annum). The formal sector employment (including state-owned enterprises (SOEs) and urban collective enterprises (UCEs)) actually declined (by 2.2% per annum) whereas the most dynamic sector was urban informal employment (rising by 10.7% per annum).

The natural increase in the urban-born labour force was far too slow to be able to meet the growing demand for labour of urban employers, and the increasing shortfall was met by rural-urban migration. According to Sheng (2008), using data are taken from a National Bureau Statistics (NBS) website, the number of rural-urban migrants rose from 30 million in 1995 to 132

million in 2006. Migrants accounted for 7% of the rural labour force in the former year but had risen to no less than 26% in the latter. It is difficult to measure the number of migrants accurately on an annual basis but these orders of magnitude are not in dispute: migrant labour was the most dynamic component of labour force activity during this decade, growing by perhaps 14% per annum.

The table also shows that average urban real wages rose by 11.2% per annum over the period 1995-2007. However, official 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 is governed more by market forces (Knight and Li, 200 ; Knight and Song, 2005: ch. 7). Thus it cannot be inferred from this officially reported wage increase that there has been a shortage of migrant labour: information on migrant wages is required.

#### **4. Literature survey**

An inconclusive literature on the Lewis turning point in China is emerging. For instance, Cai et al. (2007), Park et al.(2007), and Wang (2008) argue that the turning point has been reached in China. The argument is partly based on evidence of recently rising migrant wages. However, different surveys produce different results, and the evidence requires interpretation. By contrast, Meng and Bai (2007) provide contrary evidence on migrant wages from a small case study of migrants employed in a growth point, Guangdong. However, their sample is too small and selective for generalisation.

Another approach is to examine the supply of and demand for farm labour. Cai and Wang (2008) used an official estimate of 'labour requirements' to argue that the pool of surplus labour in the countryside is now small. They subtracted the number of rural workers (230 million) defined to be engaged in non-farm activities (rural industry and migration) from the total rural labour force (485 million) and obtained the supply of farm workers (255 million). They calculated the labour demand in farming on the basis of the number of man-days each crop requires per mu x the



number of mu, and a similar calculation for animal husbandry.<sup>1</sup> Then, assuming that farm-workers work for 230 man-days a year, they calculated that farming required 180 million workers, leaving 75 million (32% of farm-workers) surplus. The assumption of 320 man-days a year being worked would reduce the labour demand to 130 million and raise the surplus to 125 million (49% of farm-workers); the assumption of 180 man-days would raise labour demand to 230 million and reduce the surplus to 25 million (10%). The underlying difficulty with the assumption-sensitive results based on these calculations lies in defining farm- and non-farm-workers when diversification of activities is common and there is the possibility of substitution between farm and non-farm work within the household. Many workers defined as non-farm are likely to do some farm work, but many farm-workers are likely to put in few farm hours a year not because they are fully employed but because the marginal product of labour on their farms does not warrant more. Fewer man-days worked in farming might indicate more surplus labour and not (as the calculations suggest) more farm-workers needed and thus less surplus labour. The labour requirements approach is not persuasive.

Kwan (2009), Islam and Yokota (2008) and Minami and Ma (2008) examine China's agricultural sector using a production function approach and conclude that, at the national level, surplus labour in agriculture has fallen but remains high. For instance, Kwan (2009) uses province-level panel data to estimate stochastic cost frontiers in Chinese agriculture and thus to calculate required labour in relation to observed labour. He finds that the labour surplus fell over the reform period as a whole but actually rose in the 2000s, on account of entry to the WTO, and was still substantial. Both Cai (2008) and Park et al. (2008) examine the 'demographic transition' and conclude that China's labour force will begin to decline in about 2020. They see the projected deceleration of labour force growth as a sign that the turning point has arrived or is imminent.

A paper which comes close to one of our approaches is that by Chen and Hanori (2009). The authors estimate multinomial logit equations to predict the sectoral choice of rural workers (agricultural, local non-agricultural and migrant) and wage functions for migrants, using the China Health and Nutrition Survey for 2000. They find that the migration propensity is raised by

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<sup>1</sup> Taken from *China Rural Household Statistics Yearbook*, itself taken from the national product cost survey', covering over 60,000 households.

education, being male, being under 30 years of age, not having young children, if other family members have high income, and having less arable land per worker; and that the hourly wage of migrants is raised by education only if employed in a (rare) skilled job, being aged under 30, and if other family members have high income. Region of origin is relevant to both equations. The authors conclude that demand side policy can be effective: shortages of migrant labour could and should be eased by raising levels of rural education. They recognise, however, that supply side policy is also needed, particularly in reducing artificial barriers to migration such as *hukou* restrictions.

Thus, it appears that differing methodologies provide different pointers, and that there is diverse data and evidence, resulting in conflicting conclusions. Can an explanation be provided for the puzzle that emerges from these inconsistencies?

## **5. The data**

The main source of data used in this paper comes from two waves of household surveys conducted by China Household Income Project (CHIP) for the years of 2002 and 2007. The surveys cover three types of households: urban local households, rural households and rural-urban migrant households. The survey for each type of household was conducted separately. The sample of urban local households and rural households is a part of the large sample of National Bureau of Statistics (NBS).

The 2002 survey for rural households covers 22 provinces with a condition that they should be representative of various regions of rural China. It was expected that Beijing represents the three large metropolitan cities (the other two being Shanghai and Tianjin); Hebei, Liaoning, Jiangsu, Zhejiang, Shandong and Guangdong the coastal region; Shanxi, Jilin, Anhui, Jiangxi, Henan, Hubei, and Hunan the interior region; and Sichuan, Guizhou, Yunnan, Guangxi, Shaanxi, Xinjiang and Gansu the western region. The number of sampled households was distributed among the 22 provinces roughly in proportion to their populations. The provincial statistical bureaus were given autonomy on the number of sampled counties, but there had to be at least 50 households in each selected county and counties and villages within them had to be stratified by income level. In all, 9200 households and 37969 individuals were surveyed in 120 counties. The

2002 survey of registered urban households was conducted in 12 of the 22 provinces listed above: Beijing, Shanxi, Liaoning, Jiangsu, Guangdong, Shanxi, Anhui, Henan, Hubei, Sichuan, Yunnan and Gansu. In all, 6835 households and 20632 individuals were surveyed in 70 cities. The questionnaires were designed by the members of the project research team. Income questions were posed with the objective of measuring household disposable income. Households were required to answer questions regarding wage income and other income of each working member, and also income from family business. Questions on working time inside and outside their township were asked of rural households.

The 2002 rural-urban migrant survey sampled a total of 2,000 households: 200 households in each of the coastal and central region provinces and 150 households in each of the western region provinces. A person is defined as a migrant if he or she holds a rural *hukou* (residence registration) and has been living in the urban area for more than 6 months. Within each province, 100 households were sampled in the capital city and 50 households in each selected middle-sized city. Within each city, rural-urban migrant households were sampled from residential communities; thus migrant workers living in construction sites and factories were excluded. The questionnaires include questions regarding wage, business income, consumption, job characteristics of individual members and households.

Each of the 2007 surveys of rural, urban and rural-urban migrant households was conducted in the same 9 provinces: Shanghai, Jiangsu, Zhejiang, Anhui, Henan, Hubei, Guangdong, Chongqing, and Sichuan. For the surveys of urban local households and rural-urban migrant households, a total of 15 cities were selected. For the rural household survey 80 counties and 800 villages were included. The samples contained 8000 rural households, 5000 urban local households and 5000 urban-rural migrant households. As in the 2002 surveys, the 2007 surveys for rural households and urban local households took sub-samples 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, the 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 as possible of the questions contained in those of 2002. In addition, some new questions on migration status and behaviour were added

for the purpose of analyzing migration. The two rural-urban migrant surveys involved different sampling methods. In 2007 a migrant household was selected when one of its working members was drawn from his or her work place, 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, the difference might also produce some upward bias in the migrant wage of 2002 by comparison with 2007. To correct for this bias, we selected only those 2007 migrants whose living conditions corresponded to those of 2002 migrants.

## **6. Migrant wage behaviour**

### ***6.1 Other studies***

In this section we examine four sources of information on the wages of migrant workers in order to discover whether their wages have risen in recent years and, if so, whether the reason was growing scarcity of migrant labour. We start by reporting the results of Du and Pan (2009) who examined both the behaviour of migrant wages between two recent years and also the development of minimum wage regulation in China and its implications for migrant workers. Their sources were the minimum wages laid down - mainly in large and medium-sized cities - and information on migrant and urban workers provided by the China Urban Labour Surveys (CULS), available in 2001 and 2005. These were surveys of five big cities: Shanghai, Fuzhou, Wuhan, Shenyang and Xian. Minimum wage data could be traced back to 1995 but implementation was broadened and deepened by the promulgation of minimum wage regulations by the Ministry of Labour and Social Security (MOLSS) in 2004. Could rising migrant wages be due to upward adjustments in these minimum wages?

Between 2001 and 2005 the average monthly minimum wage of the covered cities rose by 45% in nominal terms and by 38% in real terms. (deflating by the urban consumer price index, which rose by only 4.8%). This corresponds to 9.7% and 8.4% per annum respectively. Over the same period the average monthly wages of migrants in the CULS surveys rose by 11% (nominal) and by 6% (real) (2.6% and 1.4% per annum respectively); the corresponding figures for urban

residents were 19% and 13% (4.4% and 3.2% per annum) respectively. Thus, the wages of migrants fell relative to the minimum wage and also relative to the wages of urban residents.

Because migrant workers are less well-educated than local workers, it is appropriate to standardise for education in making wage comparisons between them. The predominant educational level of migrants is junior secondary school (accounting for 57% of migrant workers in 2005). Confining the comparison to this educational category, the average wage of migrants fell in real terms by 4% (-1.1% per annum) and that of locals rose by 7% (1.6% per annum). Thus, the majority of migrants did not experience any increase in real wages over this four-year period.

It was possible to calculate the proportion of workers in the CULS surveys who were paid below the average minimum wage. Minimum wages are set on a monthly basis (for full-time workers) and on an hourly basis (for part-time workers). Migrants work very long hours (averaging 61 hours a week in 2005). Accordingly, it is the hourly rate that ought to be enforced. However, because employers normally apply the monthly minimum wage, this is more appropriate for the purpose of gauging the effect of minimum wage regulation on migrant wages. The proportion of migrants paid below the average minimum wage rose from 11% in 2001 to 16% in 2005. The corresponding figures for migrants with junior secondary education were 12% and 19% respectively.

Du and Pan (2009) also showed the percentage change in the average nominal wage of migrants between 2001 and 2005 by age and by education. There are strong patterns: the percentage change declines monotonically with age, and it is positive only below age 30. Two explanations are possible. One is that it represents employers' responses to the need to attract new migrants in the face of growing scarcity. The other concerns minimum wages. There is also a near-monotonic rise with age in the average wage of migrants in 2001. Moreover, the same pattern of wage increases is not observable for local workers, who were generally better paid and thus less likely to be affected by minimum wage adjustments. Thus, the large increases for young migrants might reflect the implementation of minimum wage levels or changes. We cannot rule out the possibility that the age-selective increase in migrant real wages is the result of minimum wage adjustments rather than market forces.

There is also a clear pattern in the size of wage increases by education level, and this is true of both migrant and local workers: the average proportionate wage increase rises monotonically with schooling. Indeed, in the case of migrants there was a nominal wage increase only for those with more than junior secondary education. The similarity of the increases for migrants and for locals suggests a degree of labour market competition for workers with high school and college education, accounting for 18% of all migrants. However, the fact that 82% of migrants received no increase even in nominal wages does not provide support for the argument that the wages of relatively unskilled migrants were rising in that period, at least in these five cities.

Zhao and Wu (2007) provided information on migrant average wages per month over the years 2003-6, obtained from the rural household survey (of 24,000 households in 314 villages in 31 provinces) conducted annually by the Ministry of Agriculture. The average nominal wage of all migrants increased by 6.9% per annum between 2003 and 2006, and their real wage increased by 3.9% per annum. However, the annual real increase was negative in 2004 and rose to 9.8% in 2006. Possibly labour scarcity began to be felt generally only in 2006. There was a difference over the three years in the real wage increases of men and women (4.1 and 1.1% respectively), suggesting that there is segmentation in the jobs that they perform. Workers reporting having received training had higher wage increases (5.8% per annum) than those without (3.4% per annum): the migrant labour market appeared tighter for those with skills. It is interesting that the central region experienced the highest real wage increase over the period (7.4% per annum) and the eastern region the lowest (2.4% per annum). The average migrant wage was distinctly higher in the eastern region than in the central region (by 58% in 2003). It is possible, therefore, that as opportunities on the coast grew, so migrants turned away from the central provinces and moved to the coastal provinces, so spreading scarcity to the interior.

It is relevant to compare migrant wages with rural household income per capita over the same period (NBS, 2008). This actually grew more rapidly than the average migrant wage (8.0% per annum versus 3.9% per annum). Even in 2006, there was little difference between them (8.5% versus 9.8% per annum respectively). Thus, the ratio of the migrant wage to household income per capita fell over the period from 2003 to 2006. Of course, it is a prediction of the Lewis model that migration will eventually drive up both migrant wages and rural incomes. It is therefore

relevant to decompose the increase in rural incomes to try to determine whether the increases were exogenous or endogenous. Some of the components of an increase in rural real income per capita are likely to be exogenous: one is the reduction in taxes and fees and another is the decline in the number of registered household members. Other components (such as farm productivity and producer price changes) could be either exogenous or endogenous to the migration process, and migrant remittance income is clearly endogenous. Unfortunately, official statistics do not permit such a decomposition.

It is arguable that the migrant labour market is changing rapidly, and that the results so far presented have been overtaken. Up-to-date evidence comes from the regular household surveys of the Ministry of Agriculture (Zhao and Wu, 2008; Ministry of Agriculture, 2010). Table 2 provides annual data for the years 2003-9. We see that the migrant real wage increased by 10% in 2006, grew slowly during the years 2007 and 2008, but rose by no less than 17% in 2009. The evidence is consistent with there being a very recent acceleration of migrant wage growth but this change is as yet not well established. Over the six years 2003-9, the ratio of the migrant wage to the NBS reported average wage in urban units actually fell, from 76% to 65%.

## **6.2 The CHIP surveys, 2002 and 2007**

The CHIP household surveys are a potentially 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 to examine the role that market forces play in migrant wage determination. Second, we combine the two surveys to examine the behaviour of migrant real wages over the crucial five years from 2002 to 2007. The purpose is to understand not only whether real wages have risen but also, if that is the case, why they have done so. Both the migrant and permanent urban resident questionnaires of the 2007 survey contain questions on monthly wage income and also on net income from self-employment. We achieve income comparability across cities by means of the PPP-adjusted deflator as calculated at 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 receive if rewarded according to the relevant city income function. This variable might be interpreted as a proxy for that city's labour demand. With a perfectly elastic supply curve of migrant labour to any particular city and a segmented labour market within the city, the wages paid to permanent residents of the city need have no effect on the market wage of migrants. However, if migrant wages are responsive to city wages, this could reflect competition for jobs between migrants and city residents (i.e. incomplete segmentation) or institutional wage determination that extends also to at least some migrants. There is information on the unskilled day wage in the migrant's village and the income which the migrant reported that they would have received had they remained in the village. These variables serve as proxies for the migrant's supply price.

The proxies for migrant labour demand and supply can be helpful in interpreting migrant wage behaviour. Consider a simple demand and supply 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 to rise and marginal employees to 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 labour supply curve is not perfectly elastic, we expect the proxy for city labour 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 supply response is lagged, and indeed there may be negative marginal rents. 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 labour demand does not influence the equilibrium wage.

The relative importance of the proxies for demand and supply thus provides a pointer to the market forces influencing the migrant wage. If our proxy for migrant labour demand has a relatively high coefficient, this 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 behaviour. However, caution is required because our cross-section data cannot deal with lags nor distinguish equilibrium and disequilibrium situations.

Table 3 presents the estimates of functions for migrant wage income and for migrant self-employment income in 2007, both variables being in log form. The variables representing the migrant's 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 was excluded from the specification (the final row of the table): the effect was to raise the coefficient a little, 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 Y100 in opportunity cost would alter migrant behaviour in such a way as to raise the migrant wage by a significant Y33. The precisely equivalent exercises for self-employment income showed the rural supply price to have larger effects (0.197 for opportunity cost and 0.173 for village unskilled wage, both significant). When the latter variable was excluded from the equation, the coefficient on opportunity cost implied that migrants with a rural supply price that was higher by Y100 would earn self-employment income in the city that was higher by Y73. The evidence suggests that migrants with higher village opportunity costs will only be found in city jobs which pay more. The implication is that a rise in the rural supply price will indeed result in higher migrant wages.

The predicted city wage of the migrant was introduced as a potential proxy for the pressure of demand for labour in the city. The coefficient for wage earners is considerably lower than their coefficient on the proxy for migrant opportunity cost (0.086 cf. 0.165). However, it might reflect other influences, either instead or in addition. The effect of variation among cities in the cost of living should in principle be eliminated by our use of the PPP-adjusted deflator but the province-level deflator has limitations, acknowledged by its compilers (Brandt and Holz, 2006: p. 83), and its inaccuracy for a particular city within a province cannot be ruled out. The wage might be affected by institutional factors, in particular - because migrants are concentrated at the lower end of the city wage distribution - by the implementation of city minimum wage regulations. It is

relevant, therefore, that the coefficient is positive and significant (0.086) for wage-earners but not for the self-employed (-0.006).

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% per annum) in wage employment, and the wage is insensitive to reported performance in school. These results might reflect the low quality of jobs that migrants generally occupy. 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 4 combines the 2007 migrant survey with the 2002 migrant survey in order to examine the change in the logarithm of the wage over time. Sample selection procedures were different in the two surveys: the 2002 sample was drawn from residential areas and thus contains only migrants living in households, whereas that of 2007 was obtained by tracking all rural-urban migrants working in randomly selected areas. Because some of these were living in dormitories or work places 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 (2006) PPP-adjusted deflator is used to correct both for differences in city price levels and for their rates of change.

The specifications differ from that of Table 3. The key variable is the year dummy, with 2007 taking a value equal to 1 and 2002 a value equal to 0. Columns 1 and 5, both including only this dummy and an intercept term, shows the raw increase in migrant real income: implying growth of 13.7% and 17.8% 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 notable that the proportionate increases in wage- and in self-employment income fall only a little, to 12.5% and 16.7% per annum respectively, when personal characteristics are held constant. This represents the income change of migrants whose characteristics make them likely to be among the least skilled. In case the urban predicted wage reflects institutional forces at work, we also standardise for this in columns 3 and 7: the increases come down further, to 11.2% and 15.9% respectively. Our best indicator of the rural supply price is the income that the migrant would have obtained in the village: its addition, in columns 4 and 8, reduces the increases to 7.0% and 10.6% 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. The returns to education are higher than in Table 3, implying that the returns fell between 2002 and 2007. This is confirmed by the negative coefficients on their interactions with the 2007 dummy (results not reported).

To summarise what can be learned from these wage regressions: in Table 3 our proxies for rural supply and urban demand both raised the migrant wage, but the former was the more important. The rural opportunity cost had a similar effect in the case of self-employment income, but the city wage level had no effect. The education variables were only slightly rewarded or not at all. This might reflect the menial jobs which most migrants perform. We saw in Table 4 that the proportionate increase in migrant income over the period 2002-7 was rapid, whether as wage- or self-employment income, and conditioning on the available income determinants reduced but did not eliminate the increase. The raw and conditional increases exceeded the reported increase in rural net real income per capita. The returns to education actually fell over the five years. Our proxy for the rural opportunity cost of migrants had a bigger influence on migrant income than did our proxy for urban employers' valuation of migrants.

Over time the average migrant worker could be expected to become more educated, and to have been working in the city for a longer time: both education and work experience are productive characteristics that are rewarded by the market. A more direct way of measuring the contribution of changing characteristics to migrant wage growth is by means of decomposition analysis. A standard decomposition of the change in average migrant wages between 2002 and 2007, summarised in Table 5, shows that, of the gross mean log wage increase (0.649), a minority (less

than 30%) is due to differences in the coefficients of the two wage functions and the majority can be explained by changes in mean characteristics. However, under 5% is due to the improvement in the educational composition of migrants and no contribution is made by change in their length of city experience. The main contributions come from the increase in city demand price (32 or 42%, according to the weights being used) and rural supply price (32 or 35%), both adjusted for price changes and for differences in province price levels. Labour market forces were indeed responsible for the wage increase. The pattern is very similar for self-employment income, also shown in the table.

The CHIP surveys provide some evidence suggesting that the market for migrants is becoming spatially more integrated. Table 6 reports the dispersion of the city average migrant wage for the seven cities that are common to the two surveys, the 23 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 wage fell from 0.107 and 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 cities in the two surveys and for all 23 cities in the seven common provinces, and also for 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 this 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 wage differences, and their costs, are likely to rise along with incomes. On that basis, these results suggest either that city minimum wages became more standardized and effective or, more likely, that market forces were responding to a growing spatial mobility of migrants.

Finally, we note that the average rural *hukou* wage (from the CHIP migrant surveys) in urban China was 70% of the average urban *hukou* wage (from the CHIP urban surveys) in 2002, but fell to 63% in 2007. Thus, the migrant wage rose less rapidly than did the wage of urban workers.

## **7. The pool of potential migrants**

Our main concern in this section is to gauge the size of the pool of rural labour available to migrate to urban employment. Our method is to estimate migration functions using the CHIP rural sub-samples 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 who migrated was 23.4% and in 2007 it was 27.3%. In 2002 14% of non-migrants were predicted to migrate and 46% of migrants were predicted not to do so; the corresponding figures in 2007 were 13% and 36%.

Table 7 reports the probit equations, the dependent variable being migrant status and the omitted category non-migrant status. Several of the coefficients are not only statistically significant but also economically substantial. We see from the marginals (showing the effect of a unit change in a variable on the probability of migration) that being male increases 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 age group 21-5 in both years. It falls sharply after age 25 in 2002 and after age 31 in 2007, and thereafter it declines more sharply in the later year. This is surprising: we would expect the probability of older workers to rise as migrants labour becomes scarcer.

With primary education and 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 enrolment is not significant in 2007. Although it is significant in 2002, its marginal effect on the probability of migrating (5%) is smaller than that of middle school. Consistent with the low returns to education reported in Table 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 it 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: 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 of them 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 search fall. In that case the many villages with still low proportions of migrants might be ripe to become migration villages.

What keeps the non-migrants from migrating? The 2007 survey contains a specific question asking for the reason. The distribution in replies is shown in Table 8. Three reasons were stressed: being too old, unable to find a job outside, and needing to care for old people or children. Each of these might prove to be flexible in the face of rising demand for migrant labour. Older workers and carers might well be willing to move if policy is revised to meet the changing circumstances, so 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.

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, 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. The higher the positive value of a regression or partial correlation coefficient, the more closely the reason is associated with a high migration probability. It suggests that such a reason is important in explaining why rural workers with high potential to migrate fail to do so. We see that the highest regression and partial correlation coefficient is the one for workers aged over 40 who say they are too old. Over and above the effect of actual age (which is already incorporated in the estimated migration probability), the perception of being too old appears to be important in

detering migration. It is an important question whether such a perception will adjust in response to improving migration opportunities and migration policies.

It was possible to use the probit estimates of Table 7 to predict the probability of migrating for each worker - whether in fact a migrant or a non-migrant - in 2002 and in 2007, and from that to calculate frequency distributions of workers by predicted probability. These could 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 9 and Figure 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 increased in 2007. There were many migrants (33 million in 2007) with probability between 0.3 and 0.5, indicating that migration is 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. It appears that there is a substantial pool of potential migrant workers still available in rural China.

## **8. Projections into the future**

Whatever the current state of the market for migrant labour, the situation is changing rapidly. It is instructive, therefore, to project the demand for and the urban-born supply of labour into the future. Although urban and rural workers are not close substitutes, we assume that an increase in the demand for labour in the urban economy enables urban-*hukou* workers to move up the occupational ladder in order to fill vacancies and rural-*hukou* workers to enter the less skilled jobs that are vacated. The gap between the two can therefore be taken as an indication of the demand for migrant labour, and the evolution of that gap shows how the demand for migrant labour will grow. Table 10 presents our projections, necessarily based on various strong assumptions. These results are illustrated in Figure 2, projecting the demand for migrants up to the year 2020.

We start on the demand side. Urban employment over the period 1980-2008 grew at an average rate of 3.8% per annum. We compare sub-periods by taking three-year averages in which the year mentioned is the middle year, so as to reduce the effect of cyclical fluctuations in employment.. Growth was rapid in the 1980s (4.5 % per annum), reflecting the rapid growth of

the urban-*hukou* labour force, in turn due to the population policies of the 1960s, and an increase in over-manning within enterprises as government sought to ensure full employment. However, there was a deceleration in the 1990s (3.6% per annum). Increased product market competition, from both urban and rural industry, involved falling profits and rising losses, and this resulted in slow growth. The policy response - privatisation and reform of SOES - in the latter half involved many redundancies. Between 2000 and 2007 annual employment growth averaged 3.4 %.

Peering into the future, it is plausible that China will maintain its recent trend rate of GDP growth in the first half of the next decade, although the growth rate can be expected to fall as the rate of structural change slows down and resources become more fully employed. Indeed, the rise in migrant wages that would occur beyond the Lewis turning point would also curb the demand for labour, by encouraging employers to substitute away from unskilled labour and from unskilled-labour-intensive products. We project urban employment from 2008 to 2020 on a conservative assumption: that it grows by 3% per annum. This projection is shown as the curve  $U_d$  in Figure 2.

The projection of the urban-*hukou* labour force is complicated by the need to separate urban-*hukou* workers from rural-*hukou* workers, and by the changing age structure of urban citizens. The baseline for our projections is provided by the official 1% Population Survey of 2005, and the projections are made over the period 2005-2020. The survey provides detailed information for cities, towns and rural areas on population by age, on age-specific mortality rates, and on age-specific labour force participation rates (all for five-year age groups). We estimate the number of entries to and retirements from the urban-born labour force in each year from 2005 onwards. People are assumed to enter at age 18 and to retire on turning 60. The five-year age-specific mortality rates in 2004 are used to estimate deaths in each age-group each year. The age-specific participation rates of 2005 are used to convert from population of working age to labour force.

The projections of the natural increase in the urban labour force are shown as the curve  $U_s$  in Figure 2. The projections imply an average rate of natural increase by -6.4% (equal to -0.44% per annum) over the fifteen years 2005-20. There is a rise (of 1.8%) over the five years 2005-10,



then a fall (-2.7%) over the years 2010-5, and an acceleration in fall (-5.5%) in the period 2015-20.

This remarkable demographic behaviour is to be explained by the violent changes in China's population policies in the past. Mao's exhortations produced a baby boom in the 1960s and early 1970s, after the Great Famine. This resulted in a rapid increase in the labour force in the 1980s and early 1990s. It also generated an echo baby boom in the decade 1985-95, as the large age cohort born in the 1960s reached their most prolific child-bearing age. Thus it was only from the mid-1990s that the low fertility rate (of the female population of child-bearing age) - starting in 1978 as a result of Deng's one-child family policy and applied particularly harshly in urban China - came to dominate the birth rate. In 2005, the number of urban children in the age groups 15-19, 10-14, 5-9, and 0-4 decreased in the proportions 100, 81, 66 and 56 respectively. This decrease, combined with the continuation of the draconian family planning policy, is the main explanation for the fall in the labour force after 2010.

The NBS's 2005 survey defined the urban population simply as those who had lived in the place for more than six months. It includes many but not all of the rural-*hukou* migrants. We therefore use the estimate of the number of rural-urban migrant workers made by Sheng (2008), also taken from NBS sources, to indicate the 'excess demand' of urban labour demand over urban-*hukou* labour supply in 2005. The growth in the number of migrants in urban employment is shown in the figure by the curve *M*. Migrants represented 46% of the urban labour force at the start of our projection period. By 2010 the excess demand is 53%, by 2015 60%, and by 2020 68%. In that year the number of rural-urban migrants working in China's cities and towns is projected to be 292 million. Thus, on the assumption that something like the past rate of urban economic growth can be maintained in the future, rural-urban migrants (i.e., workers with rural origins) will become increasingly important in the urban economy, and indeed will be predominant from about 2010 onwards.

We conducted the same projection exercise for rural areas, using precisely the same methodology. The results are also shown in Table 10 and in Figure 2. The curve *R<sub>s</sub>* represents the natural increase of the population resident in rural China in 2005. The family planning policy was not applied as strictly in rural as in urban China: in many provinces parents were, and are,

permitted to have a second child if the first was a girl. However, rural China was subject to the same violent swing in population policy. Again, there was a precipitous fall in births, albeit starting five years later: in 2005 the numbers in the age groups 15-19, 10-14, 5-9 and 0-4 fell in the proportions 100, 104, 79, and 68 respectively. Thus the rural labour force is projected to rise by only 2.6% over the fifteen years, equivalent to 0.2% per annum. There is a rise of 4.4% in the first five years, an almost constant labour force in the next five years, and a fall of 1.6% in the final five years. The curve  $R_r$  is the residual labour supply, i.e. the rural natural increase minus the projected migrant labour outflow. There is a dramatic fall in employment in rural China over the projection period: by 31%, or by 2.5% per annum, up to 2020. Our projection is from 485 million in 2005 to 468 million in 2010, to 409 million in 2015 and to 334 million in 2020. The Lewis turning stage - stage rather than point - is unlikely to be far off.

## **9. Conclusion**

We have produced evidence of simultaneous surplus labour 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 labour market - the result of constraints on rural-urban labour migration (for instance, Knight and Song 1999, chs 8-9; 2005, chs 5-7). The institutional constraints create difficulties for migrants living in urban areas - in respect of good and secure jobs, housing, and access to public services - and these deter or prevent migrant workers from bringing their families with them. This in turn makes many rural workers reluctant to leave the village, at least for long periods. Although there is evidence that the Chinese market for migrant labour 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 is. In their revision of the Lewis model, Ranis and Fei (1961) formally incorporated a turning stage that reflects a gradually rising marginal product of rural labour. We envisage an even longer turning stage - the result not only of rural sector heterogeneity but also of China's labour market institutions.

We adduced evidence that migrant wages have indeed risen in real terms in very recent years,

and that their wages are sensitive to urban labour market conditions and to rural supply prices. Much of the increase could be explained by rising rural household incomes, although it was not possible to distinguish the increases that were exogenous (such as the abolition of agricultural taxes and of 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, at least over the years 2002-7.

Our analysis of the CHIP 2002 and 2007 rural surveys showed 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 dependants, and failing to find migrant work - will fade as work opportunities for migrants improve and labour market policies adjust endogenously.

Our heroic projection of future trends indicates that the number of rural-urban migrants will grow rapidly and the number of workers remaining in the rural areas will fall rapidly. By 2020 migrants will constitute about 60% of urban employment and the residual rural labour force will be about 30% lower than in 2005. Before that date, however, it is likely that there will be an endogenous response both of the market and of the government. In the labour market, the competitively determined wages of unskilled workers can be expected to rise generally. The government response is likely to involve retirement policy, birth control policy, and urbanisation policy.

One policy variable open to government is the normal age of retirement. In China people generally retire young, reflecting the low life expectancy of past times. The 2002 survey contains information on age of retirement. The median male retirement age was 59, and 90% of men had retired by the age of 61; the median female retirement age was 51, and 92% of women had retired by the age of 56. A case can be made for raising the retirement age on account of the currently higher, and rising, life expectancy. A tightening of the labour market might well provide the impetus for such a move. The impending labour scarcity and the remarkable fall in the number of

births might induce government also to relax the one-child family policy. However, this could affect the number of new entrants to the labour market only with a median lag of about 18 years.

If our projections are broadly correct, future trends in the labour 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, so the economic imperative will be for their permanent settlement. Skill and its associated training cost bring the need for long term employment. The Chinese system of 'floating' - temporary migration - will increasingly become economically inefficient. The solution to this problem which employers in many countries have adopted is to try to stabilise their labour forces by improving the rewards for staying. If long service becomes economically more efficient, governments have an incentive to permit and encourage it, employers have an incentive to reward it, and migrants have an incentive to acquire it. Long service in turn encourages migrants to settle with their families.

Living long in the city leads to the adoption of urban attitudes, and the transfer of migrant social reference groups from the village to the city (as shown in Knight and Gunatilaka, 2010). This process may well give rise to feelings of relative deprivation in relation to urban-*hukou* residents. As more and more former peasants make the transition from migrant to proletarian, so the pressure on Chinese central and local governments to treat them on a par with urban-born residents is likely to grow, and *hukou* privilege accordingly likely to be eroded.

There are other far-reaching implications of the puzzle posed in our title. General scarcity of unskilled labour is probably the most powerful market force for reducing the inequality of income in China - inequality that has increased inexorably over 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 labour will also require a change in development strategy towards more skill-intensive and technology-intensive economic activities, and this requires long term planning and investment in human capital. There is little evidence that these changes in the economy are taking place as yet but, given continued rapid growth of urban employment and the rapid demographic transition that we predict, it is likely that they will increasingly be found over the coming decade.

## References

- Brandt, Loren and Carsten Holz (2006). 'Spatial price differences in China: estimates and implications', *Economic Development and Cultural Change*, 55, October: 43-86.
- Cai Fang (2008). 'Approaching a triumphal span: how far is China towards its Lewisian turning point?', WIDER Research Paper, February.
- Cai Fang, Du Yang and Zhao Changbao (2007). 'Regional labour market integration since China's WTO entry: evidence from household-level data' in R. Garnaut and Song Ligang (eds), *China: Linking Markets for Growth*, Canberra: Asia Pacific Press: 133-50.
- Cai Fang and Wang Meiyun (2008). 'A counterfactual of unlimited surplus labour in rural China', *China and the World Economy*, 16, 1, January-February: 51-65.
- Chen Guifu and Shigeyuki Hanori (2009). 'Solution to the dilemma of the migrant labour shortage and the rural labour surplus in China', *China and World Economy*, 17, 4, July-August: 53-71.
- Du Yang and Pan Weiguang (2009). 'Minimum wage regulation in China and its application to migrant workers in the urban labour market', *China and World Economy*, 17, 2, March-April: 79-93.
- Islam, Nazrul and Kazuhiko Yokota (2008). 'Lewis growth model and China's industrialization', *Asian Economic Journal*, 22, 4: 359-96.
- Knight, John and Ramani Gunatilaka (2010). 'Great expectations? The subjective well-being of rural-urban migrants in China', *World Development*, 38, 1, January: 113-24.
- Knight, John and Li Shi (2008). 'Wages, profitability and labour market segmentation in China', *China Economic Review*, 16, 3: 2005-28.
- Knight, John and Lina Song (1999). *The Rural-urban Divide. Economic Disparities and Interactions in China*, Oxford: Oxford University Press.

Knight, John and Lina Song (2005). *Towards a Labour Market in China*, Oxford: Oxford University Press.

Knight, John and Linda Yueh (2009). 'Segmentation or competition in China's urban labour market?', *Cambridge Journal of Economics*, 33, 1, January: 79-94.

Kwan Fung (2009). 'Agricultural labour and the incidence of surplus labour: experience from China during reform', *Journal of Chinese Economic and Business Studies*, 7, 3, August: 341-61.

Lewis, W. Arthur (1954). 'Economic development with unlimited supplies of labour', *The Manchester School*, 22, May: 139-92.

Luo Chuliang and Yue Ximing (2010). 'Rural-urban migration and poverty in China', in Xin Meng, Chris Manning, Li Shi and T. Effendi (eds), *The Great Migration: Rural-urban Migration in China and Indonesia*, Cheltenham, Edward Elgar:

Meng Xin and Bai Nansheng (2008). 'How much have wages of unskilled workers in China increased?', in R. Garnaut and Song Lijang (eds), *China: Linking Markets for Growth*, Canberra, Asian Pacific Press: 151-75.

Minami, R. and Xinxin Ma (2009). 'The turning point of Chinese economy: compared with Japanese experience', Conference paper, ADBI, Tokyo, June.

Ministry of Agriculture (2010). 'Steady augment of employment of out-migrants and faster increase of wage of migrant workers', website (in Chinese).

National Bureau of Statistics (2006). *One Per Cent Population Survey 2005*, Beijing: China Statistics Press, and online.

National Bureau of Statistics (2008). *China Statistical Yearbook 2008*, Beijing: China Statistics Press.

Park, A., Cai Fan, and Du Yang (2007). 'Can China meet her employment challenges?', Conference paper, Stanford University, November.

Ranis, Gustav and John Fei (1961). 'A theory of economic development', *American Economic Review*, 51, 4, September: 533-65.

Sheng Laiyun (2008). *Floating or Migration? Economic Analysis of Floating labour from Rural China*, Shanghai: Shanghai Yuandong Press.

Taylor, Jeffrey (1988). 'Rural employment trends and the legacy of surplus labour', *China Quarterly*, 116, December: 736-66.

Wang Dewen (2008). 'Lewisian turning point: Chinese experience', in Cai Fang (ed.), *Reports on Chinese Population and Growth No. 9: Linking up Lewis and Kuznets Turning Points*, Beijing: Social Sciences Academic Press (in Chinese).

Zhao Changbao and Wu Zhigang (2007). 'Wage issues of rural migrants', Working Paper, Research Centre of Rural Economy, Ministry of Agriculture (in Chinese) (<http://www.rcre.cn/userArticle/ArticleFile/2007121015627344.doc>).

**Table 1**  
**Labour force and employment in China, 1995-2007**

	Million			%	% p. a.
	1995	2007	95-07	95-07	95-07
<i>Rural areas</i>					
labour 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
<i>Urban areas</i>					
labour 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
<i>Rural-urban migrants</i>	30	132	102	340.0	13.14
<i>Average urban real wage</i>					
(yuan per annum, 1995 prices)	5348	19904	14556	272.2	11.16

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



**Table 2**

**Migrant nominal and real average real wage per worker per month, 2003-9**

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	Nominal wage (yuan)	Nominal wage growth (%)	Real wage growth (%)
2003	781		
2004	802	2.8	-1.1
2005	855	6.5	4.7
2006	953	11.5	10.0
2007	1060	11.2	6.4
2008	1156	9.1	3.2
2009	1348	16.6	17.3

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*Sources:* Zhao and Wu (2008) for 2003-6; Ministry of Agriculture (2010) for 2007-9.

*Note:* Real wage growth is calculated by means of the national consumer price index.

**Table 3****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\*\*\*

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

*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, 'other' sectors. Certain explanatory variables relating to the employer, including firm size, contact 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 province variation 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% level is denoted by \*\*\*, \*\* and \* respectively.

**Table 4**

**The determinants of the proportionate change in the migrant wage and self-employment income, 2002 -7**

	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:* CHIP 2002 and 2007 national household surveys, rural-urban migrant samples.

*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 in Table 3 are included except for performance in school and the unskilled wage in the village, which are 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 5****Decomposition of the increase in the average real migrant wage, 2002-7: selective summary**


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

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	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:* CHIP surveys, 2002, 2007

*Notes:* The estimates are based on a standard Oaxaca-Blinder decomposition, using the coefficients for 2002 and for 2007 as weights. The contribution of education as a whole is based on the change in composition among four levels: primary, middle and 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 3 and 4 plus primary education and 0-5 years of city experience. The income if stayed in village and predicted city wage are as used in Tables 3 and 4.

**Table 6**  
**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:* CHIP 2002 and 2007, migrant samples.

**Table 7**

**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 aged 0-6	-0.513***	-0.113	-0.401***	-0.094
with children aged 7-12	-0.540	-0.122	-0.365***	-0.086
with children aged 13-	-0.526***	-0.136	-0.413***	-0.108
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
31-5	-0.116	-0.030	-0.437***	-0.099
36-40	-0.301***	-0.073	-0.737***	-0.152
41-5	-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	0.217***	0.058	0.081**	0.022
high	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 hh 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:* CHIP 2002 and 2007, rural samples.

*Notes:* The omitted categories in the dummy variable analysis are female, not married, no parent older than 70, age group 16-20, 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 not reported.

**Table 8****Reasons given by non-migrant workers for not migrating: distribution of replies and the relationship of the replies to the probability of migrant status**

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	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 and 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 elderly or children	26.0	0.021*	0.019*
has local business	10.4	0.006	0.004
other	13.3	-0.006	-0.020

---

*Source:* CHIP 2007, rural sample.

**Table 9**

**Frequency distribution of the number of migrants and non-migrants by predicted probability of migrating, 2002 and 2007 (million)**

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Predicted probability range	Migrants	Non-migrants	Migrants	Non-migrants
	2002	2002	2007	2007
0-0.1	7.8	153.3	8.7	185.9
0.1-0.2	14.6	104.6	11.3	72.0
0.2-0.3	19.4	57.8	13.8	41.5
0.3-0.4	20.4	30.9	14.0	26.4
0.4-0.5	18.1	19.5	17.4	19.1
0.5-0.6	15.8	14.2	19.6	14.2
0.6-0.7	12.1	8.6	23.2	11.0
0.7-0.8	7.5	3.6	21.4	7.8
0.8-1.0	1.3	0.6	11.3	2.2
Total	117	393	140	380

---

*Source:* CHIP 2002, 2007, rural samples.

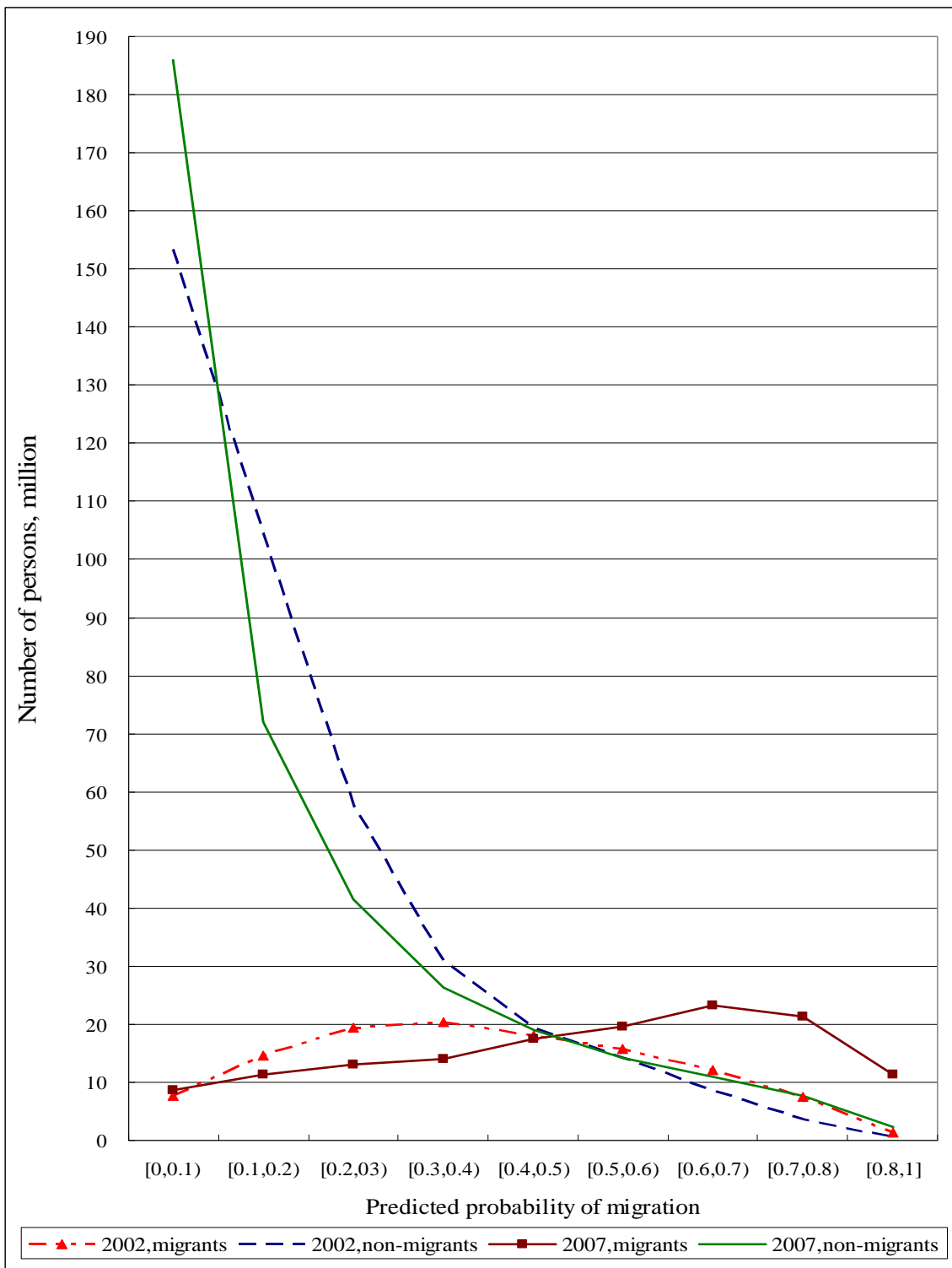
*Note:* The method of estimation is explained in the text.

**Table 10**  
**Projections of the labour force, urban, rural and migrant, millions, 2005-2020**

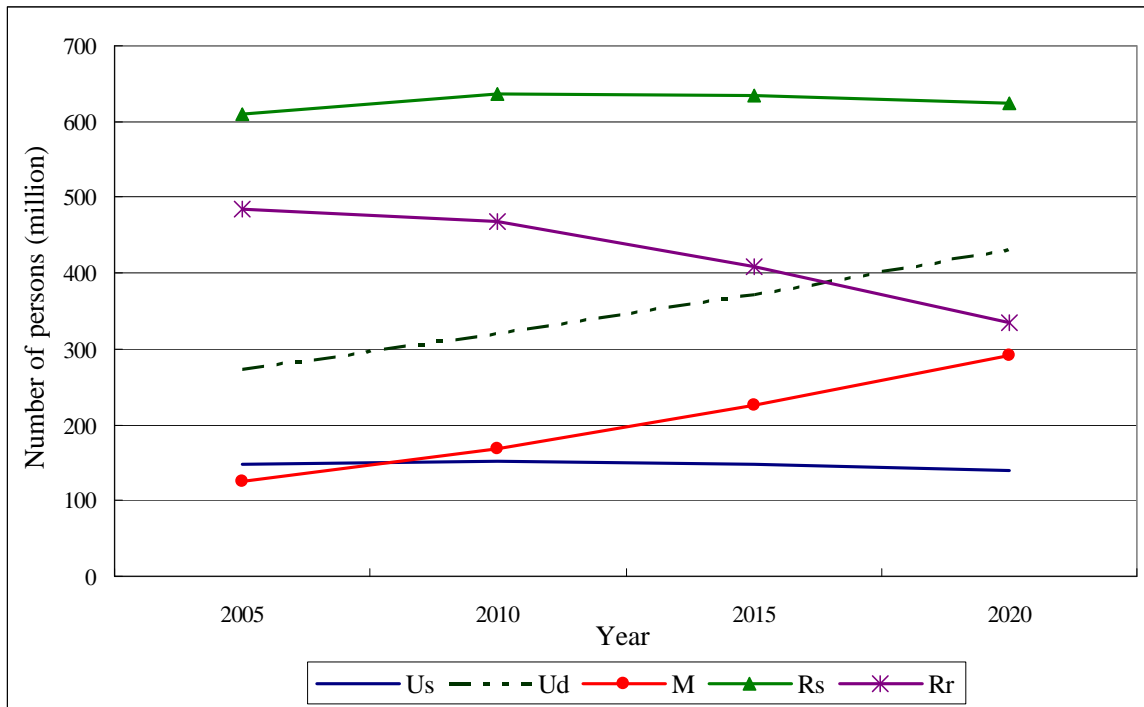
	Urban						Rural					
	Demand		Labour force		Migrants		Labour force		Migrants		Non-migrants	
	index	million	index	million	index	million	index	million	index	million	index	million
2005	100.0	273	100.0	148	100.0	125	100.0	610	100.0	125	100.0	485
2010	115.9	320	101.8	151	135.2	169	104.4	637	135.2	169	96.5	468
2015	134.3	372	99.1	147	180.0	225	104.0	634	180.0	225	84.3	409
2020	156.7	431	93.6	139	233.6	292	102.6	626	233.6	292	68.9	334

*Sources:* NBS (2005) data; Sheng (2008).

*Note:* The method of projection is explained in the text.



**Figure 1. The distribution of the number of migrants and non-migrants by the probability of migrating (million)**



**Figure 2: Projections of labour force, urban, rural and migrant, millions, 2005-2020**

*Note:*

$U_s$  natural increase or decrease of labour force in urban areas

$U_d$  projected urban demand for labour

$M$  demand for and supply of rural-urban migrants ( $U_d - U_s$ )

$R_s$  natural increase or decrease of rural labour force

$R_r$  residual rural labour force ( $R_s - M$ )