China & World Economy

China & World Economy / 4–24, Vol. 21, No. 3, 2013

China's Labor Transition and the Future of China's Rural Wages and Employment

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Abstract

This paper contributes to the assessment of China's rural labor markets. According to our data, the increase in off-farm employment that China experienced during the 1980s and 1990s continued during the 2000s. Our analysis shows that migration has become the most prevalent off-farm activity, although the destination of migrants is shifting from outside of one's province to destinations closer to home. The present paper finds that large shares of male and female individuals, especially those under 40 years, are working off the farm. These findings represent an important contribution to the labor economics field. First, the results of the present paper reveal that the labor transition from the agricultural sector to the non-agricultural sector for key segments of China's rural labor force is nearly complete. Second, although a large share of China's rural labor force work in agriculture, most of these workers are older men and women (and likely would not be willing to take low-wage, labor-intensive jobs). Third, the rising unskilled wage rate in China is partially a result of the tightening of the labor force in the young age cohorts. Finally, due to factors associated with the one child policy and other demographic transition forces, successive age cohorts will continue to fall in absolute number in the coming decade. Assuming China's growth continues, we expect to see further wage increases since it will take higher wages to coax more workers to work off the farm.

Key words: China, labor force participation, rural wages
JEL codes: J2, O1, P2

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The authors are grateful for funding support from the National Natural Science Foundation of China (71110107028, 71033003 and 70803005), the Chinese Academy of Sciences (KZZD-EW-06-02), and the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (2011RC102 and 2012ZD008).

I. Introduction

Since the economic and political reforms began in China in the late 1970s, the nation has experienced rapid economic growth. The expansion of the rural economy has driven much of this growth (Putterman, 1992; Perkins, 1994). Rural labor markets have changed dramatically over the past 20 years and their emergence has contributed to the success of the rural economy (Solinger, 1999; West and Zhao, 2000; World Bank, 2001). Many observers of China agree that the success of rural labor markets in helping to raise incomes and productivity has been instrumental in the rise in rural welfare (Parish ***et al.***, 1995; Rozelle, 1996).

However, the growth of rural labor markets is important beyond its role in providing rural residents with a means to raise income (Stark, 1976; Todaro, 1976). For China to modernize, the nation must rely on labor markets to facilitate the shift from a largely rural population to an urban population. Without well-functioning labor markets, it will be difficult for the primary mode of production to be shifted from agriculture to industry/service. Hence, the question of whether or not rural labor markets have emerged in a way that will allow them to facilitate more effectively the transformation of China's economy is important beyond the fact that off-farm jobs contribute to rural income.

Although many researchers have contributed to the debate, scholars do not agree on the role that rural labor markets have played in contributing to China's economic growth. Some researchers believe that significant barriers still exist in China's economy, and that the absence of well-functioning rural labor markets has hindered growth (e.g. Meng, 1990, 1996; Benjamin and Brandt, 1997; Liu ***et al.***, 1998; Mallee, 2000). In contrast, others believe that rural labor markets are spearheading China's drive towards modernization (Cook, 1999; Lohmar, 1999; Maurer-Fazio, 1999; Rozelle ***et al.***, 1999; Knight and Song, 2001; de Brauw and Rozelle, 2008). The disagreement may exist, to some extent, because most previous analyses consider only part of the labor market, focus on only part of the country or are limited to a subset of questions about labor market performance. Perhaps due to the magnitude of the questions, the bits and pieces that are found in the published literature seem inconsistent or contradictory.

One of the reasons that we need to investigate how well China's rural labor markets are working is to help us understand another more immediate debate that is raging in China: Why is the unskilled wage rate rising? On the one hand, there are scholars who say that there are hundreds of millions of "surplus laborers" in rural China who would be ready and able to enter the labor market if labor markets just worked better (Rawski and Meade, 1998; Golley and Meng, 2011). According to this argument, if China could just get labor markets functioning well, in the coming years, wages in China would not necessarily rise that much

and industrial restructuring would not have to occur in the immediate future. In contrast, there are others who say that the problem is not the absence of well-functioning labor markets (Du and Park, 2006; Cai *et al.*, 2008, Cai and Wang, 2010). According to these researchers, rural wages are rising primarily because a large share of those in the prime-aged cohorts (from 16 to 35 years) are already employed in the off-farm sector. Moreover, because of a number of demographic forces, in the coming decades there will be fewer and fewer people entering the labor force. From a poverty alleviation point of view, this is good news. almost anyone in China who wants a job off the farm can obtain one. In fact, the "problem" is that labor markets are working too well.

Which set of researchers is right about whether or not China has abundant surplus labor? While, as discussed above, there are several papers that attempt to address the issue, few are systematic. Almost no paper seeks to provide a careful disaggregated account of what segments of the rural labor market are working off the farm and where they are working (at least not papers that are based on a national representative sample). Most empirical work on this subject is dated.

The overall goal of the present paper is to contribute to the ongoing assessment of China's rural labor markets, paying special attention to the employment patterns in rural China. Our ultimate goal is to help answer the question of whether the recent rise in China's unskilled wage is related to the underlying fundamentals of supply and demand (i.e. because China's labor market is tight) or is due to institutional barriers. With this knowledge we will seek to interpret the recent trends and to assess the implications for future rural wages and employment.

In the present paper, we have three objectives. First, we will provide an update of the trends in off-farm labor participation. We will estimate the nation's aggregate off-farm participation rates, focusing on the performance of rural labor market participation rates over a 17-year period between 1995 and 2011. Second, we will decompose the growth in off-farm employment, searching for clues about whether or not markets are developing in ways that will support China's modernization. Finally, we will use findings from the first two substantive parts of the paper to make an assessment of future labor market and wage trends.

II. Data

The data for the present study were collected from three separate rounds of household-level surveys. Our three surveys were conducted in 2005, 2008 and 2012. The three data surveys collect labor and wage data for three periods of time. The first survey (2005) covers

a time period that spans from 1995 to the year before the implementation of the first wave of the survey (2004). The second survey (2008) covers a time period that spans from 2005 to the year before the implementation of the second wave of the survey (2007). The third survey (2012) covers a time period that spans from 2008 to the year before the implementation of the third wave of the survey (2011).

The sample frame of all three surveys is the same. The first round of the survey was conducted in April 2005 using a randomly selected, nationally representative sample of 100 rural villages in 5 provinces (Jiangsu, Sichuan, Shaanxi, Jilin and Hebei). For more details on the exact method of sample selection, see Zhang *et al.* (2006). In the second and third rounds of the survey, the enumeration teams visited the same provinces, counties, townships, villages and households that had been sampled and surveyed in 2005. During all of the rounds, the enumerators implemented a household survey that was given to 20 households per village. In total, each round of the household survey covered more than 2000 households and 8700 individuals. In 2008, the number of households was 2028 and the number of individuals was 8471.

The survey team gathered detailed information on household demographic characteristics, wealth, agricultural production, non-farm activities and investment. Several parts of the survey were designed to learn about the household's migration decisions as well as its participation in other labor market activities over time. For all of the households in the first wave of the survey, a 9-year employment history form was completed for each household member and each child of the household head, even when they were no longer considered household members. For each year between 1995 and 2004, the questionnaire tracked each individual's participation in the off-farm employment market, the main type of off-farm work performed, the place of residence while working (within or outside the village), the location of off-farm employment (which county/province), and whether or not each individual was self-employed or earned wages.[1] In the 2008 (2012) wave of the survey, we tracked the employment histories for the same individuals and households, collecting the same data, for the years from 2005 to 2007 (2008 to 2011).

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[1]Enumerators attempted to seek the employment histories from each individual themselves. 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 determined 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. This same method for collecting data has been used by de Brauw *et al.* (2002) in China. In fact, those authors ask households for 20-year employment history and believe they have high quality data.

Table 1. Descriptive Statistics for Selected Variables

Variable	Mean	Standard deviation
Age (labor force) (2011)	41	13
Gender (1 = male)	0.51	0.50
Years of education	7.6	3.7
Household's responsibility land area, 2011 (mu)	6.4	7.3
Value of durables, 2011 (RMB1000)	17.4	34.5
House value, 2011 (RMB1000)	142.9	207.3
Household's labor force	2.8	1.4
Household size	4.2	1.7

Source: Authors' survey.

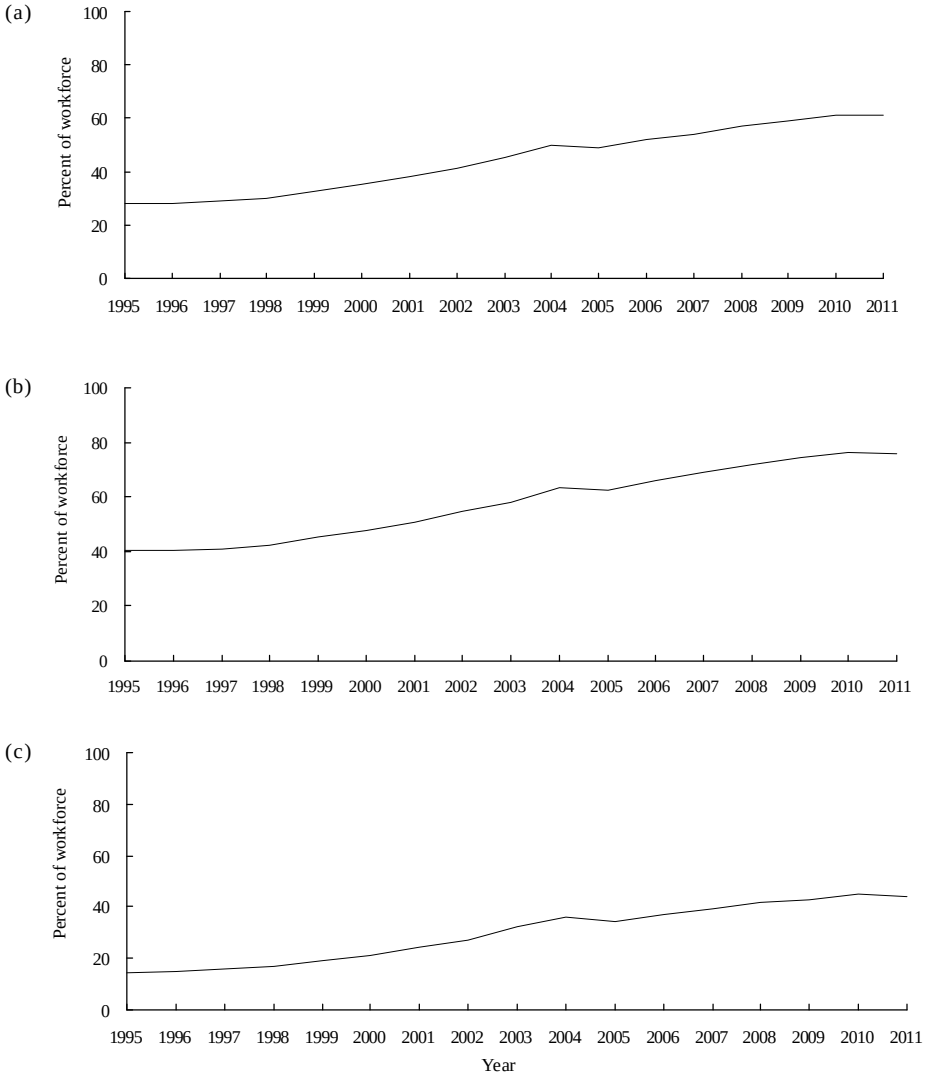
Using the employment history data, we classified all the labor force into three types of individuals: farmers, off-farm workers and those that did not work. Farmers refer to those who worked on the farm but did not have a job off the farm. Off-farm workers refer to those who had some type of off-farm job (either wage-earning or self employment). Some off-farm workers also worked on the farm; some did not. We do not distinguish in this paper if an off-farm worker worked on the farm or not. If an individual "did not work," it means that the individual did not work either on farm or off-farm but was searching for a job. A measure of the size of the household labor force was created by aggregating all individuals in the households between 16 and 65 years old when they indicated that they were either working as a farmer or an off-farm worker or were searching for employment. If a person over 16 years indicated that they had retired, could not work for health-related reasons or were enrolled in school full-time, they were not included in the labor force total. Descriptive statistics for selected variables are included in Table 1.

III. The Evolution of Rural Labor Markets in China

Consistent with previous findings of other national studies of rural off-farm employment (e.g. de Brauw *et al.*, 2002), data from our survey show that the off-farm labor force expanded steadily between 1995 and 2011 (the period covered by our employment history data). From approximately 31 percent in 1995, our survey estimates that by 2004 more than 50 percent of the rural labor force had found some employment off-farm (Figure 1, Panel A). In other words, 2004 can be thought of as a watershed year because (according to our data) it is the first year that more than half of the rural labor force were engaged in some kind of off-farm work (either earning wages or self-employed, or both). By assuming that neighboring provinces, similar to those surveyed, have identical rates of off-farm labor participation, we estimate that off-farm rural employment in China rose from less than 150 million in 1995 to more than 250 million rural residents in 2004, a growth in off-farm employment of more than 100million.

Although based on a relatively small sample, these numbers also demonstrate the

Figure 1. Percentage of Rural Labor Force Engaged in Off-farm and On-farm Employment: (a) Complete Sample, (b) Male and (c) Female



Source: Authors' survey.

Note: Each line shows percentages of all individuals, men, or women in the labor force.

consistency of our data with the much larger (although less detailed) national studies by the Chinese National Bureau of Statistics (NBS, 1996), de Brauw *et al.* (2002) and the 1995 national community survey described in Rozelle *et al.* (1999). The estimate from our survey data for the 1995 off-farm employment rate is almost the same as the NBS's estimate of the

off-farm labor force (31 percent), that of the 2002 study by de Brauw *et al.* (32 percent) and a 1995 community questionnaire-based estimate of rural off-farm employment (34 percent) that was published in 1999 (Rozelle *et al.*, 1999).

Despite the large investment in rural areas during the years of the Wen–Hu regime that some believed would stem the flow of workers out of rural areas, our data show that rural off-farm employment growth continued to expand between 2004 and 2011 (Figure 1, Panel A). By 2011, 61 percent of rural individuals were participating in off-farm work, a rise of approximately 10 percentage points (or 20 percent) between 2004 and 2011. If this is representative of the entire country, this means that nearly 310 million rural individuals worked off the farm in 2011, a rise of almost 60 million workers during the 2000s. In 2011, an individual in the rural economy was more than twice as likely to work off the farm as an individual in 1995. Such a large increase in labor flow would be one indicator that China's labor market is functioning well.

1. Disaggregating the Evolution of Rural Labor Markets

By disaggregating China's labor trends, our data demonstrate that labor markets are providing rural residents with choices to move into different locations of employment. Interestingly, the flow of labor out of rural areas to different destinations has evolved over time. For example, between 1995 and 2007, migrants were venturing further from home (Table 2). In 1995, approximately 65 percent of migrants worked within their own province (row 1, columns 1 and 2), while only approximately 35 percent went out of the province in search of work (row 1, column 3). By 2007, nearly half (46 percent) of migrants took jobs outside their home province (row 2, column 3). Significantly, however, after 2007, the trends changed. By 2011, more than half (57 percent) of the migrants took jobs within their own county (row 3, column 1); only 22 percent went out of the province (row 3, column 3).

Although the pattern of these destination shifts is similar for all workers, both young (under 30 years of age; henceforth, *younger workers*) and older (over 30 years of age; henceforth, *older workers*), there are fundamental differences by 2011 (Table 2, rows 6 and 9). In 2011, more than 60 percent of younger workers were working outside of their own county (31 percent outside of the county but inside the province; and 31 percent outside of the province, row 6). In contrast, in 2011, nearly 70 percent of older workers (69 percent, row 9) worked inside their county. The rest of the older workers (14 percent outside of the county but inside the province; and 17 percent outside of the province) were working in destinations farther from home. These observations are consistent with the trends that were just emerging in a 2009 survey taken after the global financial crisis and collapse of part of China's export sector (Huang *et al.*, 2011).

The labor movement contours created from the off-farm employment histories of different

Table 2. Comparison of Location of Migrant Employment
(In Percentage of Migrants Working in Specific Locations by Age in 1995, 2007 and 2011)

	Off-farm job location		
	Within own county	Within province, but outside own county	Outside own province
All off-farm workers			
1995[a]	36	29	35
2007	30	24	46
2011	57	21	22
Workers under 30 years old			
1995	31	31	38
2007	21	25	54
2011	38	31	31
Workers over 30 years old			
1995	40	32	28
2007	35	35	30
2011	69	14	17

Source: Authors' survey.

Note: [a]For example, the table compares workers who were 25 years old in 1995 with workers who were 25 years old in 2007.

age cohorts add more detail to the characteristics of these trends. Our data demonstrate a striking characteristic of China's changing employment pattern: the youngest age cohorts (i.e. those under 30 years) have almost completely shifted the focus of their employment to the off-farm sector (Table 3). Workers in all age cohort categories participated at similar rates as late as 1990. In 1990, participation rates of all age cohorts fell into a narrow range from 21 to 34 percent (Table 3, column 1). There was no clear progression when moving from the oldest to the youngest cohorts.

However, by 2004, the rise in the off-farm participation rates of younger workers had greatly accelerated relative to older workers, and a distinct ranking appeared as one moved from the youngest to the oldest cohorts (Table 3, column 2). In 2004, young workers in the

Table 3. Comparison of Labor Participation Rates (In Percentage of Individuals that Participate in the Off-farm Labor Force by Age Category, 1990, 2004, 2007 and 2011)

Age cohorts	Percentage with off-farm work			
	1990 (from de Brauw *et al*., 2002)	2004 (our data)	2007 (our data)	2011 (our data)
16–20[a]	24	74	81	88
21–25	34	82	84	90
26–30	29	73	82	88
31–35	27	68	74	84
36–40	21	53	69	74
41–50	21	41	50	61

Source: Authors' survey.

Note: [a]For example, the table compares workers who were between ages 16 and 20 in 1990 with workers who were ages 16 to 20 in 2007.

16 to 20-year-old cohort participated at rates more than three times (74 percent) those of 16 to 20 year olds in 1990 (24 percent). The off-farm participation rates of those in the 21 to 25-year-old cohort (82 percent in 2004) and those in the 26 to 30-year-old cohort (73 percent in 2004) more than doubled those of their 1990 cohorts (34 and 29 percent, respectively). In contrast, older workers (e.g. those over 40 years), while still increasing their participation rates (by 20 percentage points from 21 to 41 percent), worked off the farm at a rate that was nearly half the rate of those in the 16 to 30-year-old cohorts.

The rate of increase of off-farm participation accelerated even further between 2004 and 2011 for all age cohorts (Table 3). According to our data, almost all of those in the youngest cohort (who were not in school or who were not sick) were employed and working off the farm. Indeed, in 2011, less than 12 percent of 16 to 20 year olds that were in the labor force did not have an off-farm job. The rate was higher for the 21–25-year-old cohort; 90 percent of these rural individuals had an off-farm job; 88 percent of those in the 26–30-year-old cohort also had a job off the farm. Even for the older workers (e.g. those in the 40 to 50-year-old cohorts), the rate of off-farm participation was more than 60 percent in 2011, increasing dramatically over the rate in 2004.

The work behavior of younger workers also illustrates their increasing specialization in the off-farm sector (Li *et al.*, 2010). For example, in 1990, of those in the younger cohorts who had off-farm jobs (which was only 20 percent), more than half worked on the farm either part time or at least some time during the busy season (de Brauw *et al.*, 2002). By 1995, the first year of our data, already less than 20 percent of the youngest cohort who worked off-farm spent any time in agriculture. By 2007 (when almost all of those in the young cohort worked off the farm), only approximately 15 percent of the youngest cohort *only* worked on the farm. Clearly, this generation is very unlike those of the past. In fact, according to interviews with their parents, few among this cohort have any significant experience working in farming at all (except perhaps as children helping out during the harvest or other busy times).

2. Effects of the Emergence of China's Labor Markets on Women

While emerging rural labor markets may have numerous effects on the fabric of rural and urban economies, we limit our descriptive analysis in this subsection to a subset of the many possible effects. Specifically, we examine how the development of labor markets has affected the level of participation of women in off-farm activities. We also examine the effect it has had on the participation of women in farming.

Off-farm Participation

Emerging labor markets have already begun to positively affect the off-farm participation

rates of women. Although women have participated at rates below those of men throughout the entire study period, participation rates have risen steadily since 1995 (Figure 1, Panels B and C). In fact, during our sample period, the participation rate of women in the off-farm sector rose faster than that of men.

The participation by women in the youngest cohorts demonstrates the most striking gender effects of the growth of China's rural labor markets (Table 4). In the 16–20 and 21–25-year cohorts, the rates of participation are fairly similar; both are very high and increased rapidly from previous levels, especially in 2007 (rows 1 and 2). By the time women reach the 26–30-year cohort, however, the rates of participation, while still high (approximately 70 percent), are beginning to slow, and a gap between men and women starts to appear. Even with this slow down, when taken as a group (i.e. when looking at the participation of those in the 16 to 30-year-old cohort), more than seven out of ten women are working off the farm. The rates of participation, as might be expected, fall in the female age cohorts above 25 to 30 years, as women begin to have children. Men between the ages of 30 and 50 years participate in the off-farm labor force at rates more than 40 percentage points higher than women.

The rates of female participation continued to grow between 2007 and 2011 (Table 4, columns 3 to 6). In the 16–20-year cohort, the rate of participation of women reached 86 percent, very close to the rate of men (88 percent). From 2007 to 2011, the average participation rate of women in the 16 to 30-year cohorts rose more than 10 percentage points, from approximately 70 percent in 2007 to more than 80 percent in 2011. The average participation rates of men in the same cohort rose less than 5 percentage points. Similarly, the rates of increase of off-farm participation by women in the 30 to 40-year cohorts are much higher than the rates of increase of off-farm participation by men in these cohorts.

Table 4. Comparison of Labor Participation Rates
(In Percentage of Individuals that Participate in the Off-farm Labor Force by Age Category and Gender, 2004, 2007 and 2011)

Age cohorts	Percentage with off-farm work					
	2004		2007		2011	
	Male	Female	Male	Female	Male	Female
16–20	86	64	86	77	88	86
21–25	88	65	94	70	94	83
26–30	84	45	88	70	93	81
31–35	78	28	90	44	92	72
36–40	49	19	64	28	87	59
41–50	39	11	46	16	79	41

Source: Authors' survey.

Are Women Taking Over the Farm?

While our current dataset does not allow us to analyze this question for the rural individuals using our 100 village study (since we did not collect information on hours in the farming sector), in a previous paper (de Brauw *et al.*, 2008), we show that, surprisingly, the common perception that women are taking over the farm (as men push into the off-farm sector) is not literally true. In an environment in which a considerable amount of labor is moving off the farm, especially in the young male cohorts, it is not surprising that there should be growing attention to the study of those left behind. However, while other factors (e.g. composition of the labor force) are not held constant, the CHNS (Child Health and Nutrition Data, collected by the School of Public Health in North Carolina) and the data used in de Brauw *et al.* (2002: henceforth, CNRS) also demonstrate that according to the ***hours measure*** there is little support for the labor feminization hypothesis (Table 5).

During the 1990s, the average number of hours worked by men on their farms fell, as one might expect given the huge shift into the off-farm employment sector and the overall fall in the number of hours worked on the farm (by 46 percent from 1585 in 1991 to 918 in 2000). Surprisingly, however, the number of hours worked by women on the farm not only fell, but fell faster than those of men. According to the CHNS data, between 1991 and 2000, the number of hours worked by women fell from 1943 in 1991 to 1058 in 2000, a decline of 46 percent, 4 percentage points more than the average hours worked by men on the farm. Between 2000 and 2009, the number of hours worked on the farm, including those for women, continued to fall (by approximately 30 percent, Table 5, row 1). Clearly, according to the "hours criteria," there is no evidence of agricultural feminization.

The participation of women in agriculture also declined faster than that of men during the 1990s (and during the early 2000s). This can be seen by measuring the shaded white

Table 5. On-farm Participation by Men and Women, China Health and Nutrition Survey, 1991–2000

	1991	1993	1997	2000	2004	2006	2009
Average total reported hours of farm work	3528 (174.3)	2743 (133.1)	2356 (127.4)	1976 (145.6)	1756 (145.2)	1557 (120.3)	1399 (126.3)
Share of households reporting positive hours of farm work	0.89	0.87	0.81	0.75	0.70	0.65	0.65
Average hours of farm work done by women	1943 (96.7)	1431 (69.2)	1192 (63.7)	1058 (76.4)	927 (75.7)	867 (63.5)	748 (63.7)
Number of observations	2290	2236	2393	2389	2338	2355	2385

Source: CHNS, 1991–2009; de Brauw *et al.* (2013).

Notes: Standard deviations are in parentheses. Year refers to the year survey was completed. Farm work is defined to include time spent "gardening" and "cropping," and omits time spent tending livestock or fishing.

part of the graph between the trend line and the 100 percent line in Figure 1 (Panel C). While the participation rate of men working full-time on the farm is lower throughout our study period, due to their earlier and larger shift into the off-farm sector, the participation rate of women as full-time farm workers declines faster. Since this measure of participation is the complement of the off-farm participation rate, this finding is not surprising, as the off-farm participation rate rises faster for women during the 1990s.

When we examine the proportion of farm work done by women over time in the CNRS (also for the 1990s), we also do not find evidence of labor feminization. Using the employment history data, we created a measure of the proportion of farm work done by women in years prior to 2000. To do so, we estimated the fraction of a full-time worker that a part-time or busy season worker represents, for both men and women.[2] By aggregating the data up to the household level and measuring the proportion of farm work done by women in each household, we can estimate how the share of farm work done by women changed between 1990 and 2000.[3] We account for households that are formed after 1990 and for members of the household alive in 2000 that leave or return to the household. To generate a confidence interval around the mean, each point was estimated using a simple bootstrap 1000 times. Using this method, de Brauw *et al.* (2008) estimated the change in the proportion of the household farm workforce that is female over time. As suggested by the literature (e.g. Rawski and Mead, 1998), the proportion of farm work done by women increases slightly during the early 1990s. However, it peaks in 1995 and then declines thereafter, falling by nearly 5 percentage points between 1995 and 2000. A drop in the percentage of farm work being done by women, on average, is certainly not consistent with a story of agricultural feminization in China. In fact, contrary to the common perception, according to this household share measure of labor feminization, agriculture is gradually defeminized after 1995.

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[2] In order to extrapolate the percentage of farm work done in each household by women back in time, we make some assumptions about these fractions. First, we assume that men and women work equal numbers of hours if they work full-time on the farm. If they work part-time on the farm, we assume that they are equivalent to two-thirds of a full-time worker, regardless of their gender (which is the fraction that is worked by part-time workers in 2000). Finally, men who work only in the busy season are assumed to be equivalent to one-third of a full-time worker, whereas women who work only in the busy season are assumed to be equivalent to one-third of a full-time worker (which is also based on the 2000 labor allocation data in the CNRS sample). We further assume that the fractions do not change over time.

[3] We only analyze the percentage of farm work done by women between 1990 and 2000, instead of over the whole period (1980 to 2000), because some individuals who may have worked on these family farms during the 1980s may have died. Since the share of respondents that were alive and for whom data were reported in 1990 is higher than in 1980 (since there was more time for an individual to have died), this problem is not as substantial during the 1990s.

While the conclusion from an analysis of survey data from the 1990s is that there was little evidence of feminization, recent surveys of farming areas in north China cotton-producing regions and coastal horticulture-producing regions suggest that after 2000 the gender share of on-farm work may have started rising again (as it did in the early 1990s). To show this we examine information about the share of men/women who were interviewed during our survey. According to the rules of the survey, our questionnaire (which was targeted at cotton-producing households) was supposed to be answered by the "person who was in charge of the farming operations." In 2000, men answered the questionnaire more than 70 percent of the time. In 2007, women answered 65 percent of the time. The same was true in a survey of Shandong apple and grape farmers in 2005. Women also were shown to contribute the most labor on the family orchards in 2005. Unfortunately, these surveys are not nationally representative and they do not contain the complete set of variables (e.g. over time and on all farming enterprises) that are needed to answer the question. Therefore, more research is needed on this question of the participation of women in on-farm labor activities, but the possibility remains that feminization is occurring again in agriculture.

3. Summary of the Empirical Findings on Rural Labor Markets

According to our household survey data, the rapid increase in off-farm employment that China experienced during the 1980s and 1990s has continued and may have even accelerated among certain subgroups during the 2000s. Our analysis shows that the rate of off-farm participation has reached a high level. Interestingly, while there are still tens of millions of rural off-farm workers that live and work outside their own province, by 2011 most of the off-farm workers, especially those over 30, were finding jobs in either their own county or province.

We believe, however, the most important contribution of this section of the paper is revealed by analyzing the labor force participation rates by age cohort. According to our analysis, 88 percent of 16 to 20 year olds (who are not in school); 90 percent of 20 to 25 year olds; 88 percent of 25 to 30 year olds; and 84 of all 30 to 35 year olds in the rural labor force now work in the off-farm sector. Increasingly, these cohorts are working full-time off the farm.

The role of women in the labor force is also changing dramatically. The rise in the participation rates is faster than that of men (although starting from a lower base). In some of the lower aged cohorts, there is little difference between the participation rates of men and women. One interpretation of this rise in the participation of women is that, as labor markets have become more competitive, the scope for managers to exercise their discriminatory preferences has declined, therefore opening up new employment opportunities for those who had previously not been able to participate. Alternatively, a

rise in women's work could have occurred as the types of industries that have a preference for the skills of women have expanded. It is also possible that employers are searching for all types of workers (either male or female) and since a smaller share of females were employed in the late 1990s and early 2000s, they have been the ones drafted into the labor force most often in recent years. To the extent that working off the farm increases incomes and raises status, women have benefited.

III. Implications for Future Rural Wages and Employment

In the previous section, we provided evidence showing how labor markets are performing in a way consistent with an economy that is in transition from agriculture to non-agriculture. The population is shifting from rural to urban. Moreover, the rising unskilled wage rate in China, which increased by more than 10 percent a year between 2005 and 2006 (Cai *et al.*, 2008), appears to be related to the tightening of the labor force, at least among the younger age cohorts. Following this logic, it would appear as if one could safely predict that there was no reason to forecast anything but tighter labor markets and increasingly rising wages.

While this may be one interpretation, despite the enormous shift of labor from farm to non-farm employment over the past decade, it is also true that there are a lot of people left in the rural areas. If one visits villages there are still as many towns, villages and hamlets as there were 30 years ago (administrative mergers aside). Farm size, since 2005, is beginning to increase after falling for more than 40 years (NBS, 2008), but the labor to land ratio is among the highest in the world. Our own graphs show that there are large numbers of laborers still in China's villages, with many of them still engaged in farming (see the white parts of the figures). Hence, while our evidence is helpful, we still need to reconcile our arguments with the fact that there are a lot of persons in rural China.

In the rest of this paper we are not going to dispute the fact that there are a lot of people still living in rural areas (as stated, our own figures support this assessment). Instead, what we are going to do is to show that an expectation of rising wage rates in the future and the fact that there is still a large number of laborers in rural areas of China are not inconsistent. Indeed, in the rest of this section we will show that China will have plenty of labor to fill its factory floors and satisfy the demand from the service sector. However, these new entrants will likely only emerge from China's villages and shift into the off-farm sector if they are enticed out by either higher nominal wages or higher "real" wages (i.e. the wage plus the services provided to workers and their families in the destination communities into which the new entrants will be moving). In fact, there are at least three large subsets of rural residents that are available for recruitment into the off-farm labor market: (i) younger/ middle-aged men that are still working in agriculture, but who are engaged in activities that

are relatively high valued; (ii) middle-aged/older men who are engaged in off-farm self-employed activities; and (iii) young/middle-aged women who are raising their children in their family's villages and have made the decision to stay in the village because of the expense or difficulties of accessing social services in the city (who often are also currently engaged in farming and non-farming labor activities).[4]

1. Finding Higher Value in Farming

In our discussions about the transition of labor out of agriculture into the off-farm employment sector, historically the story was one around getting access to the job in an off-farm enterprise (either by working for someone or by starting one's own non-farm firm). The assumption often was that an individual with employment off the farm job would always earn more than he or she could when working on the farm. This was especially true for young, able-bodied laborers who were endowed with entrepreneurship. Indeed, in most economic models of development, it is assumed that the wage rate in the non-agricultural sector is always higher than in the farming sector and it is the number of jobs that is keeping people on the farm (Gillis *et al.*, 1996).

However, Huang *et al.* (2008) present empirical evidence to challenge this. The agricultural sector has not been static during the past two decades (during the time that off-farm employment has been growing). There has been a rise in the livestock and fisheries sectors; commercialized farming in the poultry, hog and dairy sectors, although slow to take off, are shown to be gradually emerging (Rae *et al.*, 2006; Bi *et al.*, 2007). The rise in the horticultural sector in China is unparalleled anywhere in the world (Huang *et al.*, 2008).

Out of this structural change have emerged opportunities for those interested in farming and who have access to the necessary amounts of capital and management skills to invest in a number of the newer higher valued enterprises. According to a study in Shandong Province's horticultural belt, rural residents (especially younger ones, both males and females, with relatively higher levels of human capital) face a real tradeoff (Huang *et al.*, 2008). They can search for off-farm employment (and almost always find a job) or they can go into the production of high-valued fruit and/or vegetables. According to our data, there is absolutely no income penalty for doing so. The average grape-producing and apple-producing households (selected from a provincial representative sample) had assets that were statistically indistinguishable from the average rural resident earning a wage in the

[4] It is also highly likely that this situation is caused by the fact that China's urban environment is not particularly welcoming to urban migrants. Brandt and Rawski (2008) show that there are many institutional constraints, such as: (i) an unwelcoming education system; (ii) restrictions against use of urban health facilities; and (iii) high housing prices.

off-farm market. Even when all other factors were held constant using multivariate analysis, it was found that the average horticulture-producing family in Shandong made almost the same level of earnings as a family that had chosen to work off the farm (Huang *et al.*, 2008).

What does this mean for future wages? There are a lot of these young/middle aged farmers who have decided to go into the production of high-valued agricultural commodities. They are not getting rich, but they are earning the equivalent of what they would off the farm. So if there is any benefit to working and living at home (in one's own village), it is clear that while many of these farmers could be enticed to leave farming and join the off-farm labor market, it is almost certain that for most it would take a higher relative wage to induce them to leave. There are a lot of laborers still left in rural China, and to tap into this part of the labor force, the rural off-farm wage will have to rise even higher than it is now.

2. China's Army of the Self-employed

Fundamentally, the same story is true in the case of the (non-farm) self-employed. Although the migrant segment of the rural labor force has grown rapidly since the early 1980s, the second fastest growth rate was registered by the self-employed migrant living in the rural areas at home. In 1980, according to de Brauw *et al.* (2002), only 4 percent of rural laborers were engaged in running their own small businesses. Our data show that by 2007 the share of the rural labor force that were self-employed (and living at home) rose to 15 percent. In other words, there are approximately 75 million persons in rural China who are self-employed. As shown in Zhang *et al.* (2006), the enterprises in which self-employed persons work might best be described as micro-enterprises. On average, including the entrepreneur himself/herself, each enterprise has fewer than 1.5 employees. Although the capitalization rates have been rising and firms have been gradually evolving towards more sophisticated business activities, these are still best characterized mostly as service-oriented, labor-intensive firms.

The nature of the firm, however, does not reduce the ability of the firm's "owner" to generate earnings that are above the unskilled wage rate. According to a dataset analyzed by Zhang *et al.* (2006), in 2000 the average wage-earning worker was earning approximately 2 yuan per hour. The hourly earnings of the self-employed who were living and working in the same villages/townships as their wage-earning counterparts were 7.8 yuan. Of course, the hourly earnings of the self-employed were not only the return to his/her labor, but also part of the earnings was the return to the owner's capital and entrepreneurship. Indeed, the higher earnings were also needed to offset the much higher level of risk (the standard deviation of the wage earner's hourly earnings was 3.9 versus 36.9 for those who were self-employed, as shown in Zhang *et al.*, 2006).

So how can labor markets in the future tap this segment of the rural labor force? There are likely many farmers currently engaged in horticultural (and dairy and commercial livestock) production who could be induced into the off-farm market if the wage were high enough; this is likely to be equally true in the case of the non-farm self-employed. Since earning a wage is less risky (and there would be no need to invest into the capital stock/ inventory of one's own firm), a fourfold increase in the wage is not likely needed. However, it is almost certain that a higher wage is going to be needed to convince many of these small entrepreneurs to stop working for themselves and shift into the more formal, wage-earning labor market.

3. Women and Their Families

Finally, as our data show, in the case of those workers in cohorts that exceed 25 to 30 years of age, the proportion of men working out of the village in the migrant labor force exceed that of women. Of course, the reason for this is that many women in age cohorts above 25 years of age leave the off-farm labor force and the city and return to their home village to begin to raise their family. However, like most people in rural China, there are few who leave the labor force entirely. Except for during the periods of time immediately before and after the birth of their children, women usually continue to work. Because they are living in their village, work during this time of their lives is most likely either on a farm, in a local factory or service-oriented enterprise, or in their family's own self-run micro firm.

Why do women decide to return to the village to have their babies and raise their children? In many societies, women from migrant families continue to live in the city. Many can continue to work. In China, while there are some women (and increasingly so) that do not move back to the village to raise their families, during interviews most women stated that raising their family in rural areas was much easier and more cost-effective. Access to health services, educational facilities and child care are all much more convenient and less expensive (or free) when the family is in the village. In recent years, particularly as rural elementary and junior high school tuition have been free (while migrant schools still charge tuition) and rural health insurance is beginning to become universal, there have been non-wage incentives to leave the migrant work force and return to the village.

So, how could the tens of millions of women who are living and working (and farming) in villages be encouraged to (re)enter the migrant labor force? In the case of women with young children, in addition to offering a real wage that is higher than what they are making in the village, the employer (or city in which the employer is located) will either have to offer educational, health and other social services or an even higher wage to compensate for the inconveniences and additional costs of living in and using the more expensive social services in the city. Therefore, as in the case of men who are self-employed both on and off

the farm, there are a lot of women who would be willing to enter the labor force, but only at a higher real wage.

4. Final Word: Higher Wages and Lots of Labor

So who is correct? Are there tens of millions of people living in the countryside who are willing to enter the non-farm labor force, or are wages in the future destined to rise? According to our findings, we believe that it might best be said that both "schools of thought" are right. There are a myriad of economic and demographic forces that are coming together to tighten labor markets. These are the forces that have helped push up wages over the past several years. Yet, wages are rising at a time when there are literally tens of millions of able-bodied men and women in rural areas. This is not a sign that labor markets are not working, however. These men and women are in the village for a reason. They are making a wage, earning through their self-employment activities and taking advantage of social services that make it more attractive for them to live in the village. Some of them (which in this case could still be a large number) will undoubtedly be willing to move to the city and join the migrant labor force. The wage that will draw them out, however, will need to be increased gradually over the coming years (assuming the economy keeps growing). Of course, there are still institutional constraints (e.g. high housing prices, lack of access to education and discriminatory licensing requirements) that may be keeping wage earning migrants and the self-employed from moving into cities (even at the current wage rate). This is not to say that wages would not rise if these institutional constraints were removed. Even if the constraints were relaxed, it is likely that the rate at which they could politically be relaxed would not exceed the rise in the demand for labor. It would only slow the rate of wage increases.

Are higher wages a bad thing? In fact, a rising wage rate is good for the rural economy. It will benefit those that are endowed primarily with labor, which is typically the poor. Higher unskilled, low-skilled wages are effective in reducing inequality. Of course, higher wages will not come without a cost. Many of China's industries were established on the basis of the nation's low wage rates. The technologies and management strategies of many of China's factories and industries depended on low wages. When wages rise (and they will, according to our analysis), it will be necessary for firms that want to survive and thrive to change their technologies and management approaches to accommodate higher wages. The key to firm survival is to increase labor productivity. Often this involves training workers to use new technologies, giving workers more responsibility and relying on the enterprises labor force to adapt to the demands of markets that require more flexibility and demand higher quality. Workers in these industries often have to be trained to perform relatively more sophisticated tasks. This is another challenge for the state in the coming years.

There is an alternative scenario, of course, in which wages do rise rapidly in the future. If China's economy were to slow down, the demand for labor would diminish. Low demand would mean lower wages. The future growth rate of China is a source of great debate. The overall assumption in this paper is that, at least in the short run, growth will continue. If that assumption were not true, the case for rising wages would be fundamentally different.

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(Edited by Xiaoming Feng)