Can China Meet Its Employment Challenges?

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Concern is growing about employment, or the lack thereof, in China. Some suggest that unemployment in cities has reached crisis levels, citing the fact that workers from a range of backgrounds—former state-sector workers, rural laborers from China's vast interior regions, and even recent college graduates—are all having a hard time finding jobs. Others argue, pessimistically, that the economy cannot produce enough new jobs to employ the large numbers of new entrants to the labor market, let alone the newly unemployed. Still others point to large differences in income between urban/rural and coastal/interior regions, and to the persistence of China's residential permit (*hukou*) system, which links access to public services and benefits to where one is born, as evidence that those in the rural interior continue to be excluded from employment opportunities in China's booming cities and coastal areas. All of these observations indicate that a combination of failures, both market- and policy-related, may contribute to the system's inability to provide jobs equitably to all of China's able and willing laborers. China's success or failure in employing its workforce will have enormous impact on its future economic performance, social equity, and political stability, and can be considered the first of its major employment challenges.

Given the lively debate about rising unemployment, it is surprising that China also faces considerable controversy over labor shortages and rising wages for unskilled workers. Are these phenomena, reported in southern China and elsewhere, temporary? Will they subside as soon as more workers can be mobilized from the countryside? Or will they diminish once China reaches a Lewisian turning point, when surplus labor is exhausted and real wages begin to rise?[1] If the former is true, then temporary shortages provide additional evidence of labor-market immaturity. If the latter is true, it raises the question of whether China's low-cost advantage may disappear and threaten its export competitiveness. The continued mobilization of a cheap, educated, and disciplined labor force to support economic growth represents China's second key employment challenge.

A third major challenge is the provision of adequate social insurance for workers who are increasingly exposed, not only to market risks and uncertainties, but also to other unforeseen events such as illness. Social insurance—with its concomitant political implications[2]—is important for maintaining adequate

security and well-being for all of China's citizens. An effective social insurance system can contribute directly to the productivity and flexibility of the workforce by ensuring the health and well-being of workers and by facilitating job transitions.[3] In China, employers or work unit systems (*danwei*) have traditionally provided great security to workers. Given the downsizing of the state sector, the rise of the private sector, and the high variability in the administrative and financial capacities of local governments, more and more Chinese lack access to unemployment insurance, health insurance, and social security in old age. Indeed, many dislocated workers and their families may be falling through the cracks.

These problems are much discussed, but often informed by anecdotal, outdated, or misleading evidence. By consulting the best available microdata and considering key measurement issues that affect how data from different sources are interpreted, this chapter seeks to shed empirical light on how China is meeting its three major employment challenges. In particular, the chapter analyzes an important new source of information—data from China's 2005 minicensus, which surveyed 1 percent of the Chinese population using a multistage sampling design. Like the 2000 census, the 2005 minicensus featured national coverage, but was unique in that it included information on wages. As in the 2000 census, the 2005 survey asked about persons living in the residence on October 31 of that year, and about work undertaken during the previous week. The newly available income data is particularly useful because it includes the incomes of migrants, who are severely undersampled in the annual urban household survey conducted by the National Bureau of Statistics (NBS), which is the source for official estimates of income and expenditure levels in China. The lack of previous census income data, however, makes it difficult to examine changes over time. For employment and migration outcomes, this chapter provides comparisons between 2005 and 2000, using the 2000 census data.

In addition to the 2005 minicensus and 2000 census data, the chapter also presents statistics and empirical analysis using NBS's annual labor-force surveys, NBS's urban and rural household survey data, and the Ministry of Agriculture's panel rural household survey data.[4] Because these are annual surveys, they are useful for tracking changes over time.

Can China Generate Enough Jobs?

In a neoclassical labor-market model with costless mobility, wages are set so that labor supply equals labor demand, and there is no involuntary unemployment. Explaining unemployment requires a theory of disequilibrium that considers the reality of labor adjustment costs, barriers to mobility, and/or wage rigidities. In such settings, shifts in labor demand or supply can influence not only the wage level but also the number of dislocated or unemployed workers. For example, it may be difficult for former state-sector workers to acquire the skills required in the new market economy and to find jobs at wages they find acceptable. If the government stipulates minimum levels of wages and benefits that are above

market-clearing levels—as they have consistently done in the state sector—an excess supply of workers can result. This can be reduced in turn if labor demand is increased or labor supply decreased. Changes in labor supply are influenced by demographic shifts, and the supply of labor at different skill levels is determined in part by education: access to it, as well as its cost and quality. Labor demand is affected by changes in the quantity and types of goods and services produced in the economy, and the technologies used to produce them. Such changes can be significantly affected by economic growth and government policies that regulate factor prices (such as wages or interest rates), liberalize international trade and foreign direct investment (FDI), support the development of specific industries, or influence innovation and technology adoption. All of these factors have different impacts on different workers, depending on their distinct skill sets and education levels.

Unemployment and Labor-force Participation

The first way to investigate whether there is a shortage of jobs in China is to examine estimates of the unemployment rate. The lack of reliable and timely unemployment rate estimates consistent with internationally standard definitions presents a significant impediment to the design of appropriate macroeconomic and social insurance policies. Internationally, unemployed workers are typically defined as those who did not work in the past week; who were not temporarily on vacation, sick, or participating in training activities before going back to a job; and who actively looked for work in the past month. Both the 2000 census and 2005 minicensus asked about work in the past week and about the reason for not working if the respondent did not work. One possible response was that the respondent did not work but was looking for work. These questions can be used to construct unemployment rate estimates, even though the questions are not standard. Giles, Park, and Zhang estimate that, for five large cities surveyed using a specially designed instrument and based on an internationally standard definition, the census overestimated the unemployment rate by about 30 percent.[5]

Indeed, the evidence reveals that anecdotal accounts of high unemployment in China's cities are alarmist. According to the 2005 minicensus data, China's urban unemployment rate on October 31, 2005, was 5.2 percent, down from 8.1 percent on October 31, 2000 (see table 2.1). If one adjusts for the upward bias in the census estimate relative to international norms, the unemployment rate was less than 4.0 percent. Using data from five large cities and extrapolating to all of China, following Giles, Park, and Zhang, we estimate the urban unemployment rate at 4.4 percent in 2005, compared to 7.3 percent in 2002. This finding independently verifies the downward trend in unemployment. However, as shown in table 2.1, estimates of the unemployment rate based on data from the NBS labor-force survey of the economically active and employed populations produces a somewhat different trend, with unemployment first

29

Table 2.1 Unemployment Rates and Labor-force Participation Rates in China, 1996–2005

	Unemployment rate, all (census)	Unemployment rate, all (AS)	Unemployment rate, all (GPZ)	Unemployment rate, urban residents (GPZ)	Labor-force participation rate (census)	Labor-force participation rate (AS)
1996	–	3.9	4.5	6.8	–	73.0
1997	–	4.3	5.0	7.7	–	72.0
1998	–	6.3	5.6	8.5	–	71.0
1999	–	5.9	5.9	9.0	–	73.0
2000	8.1	7.6	6.5	10.8	69.0	66.0
2001	–	5.6	7.0	10.8	–	67.0
2002	–	6.1	7.3	11.1	–	66.0
2003	–	6.0	–	–	–	63.0
2004	–	5.8	–	–	–	64.0
2005	5.2	7.0	4.4	6.7	65.0	63.0

Sources: Aggregate statistics are published in the *China Labor Statistical Yearbook* (Beijing, China Statistical Press, 2006).
Notes: Census data calculations by the authors. AS = From aggregate statistics based on labor-force surveys. The unemployment rate is the difference between the economically active population and employed workers, divided by the economically active population. The labor-force participation rate is the economically active population divided by the working age population (above age 16). GPZ= Giles, Park, and Zhang (2005); figures for 2005 are the authors' calculations based on the second wave of the China Urban Labor Survey.

falling and then rising between 2000 and 2005, with a slight overall drop in unemployment from 7.6 percent in 2000 to 7.0 percent in 2005.[6] Still, the latter number is within shouting distance of the 5.2 percent minicensus estimate, though it remains unclear why there is a discrepancy at all, since both are presumably based on the same data.

According to the census data, the labor-force participation rate fell from 69 percent in 2000 to 65 percent in 2005, or by nearly a percentage point each year, as shown in the last column of table 2.1. Data from labor-force surveys show a similar decline, from 66 percent in 2000 to 63 percent in 2005. Over the past decade, the labor-force participation rate fell by 10 percent, a dramatic reduction. This decline might be cause for alarm if one believed that many of those leaving the labor force were doing so involuntarily and felt discouraged about finding a new job, and thus were similar to the unemployed. But another perspective is that adjustment was unavoidable, given a competitive market environment in which the government could no longer afford to subsidize nonproductive, or surplus, labor. As in other transitional economies, such an adjustment led naturally to a reduction in historically high labor-force participation rates. Neither perspective, of course, mitigates the pain experienced by older workers who developed their skills in an outdated system and held on to high expectations for their job security and other benefits. China's government has tried, with limited success, to cushion the shocks associated with such job loss.[7] Today, for better or worse, most workers dislocated by the major restructuring of the late 1990s have found new jobs, transitioned to retirement, or left the labor force. The most difficult part of the adjustment process appears to have passed.

Which groups of workers, then, currently have the hardest time finding work? Table 2.2 shows unemployment rates and labor-force participation rates in 2005 and 2000, respectively, broken down by gender, age, education, and region. In 2005 women had a higher unemployment rate than men, 6.1 percent compared to 4.4 percent, and a much lower labor-force participation rate, 57.1 percent versus 73.7 percent. These gender differences are similar to those in 2000. Unemployment rates tend to fall with age—they are highest for the youngest workers, aged 16 to 25 (9.1 percent). While this may reflect particular problems faced by new entrants to the labor force, unemployment rates for this group fell most sharply from the 2000 unemployment rate of over 15 percent. Also, younger workers in many countries tend to experience higher unemployment rates as they try to match their skills to employers and move more frequently from job to job.

Table 2.2 Urban Unemployment Rates and Labor-force Participation Rates, 2000 and 2005

	Unemployment rate (%)		Labor-force participation rate (%)	
	2000	2005	2000	2005
All	8.1	5.2	68.7	65.3
By gender				
Men	7.4	4.4	77.3	73.7
Women	9.1	6.1	60.0	57.1
By age				
16–24	15.8	9.5	91.9	85.1
25–34	7.1	5.3	88.7	86.3
35–44	7.5	4.6	88.1	85.9
45–54	5.1	3.8	71.0	69.3
55+	1.6	1.9	21.1	23.1
By education				
< Primary	2.1	1.4	26.8	29.7
Primary	4.0	2.6	60.4	58.1
Middle	9.6	5.7	78.9	74.3
High	10.9	7.6	83.4	74.8
Technical college	4.4	4.1	90.5	84.8
Regular college	2.0	2.5	84.9	85.3
Graduate	1.1	1.3	92.1	95.6
By region				
East	7.4	4.8	70.1	67.3
Central	9.8	5.9	66.3	62.0
West	7.7	5.1	68.4	65.0

Source: Authors' calculations using 2000 census and 2005 minicensus microdata.

Employment of College Graduates

Considerable media attention, both within and outside China, has focused on the difficulty that recent college graduates have encountered in finding desirable jobs. Many have attributed this to the surplus of graduates resulting from China's aggressive expansion of higher education in recent years. The number of graduates from regular institutions of higher education increased from 9.5 million in 2000 to a staggering 37.8 million in 2006.[8] Table 2.3 presents data on unemployment and labor-force participation rates for those aged 16 to 25, broken down by level of education. The data do show an increase in

the unemployment rate and a decline in the labor-force participation rate for those graduating from regular college. The unemployment rate for this group increased from 6.3 percent in 2000 to 11.9 percent in 2005, while the labor-force participation rate fell from 96.3 to 90.1 percent over the same period. Interestingly, the increase in the unemployment rate contrasts sharply with declines in the unemployment rate for all other education levels over the same period. The decline in labor-force participation occurred for all education levels, perhaps reflecting the fact that people were pursuing higher levels of education or had a greater propensity to postpone or avoid employment.

Table 2.3 Labor-market Outcomes for Young Workers Aged 16–24, 2000 and 2005

	Unemployment rate (%)		Labor-force participation rate (%)	
	2000	2005	2000	2005
All	15.8	9.5	91.9	85.1
By education				
< Primary	7.7	3.3	52.5	41.1
Primary	10.4	5.9	87.4	80.0
Middle	14.6	7.7	91.7	85.3
High	20.4	13.0	92.8	84.5
Technical college	14.1	13.4	96.7	90.8
Regular college	6.3	11.9	96.3	90.1

Source: 2000 census and 2005 minicensus data.

On the one hand, the data support the argument that greater policy attention be directed toward facilitating the employment of recent college graduates. On the other hand, larger trends indicate that college graduates are being successfully absorbed into the workforce. The private return to college education compared to high school in urban areas has increased tremendously over time, from less than 12 percent in 1988 to 37 percent by 2001.[9] Younger cohorts enjoy even higher returns to schooling than older cohorts. This suggests that increases in demand for college-educated workers far outpace increases in supply. The national urban labor force that is college-educated remains less than 10 percent, even as global integration and rapid technological change increasingly place a premium on highly skilled workers. It is possible that college graduates need time to modify unrealistically high expectations about their first postcollege jobs, or that they are willing to wait for better matches because of the perceived importance of initial placements to future career development. Modest initial

wages for college graduates are balanced by the fact that wages subsequently rise most steeply among younger members of the workforce.[10]

Industrial Policy, Financial Reform, and the Demand for Labor

As noted earlier, government policies can affect employment opportunities in the economy. During the period of economic restructuring, Chinese leaders sometimes felt frustrated that China's double-digit growth was not generating more new jobs. Relatively slow job creation can be partly linked to policies in other sectors that were formulated without consideration of their effects on aggregate labor demand. Industrial development strategy in particular has emphasized the development of heavy, capital-intensive industries (such as automobiles, machinery, and steel), which are viewed as keys to modernization, sustained GDP growth, and government revenue mobilization. In China, these sectors received preferential access to cheap credit, favorable tax treatment, and supportive public investments. Investments generally did not flow to light industries that had the capability to create more employment opportunities, especially for unskilled workers. Entry into nonindustrial, labor-intensive sectors, such as services, was often restricted, which in turn limited their development.[11] Especially after 1998—when the government initiated expansionary fiscal and monetary policies—the cost of investment funds for large enterprises was very low. For these reasons, industrial development has been very capital-intensive.[12]

Despite recent reforms in the banking system, large, capital-intensive firms have continued to receive favorable treatment from state-owned commercial banks. Banks had plenty of funds to lend, thanks to robust economic growth and large increases in personal savings. Under strong pressure to reduce nonperforming loans (NPLs), banks perversely had an incentive to steer funds to large, state-owned enterprises (SOEs) or to state-supported projects implicitly backed by the government. State-controlled interest rates were kept at below-market levels, creating incentives for firms to choose capital-intensive technologies. In addition to reducing overall labor demand, if capital is skill-biased, the demand for unskilled workers falls even more than that for skilled workers. Private enterprises, by contrast, many of which were small and medium sized, found it difficult to obtain loans from state commercial banks and instead turned to alternative financing channels, including FDI. Indeed, the private sector has accounted for the majority of new job creation since the mid-1990s, government restrictions notwithstanding.[13] Continued reform of the banking system through greater competition, including from foreign and private banks, could promote more lending to the private sector and increase labor demand.

Demography and Labor Supply

China has reaped a demographic dividend that has increased the size of the labor force each year. Because of the age structure of China's population, the

labor force grew rapidly by 3 percent per year during the 1980s and early 1990s and at a slower rate of about 1.5 percent per year since then.[14] As the population pyramid for 2005 in figure 2.1 shows, China currently has more people entering their twenties (that is, joining the labor force) than entering their sixties (retiring). But after 2020 this will have reversed, so that the labor force will begin to decline in absolute numbers. As figure 2.2 illustrates, the dependency ratio, defined as the number of children and elderly relatives to the number of those of working age, will reach its low point sooner, in 2013, after which China will become a rapidly aging society. As that process occurs, the rising dependency ratio will slow per capita growth rates. However, China could reap a second demographic dividend as older citizens with greater savings enable the financing of investments that raise labor productivity, an important point to which we will return later in this chapter.[15] In summary, over the next fifteen years, labor force increases will be modest when compared to the speed of China's economic growth, but the labor force will subsequently shrink, leading to labor scarcity rather than surplus.

For urban labor markets, the large increase in rural migrant labor has been an even more important source of growing labor supply. This has been due in part to the relaxation of institutional restrictions on migration, yet it also reflects the biases of public investments, which have favored urban areas over rural areas. China's investment in agriculture is small compared with other countries at similar levels of development.[16] Through various channels—such as taxation, pricing policies, and credit allocation—significant resources have been extracted from the agricultural and rural sectors to support urban industrialization.[17] A key goal of the Hu Jintao government's new socialist countryside initiative, supported by increased public investments and social spending in rural areas, has been to reduce this urban bias, which could partly explain recent labor shortages in cities, as more rural laborers choose to remain in the countryside.

Has the Age of Surplus Labor Ended?

As noted earlier in the case of college graduates, the speed of real wage growth is another useful indicator of whether rising demand for labor is outpacing supply. Wage growth may also reflect increases in labor productivity or institutional changes that reverse practices that underrewarded workers relative to their productivity. Figure 2.3 plots mean real wages for China from 1978 to 2003 based on official data reported by work units. In contrast to most other transition economies, there are no large declines in mean real wages during the reform period. On the contrary, average real wages rose steadily in 1981, 1988, and 1989. Most remarkably, real wages increased at an accelerating rate (14 percent per year) after 1997, when state enterprise restructuring was at its high point.

**Figure 2.1 China Population Pyramids, 2005 and 2020**

China: 2005

China: 2020
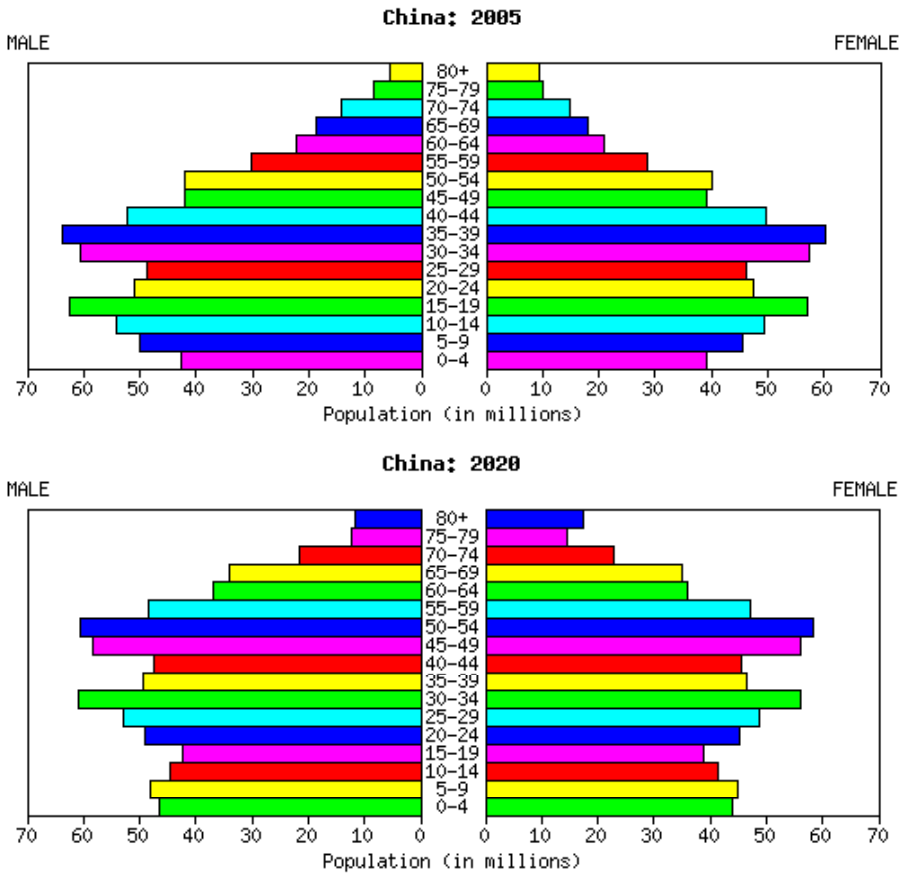
Source: Pyramids produced by U.S. Census Bureau, www.charlottediocese.org/
customers/101092709242178/filemanager/docmgr/population_pyramids.pdf
(downloaded August 20, 2009). Data underlying these pyramids available at
www.census.gov/ipc/www/idb/.

These increases are probably overstated, because administrative reporting
overlooks various types of informal employment that increased rapidly in the
late 1990s. Nevertheless, figure 2.3 highlights the success of China's economic
reforms in delivering amazing welfare gains for the average citizen. Focused
government policies might well have been responsible for the continuously
rising wages of government and SOE workers. Studies using urban household
survey data also confirm the steady increase in real wages. According to NBS
urban household surveys in six provinces from different regions, real wages
climbed between 1988 and 2001, including increases of 9 percent on average

36

between 1997 and 2001.[18] Studies describing trends in real urban income per capita support this finding.[19]

Figure 2.2 China's Demographic Dividend: Dependency Ratios, 1949–2049
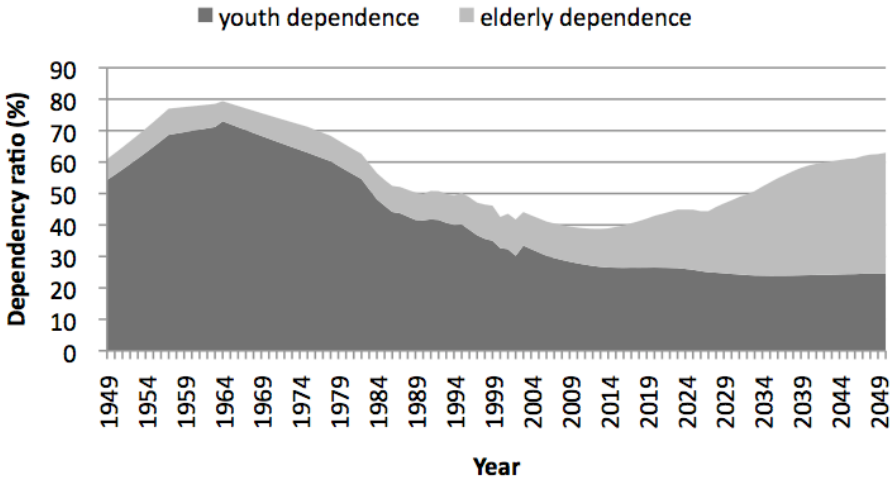
Sources: Pre-2003 data from the *China Population Statistics Yearbook* (2003); other years based on projections from the Institute of Population and Labor Economics, Chinese Academy of Social Sciences.

Figure 2.3 Real Wages, 1978–2003
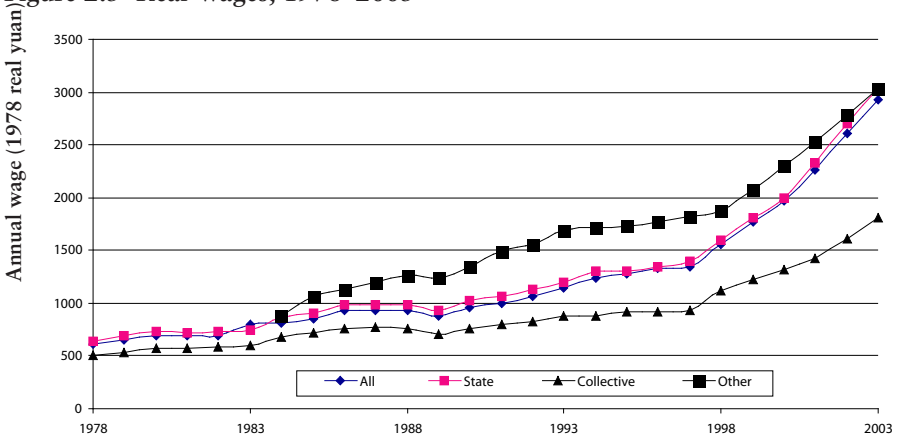
Source: NBS, China Statistical Yearbook, 2004. Wages deflated using the urban CPI (retail price index used prior to 1985).

What about increases in the wages of less-skilled workers, especially rural migrants? For many years, people doing business in China or visiting factories in the south reported that the wages for migrant factory workers remained stagnant and at a very low level (often between 300 and 600 yuan per month), thanks to the endless supply of cheap labor flowing in from the Chinese countryside. Despite numerous press accounts of labor shortage before the onset of the global economic crisis in 2007, many continue to argue that there remain hundreds of millions of underemployed (or surplus) laborers in rural areas.[20] It is true that coastal China historically tapped rural workers from nearby locations, beginning with local areas, and then progressing to neighboring provinces in central China. Only in the late 1990s did China witness significant increases in migration outflows from the western part of the country.[21] Does China still have the scope to mobilize more rural migrants from interior regions, or is the end of surplus labor with steady wage increases looming?

Let us consider the evidence. Table 2.4 shows that many of the sectors in which migrant workers are most prevalent have seen steady real wage increases over time, usually between 10 and 15 percent per year. However, these data are based on work unit reporting, which mixes skilled and unskilled workers and may underrepresent migrant laborers, who are often hired off the books. In the past several years, two national rural surveys—the Research Center for Rural Economy (RCRE, Ministry of Agriculture) Rural Panel Household Survey, and NBS's Rural Household Survey—began systematically collecting data on rural migrant wages. As detailed in table 2.5, the RCRE survey finds that mean real wages of migrant workers increased by -0.6 percent in 2004, 4.9 percent in 2005, and 9.8 percent in 2006. Wage increases accelerated particularly rapidly for middle and high school graduates in 2006—14.7 and 15.1 percent, respectively. The NBS survey finds that mean real (nominal) wages of rural migrants increased by 5.6 percent in 2003 and 7.6 percent in 2004.[22] The China Urban Labor Survey in five large cities in 2001 and 2005 underscored these statistics, indicating that the mean real hourly wages of migrants increased by 32 percent between 2001 and 2005 (an average of 8 percent per year), compared to an increase of 19 percent for local residents. For those with a middle school degree and below, the migrant hourly wage increases were somewhat slower, 22 percent—or 5.5 percent per year.[23]

Table 2.6 reports mean monthly and hourly wages for China according to the 2005 minicensus. For the entire country, the mean monthly wage was 1,021 yuan, and the mean hourly wage was 5.23 yuan. Men earned 23 percent more than women per month and 20 percent more per hour. There are similarly large differences in pay associated with disparities in education: college-educated workers earned twice as much as middle school graduates and 60 percent more than high school graduates. The age-earnings profile, however, is relatively flat, reflecting the higher mean education levels of younger workers.

Table 2.4 Annual Real Growth Rate of Average Wage in Select Sectors (%)

	Mining	Manu-facturing	Con-struction	Transport, storage, and post	Commercial and catering services	Comm-unity services
1995	5.34	3.33	1.20	4.54	2.82	1.90
1996	3.49	0.32	-0.72	4.11	0.85	4.14
1997	2.24	1.99	3.29	5.99	0.82	8.08
1998	6.63	19.78	12.71	14.74	21.79	10.99
1999	5.21	11.78	8.46	13.53	10.85	12.62
2000	10.01	11.37	8.56	11.19	11.15	10.73
2001	14.15	10.93	7.83	14.21	13.15	14.01
2002	16.09	13.69	9.48	14.39	15.88	14.88
2003	23.08	12.57	10.66	-1.34	n. a.	n. a.
2004	19.39	8.72	7.71	11.40	n. a.	n. a.
2005	20.32	10.52	10.52	14.34	n. a.	n. a.

Source: NBS, *China Labor Statistical Yearbook* (various years), and Ministry of Labor and Social Security (MOLSS), *China Labor Yearbook* (various years).

Table 2.5 Wages of Rural Migrants, by Education Level, 2003–2006

	Unit	2003	2004	2005	2006
Nominal monthly wage	yuan	781	802	855	953
	growth rate (%)	–	2.7	6.6	11.5
Real monthly wage	2003 yuan	781	776	815	895
	growth rate (%)	–	-0.6	4.9	9.8
By education level					
Primary and below	2003 yuan	687	705	750	801
	growth rate (%)	–	2.6	6.4	6.8
Junior high school	2003 yuan	728	732	757	867
	growth rate (%)	–	0.5	3.4	14.7
Senior high school	2003 yuan	878	849	846	973
	growth rate (%)	–	-3.3	-0.3	15.1
College and above	2003 yuan	1,098	1,080	967	1,027
	growth rate (%)	–	-1.6	-10.5	6.2

*Source:* RCRE panel household survey. Nominal prices deflated by the national urban CPI.

Table 2.6 Mean Monthly and Hourly Wages, 2005

	Monthly wage (yuan)	Hourly wage (yuan)
All	1,021	5.23
By gender		
Men	1,102	5.60
Women	899	4.68
By education		
Primary and below	734	3.51
Middle	867	4.15
High	1,062	5.51
College and above	1,603	9.10
By age		
< 30	960	4.80
30~39	1,061	5.40
40~49	1,049	5.48
> =50	1,005	5.42
By migrant status		
Migrant labor	1,125	5.52
Of which: rural-urban	952	4.30
Local labor	973	5.10

Source: Institute of Population and Labor Economics (CASS) Project Group, *Labor Market Supply and Demand Conditions and Social Insurance Problems: Analysis of the 2005 Mini-census Data*, unpublished report, 2007.

The advantage of the 2005 minicensus data is that it offers more comprehensive coverage for wage data than do other official sources. In particular, it has good coverage of migrants, who form an important part of the unskilled labor force in the manufacturing sector. Taking the mean manufacturing hourly wage for 2005 based on the minicensus data, adding a 27 percent premium for nonwage benefits in manufacturing as estimated by Banister for 2002,[24] and applying the official exchange rate in 2005 of 8.2 yuan, we calculate that China's mean hourly wage, as measured in U.S. dollars, was about 70 cents in 2005. To better illustrate the competitiveness of this wage level globally, figure 2.4 compares this wage with the hourly labor costs of workers in other countries, as reported by the U.S. Bureau of Labor Statistics. When stacked against countries such as Mexico, Chinese wages remain very low. Figure 2.4 makes clear that even with significant wage growth, China will remain competitive for some time to come.

Figure 2.4 Comparison of Manufacturing Unit Labor Costs Per Hour, 2005
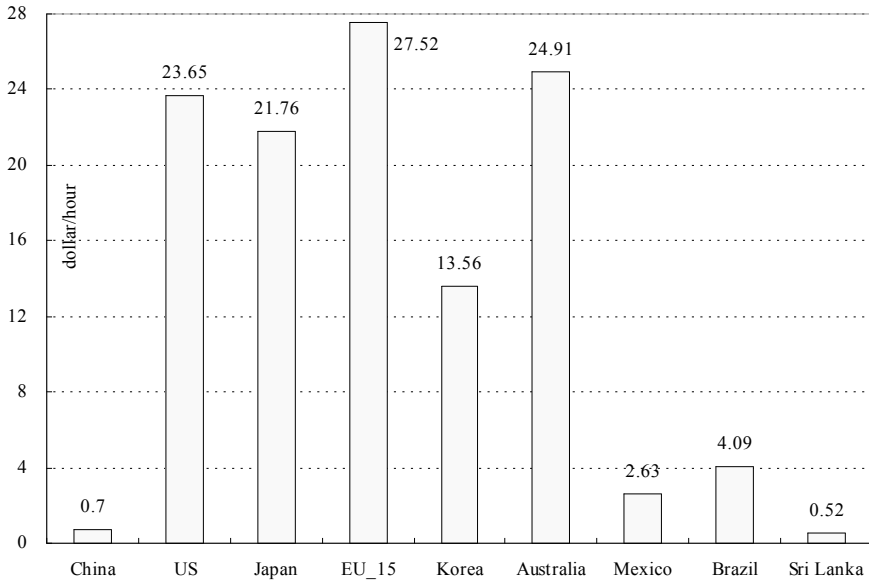
Sources: China manufacturing hourly wage calculated from 2005 1 percent minicensus data. Unit labor cost based on coefficient provided by Banister (2005)—1.27 times wage (for 2002). Yuan-dollar exchange rate for 2005 was 8.19 (*China Statistical Yearbook*). Cost for Sri Lanka is for the year 2004. Unit labor costs for other countries from U.S. Bureau of Labor Statistics, ftp://ftp.bls.gov/pub/special.requests/ForeignLabor/ichccsuppt02.txt.

Fretting over the effect of rising wages on China's competitiveness is unnecessary for several additional reasons. First, many foreign investors locate operations in China not only for low labor costs but also for proximity to the large China market, good infrastructure, and a stable, favorable policy environment. Second, even if one focuses on labor costs, it is important to remember that competitiveness depends not on the cost of labor per unit of time but on the cost of labor relative to labor's productivity. By maintaining higher labor productivity, China can preserve its competitive advantage over many countries in Africa and Asia, even though they have cheaper labor costs. Further, rising wages will not hurt competitiveness if they are matched by similar increases in productivity. One recent study that addresses data quality issues finds that labor productivity in Chinese manufacturing increased by over 20 percent per year between 1997 and 2003.[25]

Some have argued that despite the large number of migrants, there are still hundreds of millions of workers employed in agriculture who can be easily shifted to more profitable nonagricultural activities. According to official statistics, of the 485 million rural laborers, 297 million were not working in township and village

enterprises (TVEs), private enterprises, or nonagricultural self-employment.[26] It is not clear how many of these individuals were actually working full-time in agriculture. Some may have migrated to urban areas, but were not categorized as such. The Ministry of Agriculture estimated the number of rural migrants (presumably mostly workers) to be 108 million in 2005. Others may have been engaged part-time in nonagricultural work. Rawski and Meade estimated that official numbers on agricultural labor overestimate actual labor time spent in agriculture by up to 25 percent.[27] Cai and Wang conduced similar exercises for the year 2005 and found that the number of full-time equivalent workers in farming and animal husbandry was about 190 million, assuming a 300-day work year.[28] This suggests that surplus labor time in 2005 could have ranged anywhere from 0 to 106 million workers, depending on how well official statistics captured migration.

And yet, these back-of-the-envelope calculations can be misleading. In China, young people are much more likely to migrate than older people, who often strongly prefer to live in their home villages. For their part, employers of migrants favor young workers. According to rural household surveys conducted in five provinces, by 2007 over 80 percent of those aged 16 to 30 were engaged in off-farm work, compared to about 70 percent for those aged 31 to 40 and 50 percent of those aged 41 to 50 (figure 2.5). Moreover, the number of young people who migrated increased significantly from 2000 to 2005, whereas less than 5 percent of people over the age of 45 elected to migrate. In other words, to the extent that surplus labor persists in China, workers are more likely to be older individuals who are both less willing to migrate and less desired by employers.

Figure 2.5 Share of Rural Labor Participating in Off-farm Work in 2007, by Age Group
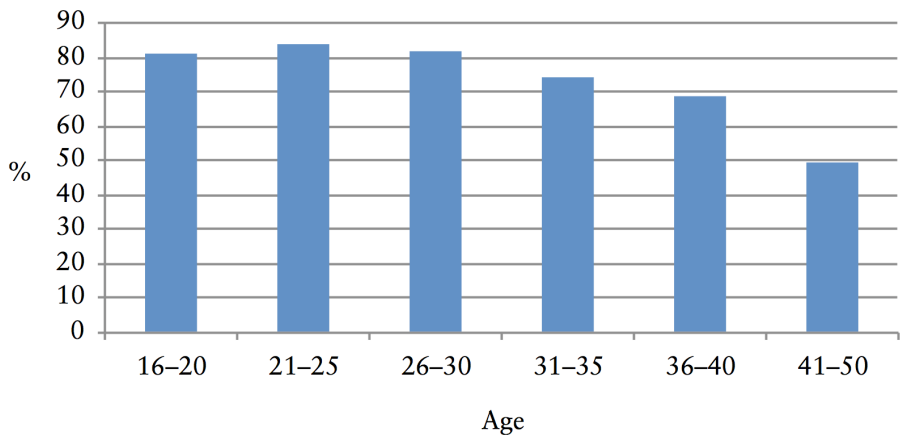
Source: Linxiu Zhang, Xiaofei Li, Scott Rozelle, and Jikun Huang, "China's Labor Transition and the Future of China's Rural Wages, Employment and Urbanization Shifts," unpublished manuscript, 2009.

Evidence on Labor-market Integration

To what extent has the Chinese labor market become integrated across regions? This key question helps us to evaluate whether observed labor shortages are temporary and region-specific or whether they reflect broad changes in the labor market as a whole. Greater integration would mean that rising wages are unlikely to reflect temporary shortages in a particular region. Integration also would promote more efficient labor allocation and create equal opportunities in the market for similarly qualified workers from different parts of the country. In this section, we review evidence from a number of different microdata sets, including the 2005 minicensus, all of which consistently show that labor markets have become highly integrated in recent years.

First, we consider evidence from the NBS's annual urban household survey. Analysis of a six-province subsample of the survey suggests that after the year 2000, interregional wage differences began to decrease. This can be seen in the narrowing dispersion over time of coefficients on provincial dummy variables included in Mincer-type wage regressions plotted in figure 2.6 (coefficients equal the percentage difference in earnings compared to the lowest wage province in the sample,

Figure 2.6 Provincial Urban Wage Differences, 1988–2003
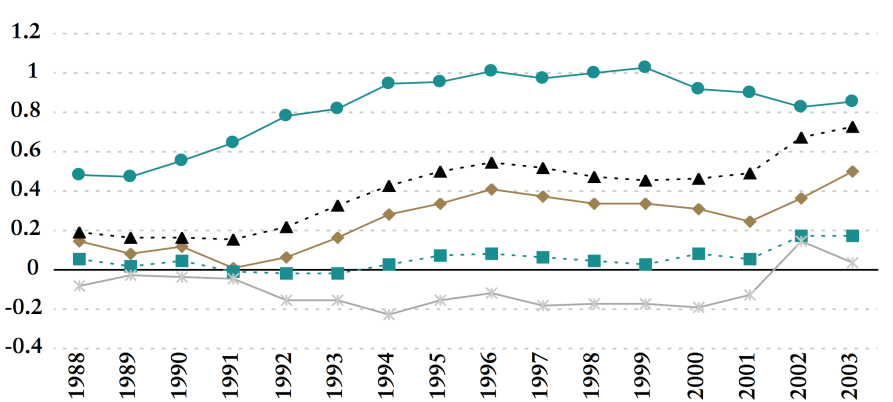

Source: Albert Park, Xiaoqing Song, Junsen Zhang, and Yaohui Zhao, "Rising Returns to Skill, Labor Market Development, and Rising Wage Inequality in China," unpublished manuscript, 2006.
Note: Differences relative to Sichuan as a percentage of annual wages of employed workers. Calculations based on Mincer regressions of annual earnings according to years of schooling, gender, potential experience, potential experience squared, and provincial dummy variables. Earnings are deflated by provincial CPIs to 1988 prices.

Sichuan). Conducting a similar analysis based on the full urban household sample in 2003, we find that coastal wages remained about 20 percent higher than elsewhere in real terms, although the differences among noncoastal regions were relatively small (figure 2.7).

Figure 2.7 Regional Urban Wage Differences, 2003
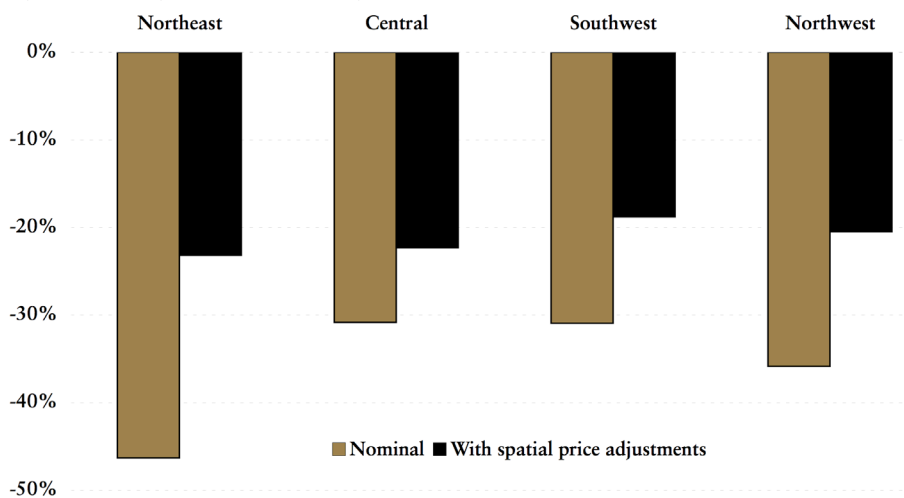
Source: Analysis of 2003 NBS urban household survey data.
Note: Percentage difference in wages relative to the coastal region. Calculations based on coefficients of regional dummy variables from Mincer regressions of annual earnings on years of schooling, gender, potential experience, and potential experience squared.

Next, we examine evidence from the Ministry of Agriculture's rural household surveys, with a particular focus on the earnings data for rural migrants, which were collected systematically beginning in 2003. As noted earlier, the NBS urban household survey significantly undersamples migrants. This gap in the evidence makes it difficult to study labor-market integration because migration is the mechanism that connects and integrates regional labor markets. As a first step, we decompose the inequality in wages into within-province and between-province components, using a set of general entropy measures that assign different weights to differing degrees of inequality. The best known of these measures, the Theil index, produces results similar to those using other measures. We control for differences in the cost of living across regions by using spatial price deflators for wages, as calculated by Brandt and Holz.[29] Throughout the period 2003 to 2006, interprovincial wage differences accounted for less than 10 percent of total inequality (table 2.7). This percentage was 7.2 percent in 2003, 9.3 percent in 2004, and 6.8 percent in 2005 and 2006. Thus, interregional market segmentation was relatively low and is declining over time. In table 2.8, we use a regression-

based decomposition method to directly measure how specific factors contribute to inequality. Using this method, we find that the importance of regional differences increased from 14.4 percent in 2003 to 20.8 percent in 2004, and then declined to 19.0 percent in 2005 and 16.9 percent in 2006 (table 2.8).

Figure 2.8 The Rise of Informal Employment in Urban China (% of urban employment by employer type)
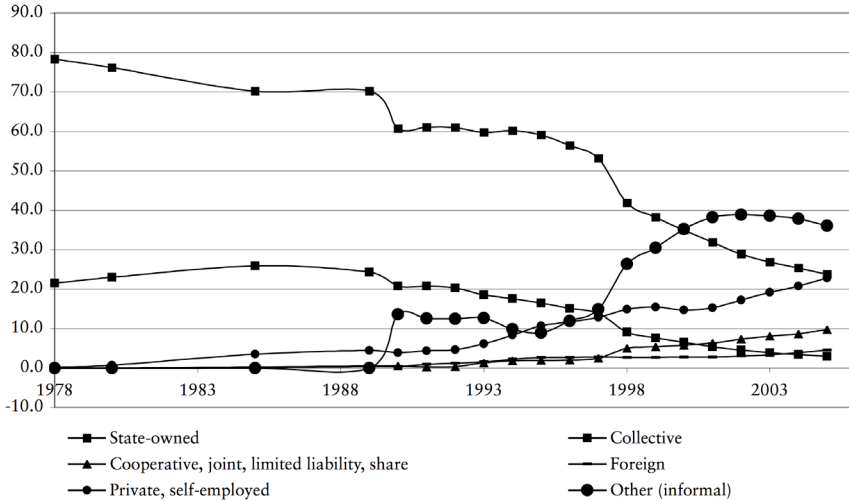
Sources: NBS 2006 and *China Statistical Yearbook*, 2006.
Note: The "other" category is obtained residually as the difference between total urban employment (as estimated from labor-force surveys and that reported by state and collective units), and registered private businesses and self-employed individuals. This category primarily relates to those in some kind of informal employment in urban areas.

Table 2.7 Decomposition of Rural Labor Wage Inequality between and within Provinces (Theil index)

	2003	2004	2005	2006
Total inequality	0.263	0.237	0.204	0.205
Within provinces	0.244	0.215	0.189	0.190
Between provinces	0.019	0.022	0.014	0.014

Source: Calculations using Research Center for Rural Economy panel household survey data and Brandt and Holz (2006) provincial spatial price deflators. For results without spatial price deflation, see Fang Cai, Yang Du, and Changbao Zhao, "Regional Labor Market Integration since China's World Trade Organization Entry: Evidence from Household-level Data," unpublished manuscript, 2007.

Table 2.8 Theil Regression-based Decomposition of Rural Labor Wage Inequality

Components of inequality	2003	2004	2005	2006
Theil entropy	0.263	0.237	0.204	0.205
Regional factors (%)	14.4	20.8	19.0	16.9
Individual factors (%)	-63.7	-54.3	-36.4	-29.4
Constant (%)	-11.4	-27.5	-64.4	-43.6
Residual (%)	160.7	161.1	181.7	156.1
Total (%)	100.0	100.0	100.0	100.0

Sources: Calculations using Research Center for Rural Economy panel household survey data and Brandt and Holz (2005) provincial spatial price deflators. For results without spatial price deflation, see Cai, Du, and Zhao, "Regional Labor Market Integration since China's World Trade Organization Entry."

As a final exercise to study wage patterns across regions, we turn to the 2005 minicensus data, which includes wage data for both local residents and migrants. We present separate results for workers with different education levels. Again, spatial price differences have been controlled for using Brandt and Holz's indices.[30] Classifying the decomposition of wage variation into between- and within-province components, we find that interprovincial wage differences accounted for between 8 and 13 percent of total wage differences for primary, middle, and high school graduates, depending on the education level and entropy measure (table 2.9). Interprovincial differences were least important for middle school graduates—by far the largest category of migrants. In contrast, they accounted for 22 and 26 percent of wage inequality for college graduates.

Is this pattern of wage convergence across regions consistent with other indicators of the magnitude and nature of migration? Table 2.10 presents estimates of the scale of migration in 2000 and 2005 using the census and minicensus data. Total migration increased from 73 million in 2000 to 97 million in 2005, a growth of 32 percent. Interestingly, migration by urban dwellers increased three times faster than the rural population, by 65 percent compared with 22 percent. Nonetheless, in 2005 rural migration still accounted for 70 percent of all migration. While migration increased rapidly over this period, it was still the case that migrants remained a relatively small portion of the total population (7.5 percent). Compared with other measurements of the number of migrants, these are on the low side, perhaps because they are based on migration in the past five years.[31] Table 2.11 also breaks down the types of labor flows that characterized migration in 2000 and 2005. In both years, the majority of migrants moved to another province, with this share increasing slightly from

2000 to 2005. Overall, the data support the story of increased migration and greater labor-market integration in the 2000s. Other research has found similar evidence of convergence in the rates of return to education across regions and ownership sectors,[32] as well as wage convergence across industrial sectors.[33]

Table 2.9 Male Manufacturing Wage Inequality Decomposition by Education Level, 2005

	Within province (%)	Between province (%)	General entropy index of inequality
Primary and below			
GE(-1)	89.43	10.57	0.16
GE(0)	88.34	11.66	0.14
GE(1)	89.31	10.69	0.15
GE(2)	92.03	7.97	0.20
Middle school			
GE(-1)	90.67	9.33	0.13
GE(0)	89.96	10.04	0.12
GE(1)	90.78	9.22	0.13
GE(2)	92.88	7.12	0.16
High school			
GE(-1)	87.72	12.28	0.16
GE(0)	86.80	13.20	0.14
GE(1)	87.84	12.16	0.15
GE(2)	90.43	9.57	0.19
College and above			
GE(-1)	77.55	22.45	0.24
GE(0)	74.02	25.98	0.20
GE(1)	74.16	25.84	0.20
GE(2)	77.36	22.64	0.22

Source: Institute of Population and Labor Economics (CASS) Project Group (2007), analyzing the 2005 minicensus data.

Table 2.10 The Scale of Migration, 2000 and 2005

	Total population	Rural population	Urban population
Million persons			
2005	97.28	68.60	28.68
2000	73.38	56.00	17.38
Increase (%)	32.6	22.5	65.02
Migration rate (%)			
2005	7.44	7.06	8.54
2000	5.79	5.88	5.5
Composition (%)			
2005	100	70.52	29.48
2000	100	76.32	23.68

Source: Peking University CCER Project Group (2007), analysis of 2005 1 percent minicensus data. Population estimates based on ratios calculated from survey data and base figures from the *China Statistical Yearbook*. Rural and urban defined by *hukou* (residential permit) status.

Table 2.11 Migration by Origin and Destination Type and by Migration Distance, 2000 and 2005

		Origin and Destination Type				Migration distance	
	Total	Rural to urban	Rural to rural	Urban to urban	Urban to rural	Within province	Between province
Million persons							
2005	97.28	55.26	13.34	26.30	2.38	45.37	51.91
2000	73.38	42.18	13.93	14.34	2.93	34.75	38.62
Increase (%)	32.57	31.01	-0.04	83.4	-18.8	30.6	34.4
Composition (%)							
2005	100	56.81	13.71	27.04	2.45	46.64	53.36
2000	100	57.48	18.98	19.54	3.99	47.35	52.63

Source: Peking University CCER Project Group (2007), analysis of 2005 1 percent minicensus data. Population estimates based on ratios calculated from survey data and base figures from the *China Statistical Yearbook*. Rural and urban defined by *hukou* status.

Are Rising Wages a Good Thing?

From a broader development perspective, rising wages should not be viewed negatively, even if labor productivity growth does not fully match the increases. After all, rising real wages are the key to increasing living standards for China's rural citizens. Rising wages for unskilled workers in China also reduces inequality between the educated and the uneducated, and between those who live in urban and rural areas. Rising wages do not mean that competitiveness will be lost. Rather, they indicate that China is ready to move up the product chain and produce higher-value-added goods—a natural and desirable progression of development. Viewed in this light, the end of surplus labor in China can be viewed as a tremendous economic achievement.

Social Insurance for All of China's Workers?

Urban workers today lack employment security, and urban families now find themselves vulnerable to market forces out of their control. In contemporary urban China, having an unemployed worker in your family is a strong predictor of being poor (table 2.12). Even though only 15 percent of all urban people live in a household with a unemployed worker, those 15 percent account for the majority of the urban poor (using a $2 per day poverty line benchmark).

In the past, employment guaranteed pensions, health care, and housing benefits. But reforms have dismantled that system, and it is now critical to establish effective social insurance and social assistance programs that will protect citizens from hardship in the face of volatile market forces or other unforeseen events such as illness. The Hu government has introduced a number of new programs intended to enhance the coverage and level of support for unemployed citizens. In particular, reforms have attempted to shift the management of social insurance programs from work units to local governments, and to scale up social assistance programs targeted at the poor. Concern persists, however, that coverage rates remain low and access to benefits varies tremendously across regions.

To date little systematic evidence exists on the extent of social insurance program coverage. Fortunately, the 2005 minicensus asked several direct questions about whether each member of interviewed households participated in pension, health insurance, and unemployment insurance schemes. As table 2.13 shows, the national coverage rates for these three programs were 18 percent, 33 percent, and 14 percent, respectively, which means that the vast majority of Chinese citizens have no access to basic social insurance programs. Coverage is highest in cities, lower in towns, and negligible in rural villages. But even in cities, coverage extends to less than 50 percent for each of the three programs: 42 percent for pensions, 47 percent for health insurance, and 23 percent for unemployment insurance. Table 2.13 also indicates that social insurance coverage is highly regressive, with the poorest individuals having virtually no coverage while most of the very rich enjoy all three types of social insurance.

Table 2.12 Employment Status and Relative Poverty in Urban Areas, 2003

| Those living in households with/without | % with per capita income below | | | |
| | $2 per day | | $3 per day | |
	With	Without	With	Without
An adult not working	4.3	1.0	13.8	5.5
Who is out of the labor force	3.3	2.3	11.2	8.6
And who is unable to work	11.9	2.6	28.1	9.6
Who is unemployed	9.5	1.5	26.8	6.6

| Those living in households with | Share in urban population (%) | Share (%) of those with per capita incomes below | |
		$2 per day	$3 per day
An adult not working	50.6	81.3	72.0
Who is out of the labor force	42.3	51.3	49.0
And who is unable to work	0.5	2.4	1.6
Who is unemployed	15.3	53.8	42.1

Source: World Bank, *From Poor Areas to Poor People: China's Evolving Poverty Reduction Agenda* (2009); based on estimates from the national sample of NBS's 2003 Urban Household Survey. See http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/CHINAEXTN/0,,content MDK:22131856~pagePK:141137~piPK:141127~theSitePK:318950,00.html. *Note*: The poverty lines in yuan per person per year are at 2003 all-China urban prices, and poverty is in terms of per capita income.

Why are coverage rates so low and so regressive? First, social program coverage remains closely linked to employment status, which is in turn highly correlated with poverty status. To rectify this problem, China began an experimental program in 2007 to expand health insurance coverage to dependents for the first time. A second challenge is that employment has become increasingly informal in nature. According to the 2005 minicensus, 53 percent of urban workers were employed without a formal labor contract, with the percentage being higher in townships than in cities and also higher among migrants (table 2.14). Employers can avoid payroll charges for social insurance programs by hiring workers informally, off the books, and young workers may prefer cash wages to benefits that they may never use—young workers, for example, tend to be relatively healthy and therefore may not demand health insurance. Rural migrants traditionally never received extended access to urban social insurance or social protection programs. Today, even though China's 1994 Labor Law allows for all city workers to join

social insurance schemes, most local governments assign low priority to meeting the needs of migrants, who are considered outsiders. Workers in the rapidly growing private sector, including the self-employed (many of whom are migrants), usually lack access to the three basic programs. The bottom of table 2.13 shows, using the 2005 minicensus data, that coverage rates of informal sector workers are dramatically lower. For hired workers, the informal worker coverage rate was 20 percent for pensions, 27 percent for health insurance, and 8 percent for unemployment insurance, compared to 74 percent, 78 percent, and 55 percent for formal employees. The China Urban Labor Survey, conducted in twelve cities in 2005, found similar results: migrant workers, the poor, and those employed informally had extremely low rates of coverage.[34]

The low level of pooling and the lack of enforcement represent a third set of difficulties. Contributions into social insurance funds are typically pooled only at the local government (municipality or city) level, which creates incentives for local governments to not enforce regulations in order to attract enterprises and leads to sizable disparities in benefit levels across cities. Local governments may fear that high contribution rates and strict enforcement will drive away businesses to other jurisdictions. Low-level pooling has the effect of tying local social insurance expenditures to local revenues. Analysis of provincial-level data finds that provincial per capita expenditures on pensions and medical care appear to be largely limited by per capita contributions within the province, so that richer (or poorer) areas are able to raise larger (or smaller) revenues to sustain their social insurance expenditures. Per capita spending at the top end (Shanghai Province) is 6.4 times higher than at the bottom end (Jiangxi Province).[35]

A final challenge for China's evolving social insurance schemes is portability. The current system does not allow workers to take their benefit entitlements with them if they decide to take a job in another city. Making benefits portable requires national-level coordination of programs, which up to now have been highly decentralized. A new system to make migrant workers' benefits portable nationally was initiated in 2007 but has yet to be implemented widely.

The Chinese government recognizes the importance of meeting these challenges and has aggressively increased the national funding and scope of social assistance programs for both urban and rural areas.[36] Even so, China is still a long way from establishing a truly effective set of social insurance and social protection programs. The programs are still plagued by inequity, difficulties in enforcement, and incomplete coverage; and solving these problems will require strong central leadership, the mobilization of enormous resources, and repairing fundamental fissures in the public finance system. The longstanding division of populations and programs between urban and rural has made it difficult to design an effective method for covering migrant workers in the cities. Likewise, little headway appears to have been made in designing a plan that will eventually harmonize the rural and urban programs. Likely elements should include gradually extending benefits to long-term migrants in urban areas, and gradually reducing the gap between benefit levels of rural and urban citizens.

Table 2.13 Urban Social Insurance Coverage, 2005 (%)

	Pensions	Health Insurance	Unemployment
All	17.9	32.9	13.6
By location type			
• Cities	42.4	47.1	23.1
• Towns	19.7	32.8	10.2
• Rural	3.9	25.3	2.7
By income group			
• Poorest decile	1.5	19.8	2.6
• Second decile	1.8	20.8	3.6
• Third decile	1.6	21.7	7.2
• Fourth decile	3.8	23.1	5.6
• Fifth decile	6.6	25.6	8.5
• Sixth decile	12.0	28.1	9.6
• Seventh decile	20.9	35.5	15.2
• Eighth decile	32.6	46.0	21.7
• Ninth decile	45.8	62.2	32.4
• Richest decile	54.5	65.7	41.6
By employment formality (urban)			
Formal employment			
• Hired	73.8	78.0	54.7
• Employer	26.6	30.5	10.2
Informal employment			
• Hired	19.5	26.6	7.9
• Self-employed	11.8	21.2	2.6
• Household labor	11.5	19.9	2.4

Source: Institute of Population and Labor Economics (CASS) Project Group, *Labor Market Supply and Demand Conditions and Social Insurance Problems: Analysis of the 2005 Mini-census Data*, unpublished report, 2007.

Table 2.14 Situation of Urban Informal Employment (%)

	Local residents	Rural migrants	Urban migrants	All
Cities	43.7	68.1	35.8	48.2
Townships	60.4	70.8	50.1	61.6
All urban	50.1	68.8	38.1	52.6

Source: IPLE Project Group (2007), analyzing 2005 1 percent minicensus data. Informal employment includes self-employed.

Conclusion

In this chapter, I have sought to assess key challenges that China faces with respect to employment and unemployment. Based on the evidence available, I conclude that China is well positioned to meet its first two employment challenges—generating sufficient jobs to employ its workers, and mobilizing workers to remain internationally competitive. However, China is currently in a weak position to tackle its third challenge—establishing strong social insurance programs for a healthy, functioning labor market and ensuring adequate protections for citizen welfare. The evidence from the 2005 1 percent sample minicensus and other microdata sources tells a compelling story of rapid labor-market development, increasing labor-market integration, and increasing labor scarcity in China. In the future, increases in labor productivity and in the production of higher-value-added items will support continued improvements in living standards. Building a well-functioning social insurance system is a difficult challenge, complicated by a host of institutional and historical factors, but it will be critical if China is to remain globally competitive over the long term.

Notes

[1] See Arthur Lewis, "Economic Development with Unlimited Supplies of Labour," *The Manchester School* 22, no. 2 (1954): 139–91.

[2] One could add here the importance of guaranteeing the rights of labor to bargain collectively; redress grievances fairly; work in safe, clean environments; and achieve other minimum labor standards. These issues are outside the scope of this chapter.

[3] Social insurance can also create disincentives to work. See John Giles, Albert Park, and Zhang Juwei, "What Is China's True Unemployment Rate?" *China Economic Review* 16, no. 2 (2005): 149–70.

[4] Collected by the Research Center for Rural Economy (RCRE) under China's Ministry of Agriculture.

[5] See Giles, Park, and Zhang, *What Is China's True Unemployment Rate?*

[6] Tabulations from the NBS labor-force surveys can be found in the *China Labor Statistical Yearbook* (Beijing: China Statistical Press, various years).

[7] See John Giles, Albert Park, and Cai Fang, "How Has Economic Restructuring Affected China's Urban Workers?" *The China Quarterly* 0, no. 177 (2006): 61–95.

[8] National Bureau of Statistics (NBS), *China Statistical Yearbook* (Beijing: China Statistical Press, 2006).

[9] See Junsen Zhang, Yaohui Zhao, Albert Park, and Xiaoqing Song, "Economic Returns to Schooling in Urban China, 1988 to 2001," *Journal of Comparative Economics* 33, 4 (2005): 730–52; John Giles, Albert Park, Wang Meiyan, and Zhang Juwei, *The Great Proletarian Cultural Revolution, Disruptions to Schooling, and the Returns to Schooling in Urban China*, unpublished manuscript, 2007; and Li Hongbin and Zhang Junsen, *Why Doesn't Education Pay in Urban China?,* unpublished manuscript, 2007.

[10] See Fang Cai, Albert Park, and Yaohui Zhao, "The Chinese Labor Market in the Reform Era," in Loren Brandt and Thomas G. Rawski, eds., *China's Economic Transition: Origins, Mechanisms, and Consequences* (Cambridge: Cambridge Univ. Press, 2008).

[11] Kesha Guo, "Aggregate Demand or Structural Problems? How Distorted Economic Structure Constrains China's Economic Growth," *Jingji yanjiu* [Economic research] 9 (1999): 15–21.

[12] See Xuejun Liu and Fang Cai, "Institutional Transition, Technology Choice, and Employment," *Zhongguo laodong jingjixue* [China labor economics] 2 (2004): 1–24.

[13] See Thomas G. Rawski, *Recent Developments in China's Labor Economy*, report prepared for International Policy Group, International Labor Office, Geneva, 2002.

[14] Feng Wang and Andrew Mason, "The Demographic Factor in China's Transition," in *China's Economic Transition: Origins, Mechanisms, and Consequences*.

[15] Wang and Mason, "The Demographic Factor in China's Transition."

[16] Jikun Huang, Keijiro Otsuka, and Scott Rozelle, "The Role of Agriculture in China's Development: Past Failures, Present Successes, and Future Challenges," in *China's Economic Transition: Origins, Mechanisms, and Consequences*.

[17] Fang Cai and Justin Yifu Lin, *Zhongguo jingji: Gaige yu fazhan* [The Chinese economy: reform and revelopment] (Beijing: Zhongguo caizheng jingji chubanshe, 2003).

[18] See table 2 of Zhang, Zhao, Park, and Song, "Economic Returns to Schooling in Urban China, 1988 to 2001."

[19] Meng Xin, Robert Gregory, and Wang Youjuan, "Poverty, Inequality, and Growth in Urban China, 1986–2000," *Journal of Comparative Economics* 33, no. 4 (2005): 710–29.

[20] This argument is summarized in "Reserve Army of Underemployed" *The Economist*, September 4, 2008. Earlier reports of labor shortages include Thomas Fuller, "China Feels a Labor Pinch," *New York Times*, April 20, 2005; David Barboza, "Labor Shortage in China May Lead to Trade Shift" *New York Times*, April 3, 2006; and Simon Montlake, China's Factories Hit an Unlikely Shortage: Labor" *Christian Science Monitor*, May 1, 2006.

[21] Yang Du, Albert Park, and Sangui Wang, "Migration and Rural Poverty in China," *Journal of Comparative Economics* 33, no. 4 (2005): 688–709.

[22] Calculated from mean nominal wages reported in Laiyun Sheng, and Liqun Peng, Liqun, "The Population, Structure, and Characteristics of Rural Migrant Workers," *Rural Migrant Labor Research on Rural Labor of China* (Beijing: National Bureau of Statistics, 2005), deflating by urban CPI (retail price index used prior to 1985). See NBS, *China Statistical Yearbook*.

[23] Fang Cai and Meiyan Wang, "Growth and Structural Changes in Employment in Transitional China," unpublished manuscript, 2007.

[24] Judith Banister, "Manufacturing Earnings and Compensation in China," *Monthly Labor Review* 128, no. 8 (August 2005): 22–40.

[25] Adam Szirmai, and Ren Ruoen, "Measuring Labour Productivity in Chinese Manufacturing: Statistical Problems and Solutions," unpublished manuscript, 2007.

[26] This is somewhat less than the 341 million workers reported to be primarily engaged in the primary sector, a number that could include farmers living in urban areas.

[27] Thomas G. Rawski and Robert W. Mead, "In Search of China's Phantom Farmers," *World Development* 26, no. 5 (1998): 767–81.

[28] Fang Cai and Wang Meiyan, "Growth and Structural Changes in Employment."

[29] Loren Brandt and Carsten Holz, "Spatial Price Differences in China: Estimates and Implications" *Economic Development and Cultural Change* 55, no. 1 (2006): 43–86.

[30] Brandt and Holz, "Spatial Price Differences in China."

[31] See Cai, Park, and Zhao, "The Chinese Labor Market in the Reform Era."

[32] See Zhang, Zhao, Park, and Song, "Economic Returns to Schooling."

[33] See Fang Cai and Yang Du, "Labor Market Integration: Evidence from Wage Convergence in Manufacturing," in Ross Garnaut and Ligang Song, eds., *China: Is Rapid Growth Sustainable?* (Canberra, Australia: Asia Pacific Press, 2004).

[34] World Bank, *From Poor Areas to Poor People: China's Evolving Poverty Reduction Agenda* (2009). The report is available online; see http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/CHINAEXTN/0,,contentMDK:22131856~pagePK:141137~piPK:141127~theSitePK:318950,00.html.

[35] World Bank, *From Poor Areas to Poor People.*

[36] Though beyond the scope of this chapter, similar issues arise with respect to China's urban minimum living standards subsidy (*dibao*) program. In addition to the urban *dibao* program and expansion of urban health insurance to dependents, in rural areas the Hu government enlarged several programs to national levels, such as the rural *dibao* program, scaled up a new rural cooperative medical insurance program, and introduced new assistance programs for the poor to subsidize compulsory education costs and pay medical bills. See Shaohua Chen, Martin Ravallion, and Youjuan Wang, "*Di Bao*: A Guaranteed Minimum Income in China's Cities," World Bank Policy Research Working Paper 3805 (Washington D.C.: World Bank, 2006); and World Bank, *From Poor Areas to Poor People.*