



The rise of migration and the fall of self employment in rural China's labor market

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ABSTRACT

When examining questions regarding the Lewis model, one of the most salient set of facts involves the shift of labor between agricultural and the off farm sectors. The goal of this paper is to answer several questions about the nature of this movement: How has the expansion of the economy after 2000 affected off farm labor market participation? Has off farm labor continued to rise? What is this rise being driven by—migrant wage earners or self employment opportunities? What is, in part, driving these trends? Using a national representative set of data that consists of two waves of surveys done in 2000 and 2008 in six provinces, the paper finds that off farm labor market participation has continued to rise steadily in the early 2000s. However, there has been a structural break in the trends of occupational choice before and after 2000. Unlike before 2000, after 2000 migration's growth accelerated; during this same period the self employed subsector stagnated. The number of wage earning migrants in 2008 was greater than the number of those in the self employed subsector. The data also show that the rise in wage-earning migration is mainly being driven by the younger cohorts. Our analysis also shows that the rise of migration is happening in conjunction with a rising unskilled wage.

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1. Introduction

According to the Lewis model (Gillis, Perkins, Roemer, & Snodgrass, 1996; Lewis, 1954), development can be characterized by the shift of labor from agriculture into industry. As an economy grows rising demand by factory owners induces workers in the agricultural sector to relocate themselves into the industrial sector. Mostly these workers are thought to be taking jobs in the wage-earning sector. Typically it is also thought that the workers also are moving from rural areas into the expanding urban areas. Hence, if one is going to try to understand if China is developing in a way that is consistent with the predictions of the Lewis model, it would be expected that there was increasing shifts of labor from farming into the wage earning sector and into the migrant wage earning sector in particular.

During the 1980s and 1990s, in one real sense, China's rural economy has been showing signs that there are a lot of individuals moving off the farm and finding employment in the off farm sector. Such trends can be seen when examining either the government's own statistics or studies in the literature (de Brauw, Huang, Rozelle, Zhang, & Zhang, 2002; Lin, Wang, & Zhao, 2004; NBS, 2009; Zhang, Zhang, Rozelle, & Boucher, 2006). Although the exact numbers vary (in part, due to the definition of off farm labor), between 170 million and 200 million members of the rural labor force found a job off the farm. Estimates of the increase in the share of the rural labor force with employment off farm range from 35 to 40 percentage points.

While initially the progress during the 1980s and 1990s might seem to indicate that China was on a development trajectory that was predicted by the Lewis model, a closer examination showed that the composition of China's off farm labor force required more nuance. Specifically, rural individuals were finding employment off the farm in two distinct ways. There was the emergence

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of a wage earning sector—especially in the migrant wage earning subsector (the type of employment that is implicit in the Lewis model). Many individuals, however, also found off-farm jobs in the non-farming self employment sector (Rozelle, Li, Shen, Hughart, & Giles, 1999; Zhang et al., 2006). According to de Brauw et al. (2002), between the early 1980s and 2000 the number of rural laborers that left home and found a wage earning job in the city (or another rural area) rose from 9.3 million to 56 million. Setting aside the 60 million of rural laborers that were living at home and working in local township and village enterprises for a wage (a number that was more or less stagnant during the late 1980s and 1990s—NBS, 1990, 2000), it is arguable that the migrant wage-earning segment of the off-farm employment sector was not the dominant part of the sector. During the same time period (between the early 1980s and 2000), the number of rural individuals that began small, non-farm self-employed enterprises (henceforth, self employed) also rose—from 26.1 million to 79.5 million. Hence, it is interesting to note that the trends of self-employment and migrant wage earners of the non-farm rural employment more or less grew in parallel during the 1980s and 1990s. And, there were far more self employed in 2000 than migrant wage earners.

Not all development economists, however, believe that a large self employment sector is a positive sign of health economic growth (Fairlie & Woodruff, 2010; Lucas, 1978; Tokman, 1992; Woodruff, 2006). Lewis is largely silent on the matter. In other developing countries the self employed are often thought of as individuals that are in a segment of the labor force that is acting as a refuge for those that have been excluded from the formal, wage-earning segment of the labor market. Economists have demonstrated in the context of other developing economies that self employment is not a step up the employment ladder, but, rather is a dead end livelihood strategy (Woodruff, 2006). Because of this non-farm self employment is often looked upon with ambivalence by the development community. Self employment is not thought to be the driver of development in the Lewis model.

In one of the only papers that has produced systematic statistics on off farm employment “by type,” including the non-farm self employed, Zhang et al. (2006) used a national representative data set and sketched a picture of “self employment with Chinese characteristics.” Indeed, rural non-farm self-employed did have a number of characteristics that might make an observer of development question the subsector's ability to contribute to rapid growth and transformation. Most of the self employed were operating extremely small family firms that were labor intensive and used little capital. The risk faced by firm owners (as measured by the standard deviation of earnings) was much higher than those in the wage-earning sector. However, there were other characteristics of the self employed that might make observers believe that being self employed was not all bad. Most small firms were profitable. The hourly earnings of the self employed (total profits divided by total hours worked) were higher than the hourly wage of wage earners. It was clear that even though this was a sector that relied on simple technologies and low levels of capital utilization, at least some individuals were attracted by the ability to earn levels of earnings higher than the low unskilled wage that labor markets were offering. In short, rural off farm employment in the 1980s and 1990s was, in part, made up of a type of employment that was not thought to be one that would be the engine of development.

Given the curious nature of rural off farm employment during the 1980s and 1990s, those interested in China's development, including those engaged in the debate about the Lewis model, should be interested in continuing to track the nature of rural off farm employment as economic growth has continued after 2000. Is off farm employment stagnating or continuing to grow? What is happening to the mix of migrant wage earners and non-farm self employed? While much was written about rural off farm employment in the early 2000s (about the 1980s and 1990s), there has been less research in the literature about more recent trends between 2000 and the present.

In fact, these questions are especially relevant as the economy as a whole has evolved since 2000. Urbanization has steadily risen (Chan & Hu, 2003; UN, 2008). Migrant communities inside and outside of large cities have become more prominent (Park & Wang, 2010; Zhang & Song, 2003). There are reports that wages are rising fast and that there are labor shortages in many areas of the nation (Cai, Park, & Zhao, 2008; Du & Park, 2006; Fleisher & Wang, 2005; Fleisher, Hu, Li, & Kim, 2011; Luc, Pan, & Wang, 2010). The service sector across China is continuing to mature (Pant & Blades, 2007). Somewhat surprisingly, despite the importance of these trends for off farm employment—both its level and mix, there is little written on the details about how rural off farm employment has evolved during the early 2000s. There is also not much written about the drivers of these changes.

The goal of this paper is simple. We seek to use a national representative sample of rural households (including those that have moved to the city) to empirically answer several questions about the nature of rural off farm employment. How has the expansion of the economy after 2000 affected off farm labor market participation? Has off farm labor continued to rise? What is this rise being driven by—migrant wage earners or nonfarm, self employment? Who is participating in the self employment sector—men or women; which age cohorts? What role does the changing wage rate play between the 1990s and early 2000s? While we recognize that the information provided in this chapter cannot fully answer whether or not China is following the development path defined by the Lewis model, it does contribute detailed information about the nature of the movement of labor between the agricultural and off farm employment sectors.

To answer these questions, the rest of this paper is organized as follows. In the next section, we describe the data that we use in this study. Section 3 examines the trends in off farm labor before 2000 and after 2000. The section also disaggregates trends in rural labor by the type of off farm employment (wage-earning migrants and nonfarm self employment) and by cohort. Because the local wage-earning sector (that is, the workers hired by the so-called township and village enterprises, TVEs) is shown to be flat during 1990s and 2000s, we will largely ignore this sector and focus our attention on the wage-earning migrants and self-employment sectors. Understanding the relative importance of the two subsectors of rural off farm employment during the 2000s will provide important information that can be used by those who are debating the relevance of the Lewis model in describing China's current development path. Section 4 explores the driving forces of the off farm employment patterns—the changing wage rates and self employment earnings opportunities. In short, Sections 3 and 4 present employment trends that are more descriptive and then follow up with a more analytical/quantitative analysis of the shift away from self-employment to migrant wage-earning. The last section concludes and discusses the policy implications.

2. Data

The first wave of the data set was initially collected at the end of 2000 in 60 villages in six provinces. The first year of the data collection was based on surveys from 1199 households. These data were called the first wave of the China National Rural Survey and have been used in many studies of China's rural labor force (de Brauw & Rozelle, 2008a, 2008b; de Brauw et al., 2002; Mohapatra, Rozelle, & Goodhue, 2007; Zhang, de Brauw, & Rozelle, 2004; Zhang et al., 2006).

The data that form the source of the information for most of this study were collected in 2008 as the second wave of a panel dataset. The dataset includes information from 58 randomly selected villages in 6 provinces of rural China selected as representative of China's major agricultural regions. Henceforth, we call this dataset the 2008 China National Rural Survey, or 2008 CNRS dataset.

Both waves of the survey were focused on the same households in the same villages in the same provinces and the protocols during each of the waves were kept as similar as possible. The provinces are Hebei, Liaoning, Shaanxi, Zhejiang, Hubei, and Sichuan. The data collection effort involved students and staff from the Center for Chinese Agricultural Policy and a group of masters and Ph.D. students from a number of other agricultural universities. Households were paid 20 *yuan* and given a gift in compensation for the time that they spent with the survey team. In fact, the same villages and households were visited during 2000 during the first round of the CNRS. In 2000 there were 60 villages and 1200 households. Unfortunately two villages were in the Sichuan earthquake zone and were damaged so heavily that a year after the earthquake most of the households had not returned to their normal lives in the village.

The selection of the sample was done carefully to make sure that we selected a sample that was representative of large areas of China. To reflect accurately varying income distributions within each province, one county was selected randomly from within each income quintile for the province, as measured by the gross value of industrial output. Two villages were selected randomly within each county. The survey teams used village rosters and our own counts to choose twenty households randomly, both those with their residency permits (*hukou*) in the village and those without. A total of 1160 households were surveyed (6 provinces \times 5 counties \times 2 villages \times 20 households—minus the 40 households in two earthquake damaged villages in Sichuan).

The 2008 CNRS project team gathered detailed information on a wide number of variables covering many household activities. In particular, there were several blocks of the survey that focused on recording information on off-farm employment, wages and activities of respondents who did not have off-farm employment. Because we wanted to be able to estimate the change of employment over time, in 2000 (2008) a twenty-year (nine-year) employment history form was completed for each household member and each child of the household head. For each year between 1980 and 2000 (2000 and 2008), the questionnaire tracks individual's participation in off-farm employment, the main type of off-farm work performed, the residence location while working within or outside the village, the location of off-farm employment, and whether or not each individual was self-employed or earning a wage.

Enumerators took great care to get high quality employment histories from each individual. If a household member or one of the children of the household head was not present, the respondent (which was almost always the household head or spouse of the household head) answered. Extensive pre-testing found that the data are fairly accurate. In addition, we conducted a practical test to see whether or not a respondent bias problem exists in the employment history part of our data. We replicated the analysis after excluding observations on individuals whom we did not interview directly and found that the results did not change.

In addition, we were worried about recall bias. Fortunately, we have data on the exact same households from two waves of the survey in 2000. Because of this we are able to compare the household's estimate of labor market participation in 2000 from the 2008 survey versus the information provided by the household from the 2000 survey. With this unique set of data, we are able to judge if there was a recall bias. As it turns out, there is almost none. Household participation in the off-farm labor market in 2000 was estimated to be 45.3% in 2008; the off-farm labor market in 2000 was estimated to be 43% when using the 2000 survey itself.

The data of wages for migrant wage earners were collected by enumerators on the basis of hourly wages. Total earnings were computed by taking all monetary earnings over the course of the year (earnings from all jobs, if the person held more than one job) and dividing by the total number of hours that were reported as being worked during the year. The survey specifically asked respondents whether or not they lived at home while they were working, so they could be categorized as local wage earners or migrants. We define migrants as individuals who are still considered household members, but lived outside the household for at least one month during the year while working.

The actual earnings of the self-employed are calculated based on total net income earned from self employment activities divided by the number of working hours per year (Zhang et al., 2006). We also exclude returns to capital. To do so, the return to capital is calculated as the interest income that the self-employed would have earned if he/she had put their investment funds in banks instead of investing in their self-employed enterprises. The interest rate used for calculating the interest income is the annual interest rate (2.5%) for deposits in the China's banking system (NBS, 2009).

Finally, there was a section of the survey form that collected data on each family member's basic characteristics. Data were collected on characteristics such as each family member's gender, age and educational attainment. Descriptive statistics for wage earner and self-employed by gender, age and education level are included in Appendix Table A1.

3. Employment trends before and after 2000

The rise of off farm labor employment for the rural population is one of the most salient features of China's development during the 1980s and 1990s. According to the 2000 China National Rural Survey only 15% of the individuals in the rural labor force had a job off the farm in the early 1980s. By 2000 the share of the rural labor force that worked off the farm reached 45.3% (Fig. 1, LHS of

the graph). With a rural labor force exceeding 500 million, this means that in 2000 more than 218 million individuals were working fully or part time off the farm. These figures are also consistent with data from other sources (Giles, 2006; Glauben, Herzfeld, & Wang, 2008; NBS, 2001).

If there were any concerns in 2000 about whether off farm labor employment would continue in the 2000s, data from our 2008 China National Rural Survey should allay those fears. The upward trend in the share of individuals in the rural labor with off farm employment continues to rise (Fig. 1, RHS of the graph). From 45.3% in 2000, 62% of the rural labor force is working off the farm in 2008. This means 310 million members of the rural labor force were fully or partially employed off the farm in 2008. The data, which are also consistent with trends from national sources (e.g., NBS, 2009), show that the transformation of the rural labor force from one dominated by individuals working on farm to one that is mostly made up of individuals that are engaged in non-farm jobs is well underway.

While the rate of growth of off farm employment before and after 2000, in general, has remained steady across the two waves of our China National Rural Survey, disaggregating the employment figures into wage-earning migration and self employment demonstrates that the composition of rural off farm employment changes sharply before and after 2000 (Fig. 2). In the same way that Zhang et al. (2006) showed that the rise in wage-earning migration was paralleled by the rise in self employment, our data also show this (see the LHS's of Panel A and Panel B of Fig. 2). Between 1982 and 2000 wage earning migrants rose from 4.2% of the rural labor force to 12.7%, an increase of 8 percentage points. During this same period, self employment rose from 4.8% to 18%, an increase of 13 percentage points. The nearly parallel increase in off farm employment in both of these employment categories (note the upward sloping arrows on the LHS of Panels A and B) shows how both wage earning migration and self employment played an important role in the transformation of rural labor markets before 2000. The importance of self employment might be quite surprising to many observers, given the large increase in the demand for wage earning labor in the manufacturing facilities that opened in the coastal areas and around cities. However, as discussed in Zhang et al. (2006), the lack of the development of the service sector (and other sectors, such as housing construction, which required many self-employed/custom contractors) also gave many opportunities for rural individuals to start their own self employment micro/nano firms.

After 2000, following trends that are quite different from the general off farm trend described above (which continued largely at the same pace before and after 2000), there are noticeable breaks in the trends in the individual components of off farm employment. Specifically, in the case of wage earning migration, after rising at 0.47 percentage points per year between 1982 and 2000, the pace accelerated between 2000 and 2008 to 1.27 percentage points per year (Fig. 2, Panel A).

When running regressions on these trends before and after 2000, there is a structural break that is statistically significant. This result is found by using the following equation:

$$\text{Percentage Points}_{\text{wage earning migrants}} = \alpha_0 + \alpha_1 \times \text{Time} + \alpha_2 \times \text{Time} \times \text{Post 2000 dummy}. \quad (1)$$

In this regression, we want to identify the change (from before to after 2000) in the rise of the trend of the share of the rural labor force that are working as wage earning migrants (measured in percentage points). According to the analysis, the trend in the rise of wage earning migrants before 2000 rose at a rate of 0.59 percentage points per year (Table 1, column 1, row 1). However, the analysis also shows a structural break. After 2000, coefficient of the trend dummy + post 2000 dummy variable (0.08 with a t-ratio of 1.81—row 2) suggest that wage earning migration accelerated after 2000.

In contrast, the self employment trend slowed—especially after 2003. To show this we estimated the following equation:

$$\text{Percentage Points}_{\text{self employed}} = \beta_0 + \beta_1 \times \text{Time} + \beta_2 \times \text{Time} \times \text{Post 2003 dummy} \quad (2)$$

The form of Eq. (2) is the same as Eq. (1) except it is designed to look at the change in the trend of self employment after 2003. According to the analysis, between 1982 and 2000 the rise in self employment was 0.76 percentage points per year (Table 1, column 2, row 1). After 2003, however, the pace fell (row 3). The time trend regression analysis also showed there was a structural slow down from before to after 2003.

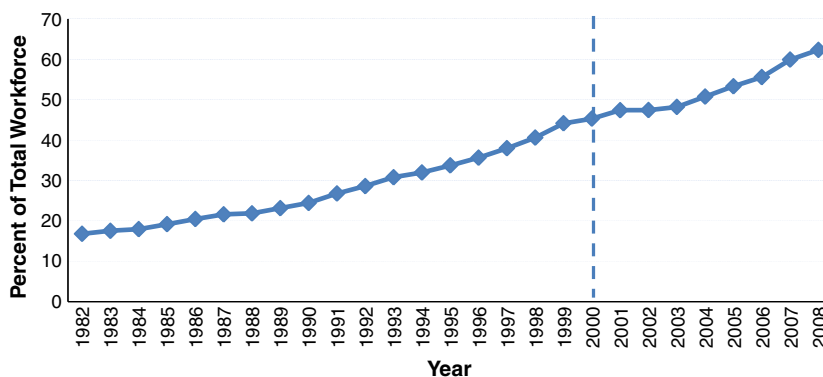


Fig. 1. Trends in off-farm employment in rural China, 1981–2008.
Source: Authors' survey.

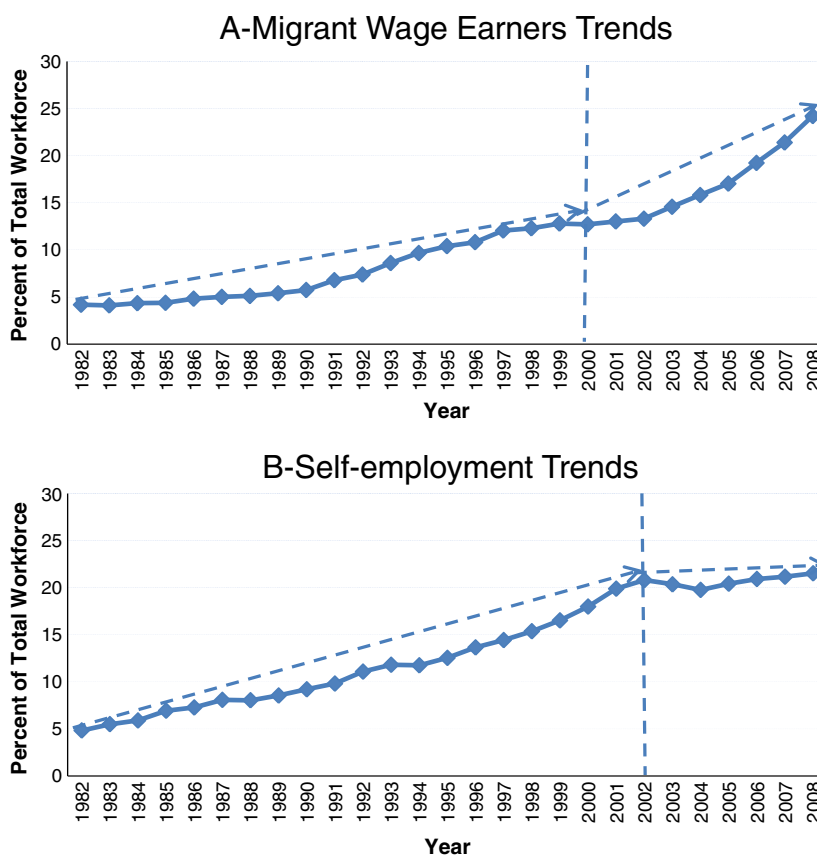


Fig. 2. Trends in migrant wage earners and self-employment in rural China, 1981–2008.
Source: Authors' survey.

3.1. Cohort effects and off farm employment trends

Cohort analysis can illuminate the source of the trends. In the 1990s, according to de Brauw et al. (2002), the expansion of off farm employment was mainly driven by the entrance into the labor force of individuals in the younger cohorts (Table 2, columns 1 and 2). For example, when looking at cohorts of workers in 1990, only 24% of the rural labors of 16–20 year old cohort had a job off the farm. This number was similar for all the other cohorts (34% of the 21–25 cohort had jobs off the farm; 29% of the 26–30 cohort; etc.). By 2000 this figure had nearly tripled for these younger age cohorts. For example, 71% of the laborers in the 16–20 year old cohort had a job off the farm. Likewise, 77% of the 21–25 cohort and 59% for the 26–30 cohort were employed off the farm. In

Table 1

OLS estimation on the structural break of wage earning migrant and self employment from 1982 to 2008.

Independent variables	Percentage point of employment in the sub-sectors (%)	
	Wage earning migrants	Self-employed
	Coefficients	Coefficients
Time	0.59 (9.52)***	0.76 (26.85)***
Time*post-2000 dummy	0.08 (1.81)*	
Time*post-2003 dummy		−0.05 (2.27)**
Constant	1.72 (2.43)**	3.18 (8.62)**
Observation	27	27
F test (2, 24)	172.40	593.65
Adjusted-R ²	0.93	0.98

Note: t-ratios are in parenthesis. ***, ** and * represent significant level at 1%, 5% and 10%, respectively.

Source: Authors' survey.

Table 2

Cohort effects of off-farm employment, self-employment and migrant wage earners, 2000 and 2008.

Categories by age cohorts	1990		2000		2008		
	Off-farm ^a employment	Off-farm ^a employment	Self-employment	Migrant wage earners	Off-farm ^a employment	Self-employment	Migrant wage earners
16–20	24%	71%	7%	43%	88%	7%	63%
21–25	34%	77%	20%	36%	91%	13%	61%
26–30	29%	59%	22%	17%	86%	18%	48%
31–35	27%	56%	26%	7%	75%	26%	28%
36–40	21%	50%	25%	4%	69%	26%	19%
41–50	21%	41%	23%	1%	59%	23%	12%
51–64	12%	25%	13%	0%	38%	15%	4%

Note: ^a Off-farm employment includes self-employment migrant wage earners and wage earners employed in the local areas, which is not presented here but upon request.

Source: Authors' survey.

contrast, the rise in the share of older cohorts working off the farm was less. In the case of the 41–50 cohort, for example, the rise in the share of those working off the farm went from 21% in 1990 to 41% in 2000; the rise in the share of those in the 51–64 cohort went from 12% in 1990 to 25% in 2000.

In part because employment rates were so high for the younger cohorts by 2000, between 2000 and 2008 the rise in off farm employment (in general) is more evenly distributed among the cohorts (Table 2, columns 2 and 5). While the share of those that had a job off the farm rose from between 14 and 27 percentage points from 2000 to 2008 in the 16–20, 21–25, 26–30 and 31–35 cohorts, the rise in the 36–40, 41–50 and 51–65 cohorts rose between 13 and 19 percentage points.

Differences in the rise of participation by cohorts between 2000 and 2008, while similar for overall off farm employment, vary when looking at wage earning migrants (Table 2, columns 4 and 7) and self employment (columns 3 and 6). In the case of younger cohorts (16–20; 21–25; 26–30; and 31–35) there is a much larger increase in the participation in the wage earning migration subsector than in the self employment subsector. For example, individuals in the younger cohorts increased their participation in the wage earning migrant subsector from between 21 and 31 percentage points. In contrast, the participation of these younger cohorts in self employment fell (with the fall concentrated in the 21–25 cohort—by 7 percentage points; and the 26–30 cohort—by 4 percentage points).

The trends among the older cohorts differed when examining trends in off farm employment subsectors (Table 2, columns 3, 4, 6 and 7). Individuals in the older cohorts (36–40; 41–50; 51–65) increased (marginally) their participation in self employment (unlike that of younger cohorts whose participation in self employment fell). At the same time the increase in wage earning migration rose less than that of the younger cohort (between 4 and 15 percentage points).

3.2. The nature of self employed firms

While a complete accounting of self employed firms is beyond the scope of this paper, in general, the firms in 2008 are similar in nature as the firms described in Zhang et al. (2006) who used the 2000 China National Rural Survey. According to our data in the 2008 China National Rural Survey, firms are still small (average 4 employees per firm); labor intensive (only 83,990 yuan/firm in total assets); and family run using family labor (only 14.3% of the firms hired non-family labor and on average these firms—which hired labor—hired only 1.2 non-family individuals per firm).

But, while small in scale, there is evidence that self employed firms have become more specialized. Table 3 shows that while the number of enterprise have fallen (from 473 to 313), the nature of participation by family members has changed (columns 3 and 6, rows 1–4). There are fewer firms in which the husband (wife) is operating the firm on his (her) own. The number of what

Table 3

Composition of family members in self-employed enterprises, 2000 and 2008.

	2000			2008		
	Obs.	Per.	Cum.	Obs.	Per.	Cum.
Husband	252	53.3	53.3	117	37.4	37.4
Wife	50	10.1	63.4	19	6.1	43.5
Husband + Wife	120	25.4	88.8	127	40.6	84.0
Children only	30	6.3	95.1	42	13.4	97.4
Other	23	4.9	100	8	2.6	100
No. of enterprises	473	100		313	100	
Percent of households		32.4 ^a			22.5 ^a	

Note: ^a These are calculated by the numbers of households in self-employed enterprises to surveyed households, which was 1199 in 2000 and 1160 in 2008.

Source: Authors' survey.

we call husband-only firms fell from 252 to 117 (columns 1 and 4, row 1). The number of wife-only firms also fell, from 50 to 19 (columns 1 and 4, row 2). In contrast, firms with both the husband and wife rose from 120 to 127 (columns 1 and 4, row 3) and those in which one of the parents were running a firm with more than one children rose from 30 to 42 (columns 1 and 4, row 4).

4. Wage rates, rising migration and the stagnancy of self-employment

In this section we explore one of the possible determinants of the pre- and post-2000 trends for wage earning migration and self employment in rural China's labor market. To do so, we adopt a four-step process. First, we first characterize the individual's decision making calculus. From this we see that if we want to explain differences in occupational choice trends over time that it is important to be able to track changes in the level and variability of wages and earnings over time. Therefore, in the second part of this section we examine the record of wage rates over the study period, showing that the wage rates trends (discussed in this section) seem to be highly correlated with the trends of observed occupational choices (discussed above). Third, we show that the choice of individuals to go into wage-earning migration or self employment is correlated with their own wage rate and earnings ability. Fourth and finally, we use a multivariate framework to show that, holding other factors constant, the wage is an important correlate of the decision of individuals to enter wage earning migration.

4.1. Occupational choice and wages and earnings: a conceptual basis

The conceptual basis for decision making on which this analysis rests is from Woodruff (2006) and can be summarized as follows. We assume that individuals in the labor market are endowed with some innate entrepreneurial ability. We also assume that they prefer more income to less, but, are also concerned with controlling the amount of risk that they face. Hence, in making the wage-earning migrant or self employed decision, they initially compare the level of the wage offered by the employer in the migrant sector with the earnings that can be gained from self employment. Simultaneously, there is an assessment of the variability of the expected earnings stream.¹ In the final analysis, since individuals in the labor market are assumed to be trying to maximize their income subject to reducing their risk, there should be expected to be a tradeoff between the hourly wage/earnings and the variability of the wage/earnings.

Of course, not all individuals are alike—even if they are competing in the same labor market—which is important to allow for since we see individuals choosing to do different activities in the same economy. The marginal return to self-employment varies according to systematic variations in earning potential activities and endogenously determined self-employer's entrepreneurial abilities (which themselves vary with such characteristics as education, age and working experience). Because of this heterogeneity, there is a different minimal level of compensation (holding risk constant) that is required by different individuals which will induce them to switch from being self employed to a wage earner (and vice versa). In addition, the wage rate of wage earners in turn will determine the ability level of the marginal self-employer who is just indifferent between self-employment and wage work. Although this (the quality of the individuals in the self employed sector) is not observable, it may affect the quality of the self employed activities (higher quality services with more predictability/or less probability of losses).

What are the predictions from this conceptualization of the occupational choice process. There are several. First, it is clear that if wages are rising (and employment, as we assume is fairly accessible), we should expect more people to be choosing to work in the wage earning sector. To the extent that there is more work in the coastal provinces and large cities, we should expect more rural individuals to choose the wage earning migration subsector. Second, if wages are rising, we should expect that there will be those in the self employed subsector that will choose to shift to the wage earning migration subsector. Third and finally, since those that are left in the self employed subsector, according to the conceptualization, should have higher entrepreneurial ability, we should either expect their earnings to rise (subject to competition in the sector) and/or their level of risk to fall.

4.2. Wage trends in the pre- and post-2000 periods

The 1980s and 1990s was a period of stagnant wages in China (Fleisher & Wang, 2005). Although there were few good studies of wages during the pre-2000 period in China, using information on wages from the few true panel data sets that do exist clearly shows that the real wage was relatively stable in the 1980s and 1990s. The rise of the real wage rate between 1988 and 1995 in the CHIPS data set (Riskin, Zhao, & Li, 2001) was only 5% in total. According to data from the CHNS data set from the late 1980s to the late 1990s, when adjusting the unskilled wage rate by the rural CPI, there is virtually no rise. Using the Jiangsu Loop Survey between 1988 and 1996, Rozelle, Dong, Zhang, and Mason (2002) showed that a real unskilled wage that rose less than 1% per

¹ There almost certainly is also an assessment of the likelihood of becoming unemployed in the wage earning migrant subsector as well as the likelihood of not being able to find clients/customers/contracts in the self employed sector. Given the rapid growth in China's economy, at least in the short run, these risks are probably less important. If one job ends (or if one client's contract is done), there are almost certainly other possibilities. Of course, there are smaller earnings during the periods of search and job switching/client hunting. But, this, at least in part, is accounted for in our analysis by the variability in the hourly earnings of the wage earning migrant and self employed.

Table 4

Actual hourly earnings comparison between wage earners and self-employers (yuan/h), 2000 and 2008.

	Mean	Mean	Annual growth rate
	2000	2008	2000–2008
Self-employer	7.2 (44.3)	7.4 (21.4)	0.35
Wage earner	3.0 (2.5)	5.4 (7.3)	7.7

Source: Authors' survey. Standard deviations in parentheses.

year. According to official data collected by the National Bureau of Statistics, China and compiled by Cai and Wang (2010), there is only a negligible rise in the wage rate during the 1990s.

After 2000, however, the story is fundamentally different. Cai et al. (2008) has shown the acceleration of wages during the post 2000 period when compared to the 1980s and 1990s. Their paper reports that the real wage rose at an accelerating rate (14% per year) after 1998. Cai and Wang (2010) cites the rapidly rising wage in the 2000s and interprets the findings as showing the after 2000 China had entered a period of development when the growth rate of the unskilled wage rate shifted relatively flat to rapidly rising.

According to our data, the real wage also rose between 2000 and 2008 (Table 4). In 2000, the hourly earnings of a rural working individual that was engaged in unskilled wage earning work was 3.0 yuan. By 2008, the hourly wage (in real terms) for the same individuals who were working in the same jobs at the same tasks was 5.4 yuan. Hence, in our sample the real hourly unskilled wage rate rose by 7.7% per year between 2000 and 2008.²

4.3. Occupational choice and wages and earnings: the empirical findings

In an almost naïve way, statistical trends from the literature and aggregated trends from our own data show that there is a clear correlation between occupational choice (self employed versus wage earning migration) and the unskilled wage rate. When the unskilled wage was low and stagnant in the 1980s and 1990s, the economic growth in China during these two decades in general triggered almost equal amounts of expansion of rural labor force participation in the self employment and the wage earning migration subsectors. After 2000, however, when the unskilled wage rate began to rise, many more individuals in the rural labor force were seen to become engaged in the wage earning migration subsector than the nonfarm, self employed subsector.

Disaggregated data (down to the individual level) support this interpretation (Table 4). As seen in the previous subsection, in 2000 the unskilled hourly wage was 3.0 yuan (column 1, row 2); by 2008 the hourly wage had risen to 5.4 yuan (column 2, row 2); the annual growth rate was 7.7% (column 3, row 2). In contrast, the self employed, while earning more per hour in 2000 (7.2 yuan per hour—column 1, row 1) and 2008 (7.4 yuan per hour—column 2, row 1), saw earnings rise at a much lower rate. Between 2000 and 2008 the growth rate of hourly earnings of the nonfarm self employed was only 0.35% per year (or less than one half of 1% per year—column 3, row 1).

From these trends it is clear that it is most likely not only the rising wage rate that may be inducing the shift in trends in self employment from rising to flat and the shift in trends in wage earning migration from rising to rising more steeply. Table 4 demonstrates that it appears to be the relative changes in the rate of growth of self employed hourly earnings and the hourly earnings of wage earning migrants. Wages between 2000 and 2008 grew at an annual rate that was nearly 20 times higher (7.7% versus 0.35%).

The role of risk may also be an important determinant of occupational choice over time. In 2000, according to the 2000 China National Rural Survey, although the hourly earnings of the self employed was more than twice that of wage earning migrants (7.2 yuan versus 3.0 yuan or 140% higher), the standard deviation of the earnings (a measure of risk) was much higher for the self employed (44.3) than for wage earning migrants (2.5). As described in Zhang et al. (2006), there were many self employed (more than 10% of them) that actually lost money in running their enterprises (although on average, the self employed gained). There were no wage earners that incurred negative incomes.

In 2008 the same high return (earnings or wage)/high risk (standard deviation of earnings or wage) still characterized rural labor markets, but, ratios had changed. By 2008 the hourly earnings of the self employed were only 37% higher than those of wage earning migrants (compared to the 140% difference in 2000). Interestingly, although the standard deviation of the earnings of the self employer was still higher than that of wage earning migrants, the ratio fell (both because the standard deviation of the

² Note: that as described in Huang, Zhi, Huang, Rozelle, and Giles (2011), it could be since our wage figure was measured at the end of 2008 this figure of 7.7% per year growth of the unskilled wage was on the low side. The reason for this is that the financial crisis hit in September of 2008 and by December of 2008 (the point of time that the wage rate was measured), the real wage had already fallen (or at least was stagnant) from the year before. Therefore, if, being conservative, we say that they wage rate growth between 2007 and 2008 was stagnant, the annual growth of the unskilled wage between 2000 and 2007 was nearly 9% per year, about the same rate of growth of GDP per capita.

Table 5

Difference between predicted and actual hourly wage earnings as self-employer (yuan/h), 2000 and 2008.

	2000	2008
Actual hourly earnings	7.2	7.4
Predicted wage	3.1	4.7
Difference	4.1	2.7

Source: Authors' survey.

earnings of the self employed fell and the standard deviation of the wage earning migrants rose). Such a finding is in some sense suggestive of healthy change in self employment. As the sector has evolved (and contracted—see discussion above around Table 3), there has been a compression of earnings. Markets may have eliminated the very large hourly earnings that some individuals earned in 2008. At the same time, firms that earned higher profits have stayed in business and there has been an elimination of some (but not all) of the loss-making firms.

Of course, in Table 4, we are comparing two groups of individuals (self employed and wage earning migrants). It might be that the results, at least in part, are being driven by the difference in the characteristics (that is, age, level of education, etc.) of the individuals in the different occupational subsectors. In Table 5 we present a similar analysis, and come to a similar set of findings. But, in the case of Table 5 we are comparing the earnings of the self employed with what the wage of the self employed would have been had he/she gone into wage earning migration instead of self employment.³

To create Table 5 we used a three step process. First, we used all of the wage earners in our sample in each year (separately) to estimate a wage equation (with the hourly wage as the left hand side, dependent variable) and the characteristics of the individual wage earners on the right hand side. The means and standard deviations of the variables used in the analysis for both years (separately) are reported in Appendix Table A1. The coefficients from the estimated wage equations for both years are reported in Appendix Table A2. Second, we used the coefficients from the wage equations from Appendix Table A2 and the characteristics (e.g., age, education, etc.) of those involved in self employment and predict the wage that each self employed individual would have earned (according to the wage equation) had the individual been in the wage earning migration labor force. This step produces a predicted wage rate for each self employed individual on an observation by observation basis for each year. In the third and final step, we use the two vectors of observations on the predicted hourly wage rates of the self employed and compare them to their actual hourly earnings.

The results in Table 5 produce a pattern of results similar to those when we compared the self employed with wage earning migrants (in Table 4). In 2000 the predicted hourly wage of the self-employed, on average, was 3.1 yuan (Table 5, column 1, row 2). The actual hourly earnings were 7.2 yuan (column 1, row 1). Evidently, the prospect of the higher hourly earnings offset the higher risk associated with self employment. In 2008, the gap still existed (7.4 yuan/h versus 4.7 yuan per hour—column 2, rows 1 and 2). However, between 2000 and 2008, the gap narrowed from 4.1 yuan per hour to 2.7 yuan per hour (columns 1 and 2, row 3). If it was the case that those that were better at being self employed were those that stayed in the self employed sector, the gap for those that were self employed in 2000 and were working for a wage in 2008 should have even been less.

In fact, interestingly, our data also supply two pieces of evidence that there might have been selection on the wage earning migrant side as well. First, it can be seen from Tables 4 and 5 that the predicted hourly wage for the self employed (4.7 yuan—Table 5, column 2, row 2) is lower than the average wage in the wage earning migrant subsector (5.4 yuan—Table 4, column 2, row 2). Second, it is also the case that the predicted hourly wage in 2008 of those that chose to stay in self employment in both 2000 and 2008 (4.7 yuan—column 2, row 2) is lower than the hourly wage of those that worked in self employment in 2000 and shifted to wage earning migration in 2008 (4.9 yuan—not shown in Table 5).

4.4. Participation choice of the self-employed and wage earning migrants

In this section we seek to examine if there is evidence using multivariate analysis that the change in the earnings gap can indeed explain changes in occupational choice. To do so we estimate a probit model using our 2008 data to empirically explain the participation choice of being either in the self-employed or wage earning migration subsectors. The dependent variable in our analysis is a dummy variable that equals to one if the individual is self employed and zero if the individual is a wage earning migrant. On the right hand side the independent variable of interest is a variable that measures the earnings gap, which is calculated as the difference between the actual earnings when one is self-employed (the actual wages when one is a wage earning migrant) and the predicted wage (from the estimation in Appendix Table A2). We also include a number of other independent variables, including gender, education, training, marriage, age and age squared. We run two versions of the regression, one without county level dummies and one with.

³ To control for possible selection bias in estimating the parameters of the wage equation, the authors follow the conventional two-stage Heckman selection correction procedure (Heckman, 1979). The approach that we use is also consistent with Hamilton (2000).

Table 6

Probit estimation of rural laborer's occupation choice, 2008.

Variables	If off-farm rural laborers are self-employed (Self-employer = 1; Wage earner = 0)	
Earning gap	0.010** (2.22)	0.007* (1.79)
Gender	-0.249** (-2.53)	-0.187* (-1.80)
Education	0.007 (0.47)	-0.005 (-0.30)
Training	0.413*** (4.24)	0.405*** (3.86)
Marriage	0.508*** (3.32)	0.471*** (2.93)
Age	0.084*** (2.69)	0.085** (2.59)
Age square	-0.0008** (-2.23)	-0.0008** (-2.15)
Constant	-4.570*** (-4.56)	-3.197** (-3.21)
County dummy	No	Yes
Pseudo R ²	0.104	0.161
Number of Obs.	1245	1245

Note: marginal effects are reported; Z-values in parentheses. ***, ** and * represent significant level at 1%, 5% and 10%, respectively.
Source: Authors' survey.

The results of the probit model fully support the idea that changes in the self employed-wage earnings gap is at least part of the explanation of the changing trends in occupational choice (Table 6). Although a number of the other variables in both sets of estimated equations are significant (e.g., Training and Marriage are both positive and significant; Age is positive and Age-square is negative—columns 1 and 2; rows 4 to 7), the levels of these variables are neither changing a lot over time or the direction of the change (e.g., more people are getting married; there is more training; people are getting older) is such that these variables (if they are changing) would be increasing self employment and decreasing wage earning migration. It is only the earning gaps variable, which is positive and significant in both regressions (columns 1 and 2, row 1), that can explain the relative fall in self employment and rise in wage earning migration. Since the earnings gap is falling over time, this shrinking gap leads to falling self employment and rising wage earning migration.

5. Conclusion

China's economy has maintained the high annual growth rate of GDP for over the past two decades. In 2009 GDP per capita reached nearly 4000 USD (NBS, 2010). In the past decade (after several decades of stagnation), China's unskilled wage rate appears to be finally rising at a rate nearly equal to that of GDP. In this paper we show that self-employment, an occupation that was so dominant in the 1980s and 1990s, has begun to stagnate. According to our data, the share of the rural labor force that is self-employed is falling and this is at least in part due to the narrowing earnings-wage gap that has occurred as the wage rate rose during 2000s. Migration has surpassed self employment as the number one subsector for employment of the rural population during the past several years. As long as the wage continues to rise, this trend will likely continue.

While the fall of self employment should have been predicted, our analysis does not suggest that those who are still involved in self employment are not necessarily being lost in an inferior subsector. Given the rigors of migration, and continued self employment opportunities in rural areas, our analysis actually is suggestive that this may be a rational division of labor among the cohorts. The young are migrating more than those that are older. And, within the cohorts we also see that those that seem to have a knack at self employment (those with higher predicted self employment earnings) stay in the sector; those that have lower predicted self employment earnings tend to opt for migration. As a result, returns in the self employment sector have not fallen (indeed, they have risen slightly) at the same time that risk (as measured by the standard deviation of self employed earnings) has fallen. In terms of policy suggestions, if there was reason to support self employment in the past because the sector was efficient in its own way, it is even more true now.

However, our results are also consistent with the view that if there is anything about participation in wage earning migration that is better for development than participation in self employment (Lucas, 1978; Tokman, 1992; Woodruff, 2006) that in the future of China's development is bright indeed. Migration is booming. Wages are rising. Those in the younger cohorts are more and more urban-focused in their lives. The decisions of those in the rural labor force are clearly consistent with the 12th Five Year Plan that is promoting permanent rural to urban migration.

Finally, the findings of our paper, while useful for this Symposium on the Lewis model, are not sufficient to prove or disprove the model. On the one hand, the paper provides findings that are consistent with the predications of the Lewis model. There is a

rising and accelerating number of individuals from the rural labor force that are moving from farm to off farm. Moreover, when wages rise, we see more and more of these individuals shift from farming to wage earning migration. However, our study does not have data on wages in the pre 2000 period. All information on this time period are from other studies. In addition, we do not know that was the nature of the impact on the farming sector (since we do not have full information on farming activities and income from farming). Finally, the wage–employment relationships that are estimated from our data are correlations. We lack the data to identify the causal relationship that the Lewis model predicts. In short, we provide information that we hope is useful in the continuing debate on the nature of China's economic development.

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Appendix

Table A1

Descriptive statistics of variables used in wage equation, 2000 and 2008.

	2000			2008		
	Self-employer	Wage earner	P-value of mean difference	Self-employer	Wage earner	P-value of mean difference
Actual earning/wage (Yuan/h)	7.2 (44.3)	3.0 (2.5)	0.07	7.4 (21.4)	5.4 (7.3)	0.32
Gender (1 = male; 0 = female)	0.73 (0.44)	0.71 (0.46)	0.30	0.64 (0.48)	0.68 (0.47)	0.09
Age (Year)	36.28 (10.67)	29.27 (11.16)	0.00	42.35 (12.07)	36.56 (30.02)	0.00
Education (Year)	7.71 (2.74)	8.56 (2.86)	0.00	8.25 (5.21)	8.82 (3.37)	0.01
Training ^a (1 = Yes; 0 = otherwise)	0.41 (0.49)	0.34 (0.47)	0.00	0.32 (0.47)	0.25 (0.43)	0.01
Marriage (1 = Yes; 0 = No)	0.83 (0.37)	0.49 (0.50)	0.00	0.90 (0.29)	0.67 (0.47)	0.00
No. of observations	599	1228		479	1398	

Note: ^a The training is defined as the training for the off-farm employment activities, such as construction, transportation, service, etc. Source: Authors' survey. Standard deviations in parentheses.

Table A2

Wage earning equations for wage earners 2000 and 2008.

	2000		2008	
	Coefficient	Z-value	Coefficient	Z-value
Gender	0.337 ^{**}	2.15	1.960 ^{***}	4.28
Age	0.020 ^{**}	2.18	0.002	0.28
Education	0.114 ^{***}	4.62	0.349 ^{***}	5.63
Training	0.633 ^{***}	4.30	0.734	1.62
Marriage	0.537 ^{***}	2.69	−0.012	−0.03
Constant	0.498	1.50	0.808	1.04
Selection equation				
Employment	3.880 ^{***}	26.01	2.417 ^{***}	24.91
Gender	0.182	1.27	0.216 ^{***}	2.62
Age	0.008	1.04	0.003	0.90
Education	0.044 [*]	1.80	−0.025 ^{***}	−2.08
Training	−0.195	−1.50	−0.093	−1.12
Marriage	0.150	0.79	−0.254 ^{***}	−2.50
Constant	−6.306 ^{***}	−13.68	−3.698 ^{***}	−13.50
Mills ratio	0.466 ^{**}	2.18	−0.343	−0.46
Wald chi ² (5)	86.37		57.79	
No. of observations	1827		1877	

Note: ^{***}, ^{**} and ^{*} represent significant level at 1%, 5% and 10%, respectively.

Source: Authors' survey.

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