

Labor Market Outcomes and Reforms in China[†]

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Over the past few decades of economic reform, China's labor markets have been transformed to an increasingly market-driven system.

China has two segregated economies: the rural and urban. Understanding the shifting nature of this divide is probably the key to understanding the most important labor market reform issues of the last decades and the decades ahead. From 1949, when China's Communist Party rose to power, the Chinese economy allowed virtually no labor mobility between the rural and urban sectors. Rural-urban segregation was enforced by a household registration system called "*hukou*." Individuals born in rural areas receive "agriculture *hukou*" while those born in cities are designated as "nonagricultural *hukou*." For simplicity, the two groups are referred to as rural and urban *hukou*. During the first 30 years of the Communist regime, more than 80 percent of the population lived in the countryside.¹ The rationale for keeping most of the population on farms was based on the low levels of agricultural productivity and the need to ensure food provision for cities, which were deemed essential for industrialization (Perkins and Yusuf 1984; Meng 2000). In the countryside, employment and income were linked to the commune-based production system. Collectively owned communes provided very basic coverage for health, education, and pensions. In cities, state-assigned

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¹ The only ways one could change *hukou* status before economic reform started were by 1) obtaining a tertiary degree; or 2) joining the People's Liberation Army and being promoted to first lieutenant or above. Recently some cities have allowed rural *hukou* holders to obtain urban *hukou* by purchasing housing in the city, but cases are rare.

[†]To access the Appendix, visit <http://dx.doi.org/10.1257/jep.26.4.75>.

life-time employment, centrally determined wages, and a cradle-to-grave social welfare system were implemented.

In the late 1970s China's economic reforms began, but the timing and pattern of the changes were quite different across rural and urban labor markets.

In rural areas, the early reforms of the late 1970s and early 1980s dramatically increased agricultural productivity and, by the mid-1980s, rural underemployment became a serious problem. At first, those living in rural areas were encouraged to set up rural township and village enterprises (TVEs) to absorb the surplus labor; this generated economic growth and employment for a time, but the effect soon reached its peak. During the 1980s, limited rural–urban migration began as a response to the demand for services in cities as well as demand for unskilled labor in the limited Special Economic Zones, where imports were duty-free and exports by foreign investors enjoyed significant tax concessions. Nevertheless, during the 1980s and into the early 1990s, city governments continued to push migrants back to the countryside and rural–urban migration was extremely restrictive (Wang and Wang 1995; Xiang 1996; Zhao 2000; West and Zhao 2000; Meng 2000). In the mid to late 1990s, economic growth in the cities began to accelerate and the demand for unskilled labor rose substantially. In particular, after China became a member of the World Trade Organization in November 2001, China's labor-intensive, export-led growth generated major demand for unskilled labor. Migration restrictions then relaxed considerably. Between 1990 and 1997, rural migrants working in cities increased slightly from 25 million to 37 million, but by 2009 the number of rural migrants to China's cities almost quadrupled to reach 145 million.

Urban economic reforms began later than rural reforms and proceeded at a slower pace. Before 1978, virtually all urban employment was in the state or collective sectors, with just 0.02 percent of China's urban *hukou* labor force being self-employed in 1978 (NBS 2010). Individuals were assigned to jobs; employers were not allowed to hire or fire; and wages were determined by the Central Planning Commission. Lifetime employment and centrally determined wages reduced mobility and incentives, which, in turn, led to overstaffing, shirking, and low productivity (Meng 2000).

Mild urban labor market reforms began in the 1980s, but labor mobility and incentives weren't much affected until two large events. Back in the early years of the Cultural Revolution in the late 1960s, tens of millions of urban high school–aged children had no school and no job, so Mao Zedong sent many of them to the countryside to work. Then, in the early 1980s, a majority of these “sent-down youth” returned to the cities, but few jobs were available, and for the first time under China's communist regime, the urban economy experienced large-scale open unemployment. The government responded by encouraging self-employment for the first time (Feng 2003). This was the first event.

The second was state-sector restructuring. China began this restructuring in the mid-1990s, at a time when more than 40 percent of state-owned enterprises were making losses. In 1997, the government introduced a new policy—“Hold on to the Large, Let Go of the Small”—which aimed at maintaining the largest

1,000 state-owned enterprises and pushing smaller ones into the marketplace to compete or go bankrupt. Official statistics on the state sector share of China's whole economy are not available, but the state/collective sector share in industrial output value fell from over 90 percent in 1990 to 70 percent by 1997 and to 30 percent in 2008 (National Bureau of Statistics (NBS) 2009).

Within three to four years of the restructuring, tens of millions of state sector urban workers were made redundant and the urban private sector began to expand quickly (Meng 1997; Fan 2000; Appleton, Knight, Song, and Xia 2002; Meng 2004; and Giles, Park, and Cai 2006). The labor market for those with urban *hukou* began a transformation.

This paper focuses on employment and wages in the urban labor markets, the interaction between the urban and rural labor markets through migration, and future labor market challenges. The next section looks at the evolution of urban labor market outcomes in China and discusses remaining tensions within this market. The following section discusses the most important change in China's labor market over the past two decades: large-scale rural-to-urban migration. I then discuss future changes in the quantity and quality of the Chinese labor force and the challenges that these pose for sustaining China's future economic growth. One main thesis is that despite the remarkable changes that have occurred, inherited institutional impediments still play an important role in the allocation of labor. The *hukou* system continues to restrict labor mobility, though to a lesser extent, and 72 percent of China's population is still identified as rural *hukou* holders (according to data from the NBS *Comprehensive Statistical Data and Material on 50 Years of New China* (1999) and the 1% Population Survey of 2005). I will argue that China must continue to ease its restrictions on rural-urban migration, and must adopt policies to close the widening rural-urban gap in education, or it risks suffering both a shortage of workers in the growing urban areas and a deepening urban-rural economic divide.

The principal data sources on labor markets used in this paper are from the Urban Household Survey (UHS) conducted annually by China's National Bureau of Statistics for the years 1988 to 2009 and Rural Urban Migration in China and Indonesia (RUMiCI) Project data for the years 2008 to 2010. I also use the 1 percent sample of the Population Census of 2000; the 20 percent sample of the 1% Population Survey of 2005; and aggregated data from *China Statistical Yearbooks*. For a brief overview of these and other sources of labor market data for China, see Appendix A, available with this paper at <http://e-jep.org>.

Urban Labor Market Reform

Employment and Unemployment

Communist orthodoxy holds that all people of workforce age should contribute to the common good by being employed, and in pre-reform China almost all able-bodied adults were employed. Economic reform changed incentive systems and encouraged labor mobility, allowed workers to choose where and whether they

wanted to work, and allowed firms to choose who to hire and fire. This flexibility also gave rise to the possibility of unemployment (Meng 2000; Cai, Park, and Zhao 2009; Maurer-Fazio, Connelly, Chen, and Tan 2010).

The employment-to-population ratio for urban *hukou* population can illustrate some effects of these changes. In 1988, the employment rate for urban *hukou* holders, aged 16 to 64, was 83 percent for men and 75 percent for women. The averages for OECD countries in 1988 were significantly below these levels at 77.3 percent for men and 52.4 percent for women (OECD Labor Force Statistics, various years).² But by 2002, the employment rates had fallen to 75 percent for Chinese men and 59 percent for women. Since 2002, the employment rate for men has hovered around the 2002 levels, while for women it fell further but at a slower pace than during the previous period, reaching 57 percent for women by 2009—much closer to OECD levels. The timing of the significant employment reduction coincided closely with state-sector restructuring.

The unemployment rates derived from data from China's Urban Household Survey lie between 3 and 5 percent for both urban men and women from the late 1980s until 1998. By 2002, the unemployment rate rises to about 6 percent for men and 11 percent for women, and remains there through 2009. The timing of this rise in unemployment is probably not captured accurately by these estimates because the significant restructuring of the state sector starting in the mid-1990s involved large-scale job losses well before 2002 (Appleton et al. 2002; Giles et al. 2006; Cai et al. 2009). One reason why *reported* urban unemployment did not rise sooner is that in the beginning of the state-sector restructuring, most laid-off workers received support from their original state enterprises, and many regarded their layoff as temporary. Thus, when the Urban Household Survey was conducted during those years, many might not have reported themselves as being unemployed.³ China's first Unemployment Insurance Act was issued in 1999 (State Council of the Peoples

² The data used in this subsection mainly come from the Urban Household Survey (UHS). I use data for 16 of 31 provinces. Using the full sample for the 1988 to 2001 period does not change the results presented in the paper. The definition of employment and unemployment used here differ somewhat from the Western standard. For employed people, the survey asks for current occupation as well as annual earnings. People who are not working need to provide reasons from the following choices: 1) unemployed; 2) waiting to be assigned to a job; 3) disabled; 4) retired; 5) students; 6) waiting for further education; 7) housekeeping; and 8) not otherwise specified. The employed are defined as those who are currently working with positive annual earnings, while the unemployed include categories 1 and 2 in the "not working" choice set, as well as those who reported as working but without positive annual earnings. The latter group account for 0.4–1.4 percent of the total labor force across different years.

³ Two alternative data sources—the China Income Project Surveys and the China Urban Labor Survey, both with more accurate definitions of unemployment—find much higher unemployment rates in the mid and late 1990s than the official figures. Indeed, the China Income Project Survey asked two questions in 1995 regarding unemployment. When individuals were asked their current labor force status, which is the same question in the official Urban Household Survey, only 3.2 percent reported being unemployed. However, in a different place the workers were first asked whether their enterprise was making losses and then were asked whether they were unemployed. With this sequence of questions, an additional 7.7 percent of people who answered as being employed in the first place now reported as being unemployed. This finding suggests that total unemployment was much higher in the mid to late 1990s than the UHS data suggest.

Republic of China 1999), but a centralized unemployment support system was not formally established until the early 2000s. Since then, laid off workers collect their unemployment payment from central offices—and this is the period when the *surveyed* unemployment statistics rise.

It is important to note that during this period of rising urban unemployment more than 100 million rural *hukou* workers moved to cities to work and their unemployment rate is extremely low. Obviously jobs were available in cities and are growing quickly. However, the jobs rural migrants take are normally regarded as 3D (Dirty, Dangerous, and Demeaning) jobs, and most urban *hukou* workers are unwilling to accept them. Thus, urban unemployment during this period may be regarded as “voluntary.” Nevertheless, the differences between average skill levels (measured in formal education) of the unemployed urban workers and employed rural-migrant workers in cities is large. For example, in 2009, 22 percent of unemployed urban workers had three-year college or above education and 63 percent had senior high school or above education, whereas in the same year, the proportion of employed migrant workers with college or above education was 5.7 percent and the proportion with senior high school or above education was 33 percent. This difference suggests that the unemployment of the urban *hukou* workers during this period is also “structural.” There exists a mismatch between skills and available jobs.

To gain more insight into employment and unemployment patterns, it is useful to look more closely at the effects by age, gender, and ownership structure. Younger age groups have experienced large employment reductions. For example, in 1988, 32 and 87 percent of 18 and 22 year-old men (senior high school and university graduation ages), respectively, were employed. By 2002, these percentages had fallen to 0.6 and 40 percent, respectively; by 2009, the percentages had fallen to 0.5 and 31 percent for 18 and 22 year-old men, respectively. The main factor behind these employment declines has been rapid expansion of education. Since the late 1990s, China has been expanding its tertiary (three-year college and four-year university) enrollment by roughly 40 percent per year. In 1988 around 30 percent of 16 to 24 year-olds were at school or waiting to continue their schooling; by 2009, the ratio had increased to 70 percent. China’s rise in tertiary enrollment was not driven by the demand for highly skilled workers, but instead was a way to respond to sluggish aggregate demand and slow employment growth in the late 1990s (Meng, Shen, and Xue 2012). In addition, the sharp increase in college-university enrollment may have reduced the quality of the education. The issue of unemployment among new college-university graduates has become a hot issue attracting considerable attention in Chinese and in Western media (Park, Cai, and Du 2010).

Older workers have also seen a decline in employment. For men, this decline mainly occurred in their 50s, with the employment/population ratio of men aged 55 to 65 falling from 62 percent in 1988 to 48 percent in 2009. For women, the change occurred mainly in their late 40s. Fifty-three percent of women aged 45–65 years were employed in 1988, and by 2009 the ratio dropped to 39 percent. The unemployment rates for these groups are quite low, though. This change in employment among older workers probably resulted from workers who lost jobs

because of economic restructuring and then became discouraged and left the labor force (Appleton, Knight, Song, and Xia 2002; Giles, Park, and Cai 2006; Maurer-Fazio, Connelly, Chen, and Tang 2010).

Women on average have seen a larger decline in employment rates and a larger rise in unemployment than men. While these effects have been larger at younger and older ages, they have occurred across the board. For prime-aged women, age 30–40, for example, 98 percent were working in 1988, but by 2002, the employment/population ratio for the group fell to about 85 percent and more or less remained there to 2009. The unemployment rate for prime-aged women has stayed at near 10 percent throughout the 2000s.

Some of the reduction in female employment is related to an increase in household income and housing availability, both of which have reduced co-residing with parents, which, in turn, has increased women's responsibilities for their nuclear families and hence reduced their labor supply (Maurer-Fazio, Connelly, Chen, and Tang 2010). Women now also have more discretion to choose whether to work, and the social stigma associated with not working has gradually diminished. Lack of job flexibility in the workplace may also be important. Part-time employment is rare in China, and the proportion of employed women working less than 35 hours per week has hovered in the range of 6.5–7.2 percent from the mid-1990s into the late 2000s (China Income Project Surveys (CHIPs) 1995, 2002, and Rural Urban Migration in China and Indonesia (RUMiCI) urban sample 2008). However, the reasons why unemployment for prime-aged women has stayed at near 10 percent throughout the 2000s have not been sufficiently examined in the existing literature.

The change in ownership structure has also affected employment patterns. As late as 1991, more than 97 percent of urban *hukou* workers were still state sector employees.⁴ In the mid to late 1990s, the share of workers in state employment started to decline, falling from 93 percent in 1995 to 82 percent in 2001, and falling further to 50 percent by 2008–09.

How do China's state and nonstate sectors differ? Table 1 compares the state and nonstate shares of employment in China's urban economy. In 2008, the state and collective sectors together employed 56.8 percent of workers (with the collective sector accounting for 6 percentage points). Domestic privately owned workplaces employ 35 percent of total workers, and foreign-owned companies employ 4.5 percent. If we look only at production-related employment—that is, excluding public servants and people working for not-for-profit institutions—the state sector hires 30 percent of the workforce while domestic private firms hire almost 49 percent.

⁴The Urban Household Survey categorizes ownership into five groups: 1) state, 2) collective, 3) private (including self-employment), 4) other ownership, including joint venture, foreign-owned, and shareholding companies, and 5) those who are not otherwise specified, including domestic maids, childcare workers, and others. The categories 1 and 2 are grouped as the "state"; 3 and 4 as "private"; and 5 as "other."

Table 1
State versus Nonstate Employment

	<i>Number of workers</i>	<i>% of total</i>	<i>% of production firm workers</i>	<i>Average number of workers in the workplace</i>	
Government/party/state not-for-profit institution	2,011	31.66		636	
Private not-for-profit institution	295	4.64		386	
Production firms:					
State firms	1,218	19.18	30.10	1,472	
Collective firms	318	6.00	9.42	507	
Domestic private firms/ self-employment	1,978	31.14	48.89	143	
Foreign-owned firms	285	4.49	7.04	740	
Other type firms	184	2.90	4.55	102	
Distribution of each ownership category among different industries					
	<i>Manuf., mining, agri/fish, construction, transport</i>	<i>Utility, water, environment</i>	<i>Communication, IT, financial, real estate, science/tech</i>	<i>Retail/wholesale trade and services</i>	<i>Education, health, social welfare, culture, sports, public service</i>
Government/party/state not-for-profit institution	19.57	6.08	10.26	13.60	50.50
Private not-for-profit institution	36.61	2.37	13.56	34.24	13.22
State firms	56.30	8.89	15.47	14.90	4.44
Collective firms	41.73	3.94	16.27	32.28	5.77
Domestic private firms/ self-employment	29.89	2.18	10.67	53.57	3.69
Foreign-owned firms	44.56	2.81	20.70	28.77	3.16
Other type firms	20.11	4.89	9.24	48.37	17.39
Total	33.08	4.92	12.34	30.07	19.59
Distribution of each industrial sector among different ownership categories					
	<i>Manuf., mining, agri/fish, construction, transport</i>	<i>Utility, water, environment</i>	<i>Communication, IT, financial, real estate, science/tech</i>	<i>Retail/wholesale trade and services</i>	<i>Education, health, social welfare, culture, sports, public service</i>
Government/party/state not-for-profit institution	18.72	39.10	26.31	14.31	81.58
Private not-for-profit institution	5.15	2.24	5.11	5.29	3.14
State firms	32.59	34.62	24.01	9.49	4.34
Collective firms	7.58	4.81	7.92	6.45	1.77
Domestic private firms/ self-employment	28.16	13.78	26.95	55.50	5.87
Foreign-owned firms	6.05	2.56	7.54	4.30	0.72
Other type firms	1.76	2.88	2.17	4.66	2.57

Source: RUMiCI Migrant and Urban Surveys, 2008.

Note: Table 1 compares the state and nonstate shares of employment in China's urban economy.

The state has held on to the large firms with high capital intensity and operated mainly in the production sector rather than the service sector, where the private firms are smaller and less capital intensive. Firms in the state sector average about 1,472 employees; foreign-owned firms average 740 people; and the domestically owned private sector firms average 142 people. By industry, 56 percent of workers in the state sector firms work in manufacturing, mining, construction, or transport industry, while 53 percent of the workers in the domestic private sector work in retail/wholesale trade, hotel/restaurants, rental/commercial services, or household services industries. This difference helps to explain why the state sector also has much higher capital intensity, as measured by fixed assets per employee: 59 percent higher than the private sector in 1998; 184 percent higher, in 2003; and 283 percent higher, in 2007 (OECD Labor Force Statistics 2010). The state sector is less productive than the private sector, although it has improved in the 2000s (OECD Labor Force Statistics 2010).

Who lost state sector jobs? I estimated a probit model for each year between 1988 and 2009 using the sample of employed individuals to answer this question. The dependent variable is whether the worker has a job with the state sector (= 1) or the nonstate sector (= 0). The independent variables are age and its squared term, gender, education level, and dummy variables for each province. The detailed regression results are available in Appendix B, Table B1, available with this paper at <http://e-jep.org>. Figure 1 shows the marginal effects by year and indicates that in the early years, when almost everyone was in the state sector, there was no effect of education, age, or gender. However, after the state-sector reforms, those with higher levels of education are more likely to end up in the state sector (Figure 1A), females are significantly less likely to work in the state sector (Figure 1B), and older workers are more likely to be working in the state sector (Figure 1C). At the end of the period, 62 percent of 50 year-olds were employed in the state sector, but only 20 percent of 20 year-olds. Thus, the general pattern of the state-sector reforms has been to shift those who are younger, less educated, and female out of the state to the private sectors (or has limited them from entering the state sector).

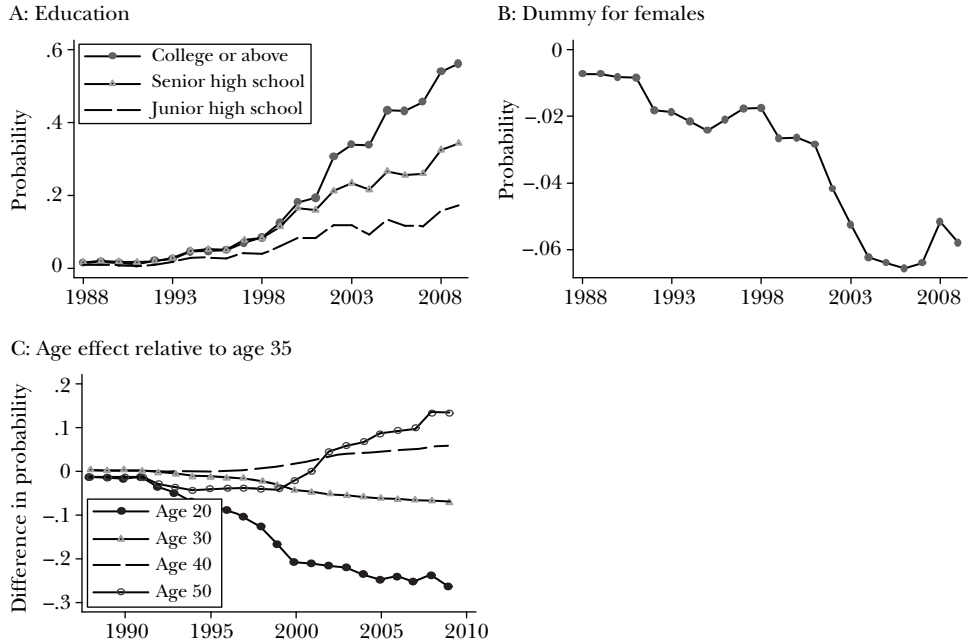
Wage Structure and Inequality

Between 1988 and 2009, real annual earnings for urban *hukou* workers increased from 3,880 yuan to 19,674 yuan, a fivefold increase (Urban Household Survey data, excluding the top and bottom 1 percent of observations). This dramatic increase in real earnings was accompanied by an equally dramatic change in wage structure.

In China's pre-reform era, there were two separate wage ranks: one for production workers and one for managerial and professional workers. Apart from slight regional variations, such as heating subsidies, the whole nation followed the same wage system (Meng 2000; Huang 2004). This system offered a low return to education, but a high return for additional years of experience that did not taper off at higher ages. Experience, education, and occupation variables explained a far larger proportion of the variation in individual-level earnings than in Western country

Figure 1

Marginal Effects of Individual Characteristics on Probability of State (versus Nonstate) Sector Employment



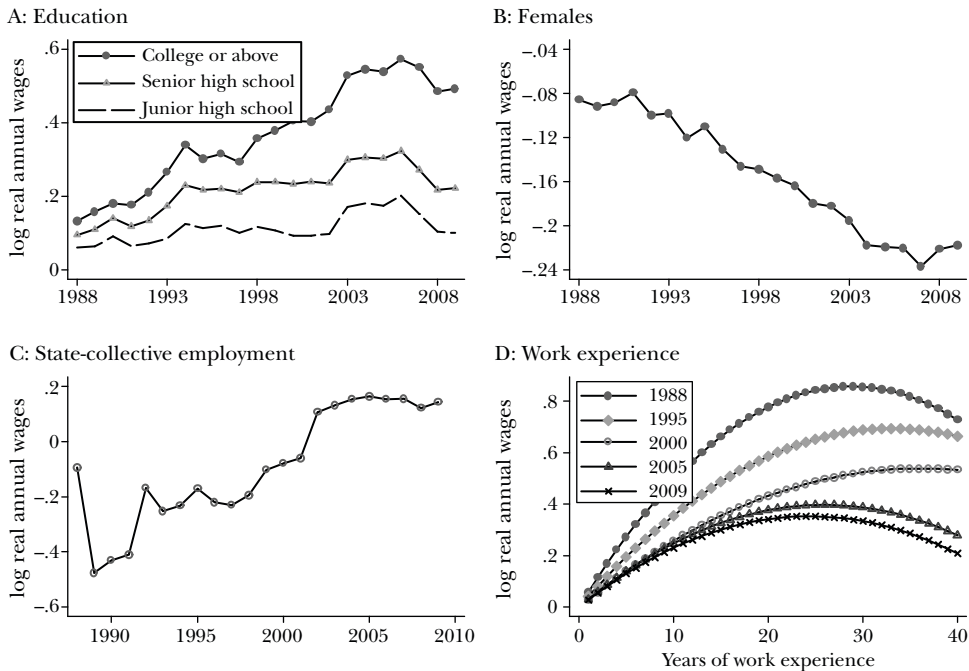
Notes: Based on the estimation of a probit model for each year between 1988 and 2009 using the sample of employed individuals. The dependent variable is whether the worker has a job with the state sector (= 1) or the nonstate sector (= 0). See the text for details.

Source: Author's own estimation results based on data from the 1988–2009 Urban Household Survey conducted by China's National Bureau of Statistics.

earnings equations, reflecting the dominance of the administratively determined wage structure (Meng and Kidd 1997). As the administrative wage system weakened, the returns to education have risen significantly, while the returns to experience have fallen (Appleton, Song, and Xia 2005; Zhang, Zhao, Park, and Song 2005).

Figure 2 presents the changing effect of observable characteristics on the urban wage structure between 1988 and 2009. The figures are based on regressions in which (log) real annual earnings are the dependent variable. The independent variables are three categories of education (three-year college and above, senior high school, and junior high school, with the omitted category as primary school); nine categories of work experience (0–4, 5–9, . . . ≥40); a dummy variable indicating employment in the state sector; seven occupational dummy variables; a female dummy variable; and dummy variables for each province. These regressions are run on data for each year, and then the coefficients for each year are presented in four panels. (Again, detailed regression results on which this figure is based are presented in Appendix B, Table B2, available with this paper at <http://e-jep.org>.)

Figure 2
Effect of Characteristics on Earnings



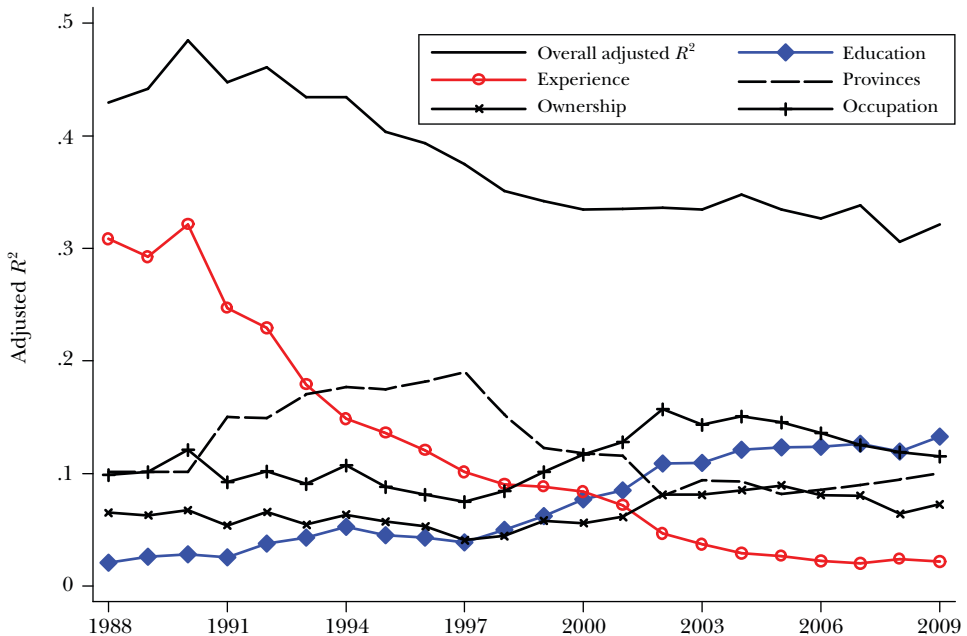
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Source: Author's own estimation results based on data from the 1988–2009 Urban Household Survey conducted by China's National Bureau of Statistics.

Figure 2A shows that returns to college-and-above education have risen from around 16 percent in the late 1980s to over 50 percent by 2003, but since then returns have slipped back slightly, which may be related to the large influx of graduates due to the 1999 university expansion and an associated decline in quality. Figure 2B shows the gender earnings differential has been widening. Women used to earn around 8 percent less than men; by 2009, the gap had widened to around 23 percent. Figure 2C shows that the state-collective sector paid significantly less than the private sector in the 1990s, but this pattern has reversed in the 2000s.⁵ In 2002, as part of a fight against corruption, China introduced a public servant examination system and increased public sector pay substantially. Since then, state sector pay has been about 20 percent higher than the private sector, along

⁵ If the collective sector is not combined with the state sector, the state sector (alone) dummy variable always has a positive and significant coefficient, and the magnitude is always above 10 percent over the entire period.

Figure 3
The Adjusted R^2 from Separate Earnings Regressions



Note: Figure 3 is based on a regression of the log of real annual earnings on each of the explanatory characteristics alone, and shows the share of the wage variance explained by that factor alone, as measured by adjusted R^2 .

Source: Author's own estimation results based on data from the 1988–2009 Urban Household Survey conducted by China's National Bureau of Statistics.

with offering significantly higher social insurance and other benefits. Figure 2D shows that experience–earnings profiles have continued to flatten over the period, although more slowly in recent years.

As the wage structure changes, so does the relative importance of different contributing factors. To illustrate, I regressed the log of real annual earnings on each of the explanatory characteristics alone, and then look at the share of the wage variance explained by that factor alone as measured by the adjusted R^2 .⁶ Figure 3 shows the results. In 1988, work experience alone explained 30 percent of wage variation, but by the end of the data period it explained only around

⁶ This approach follows the lead of Dickens and Katz (1987). The idea is to derive a bounded range for the contribution of each characteristic to wage determination. The lower bound is derived by examining the increase in explanatory power by adding each of the characteristics into a regression that already includes the other set of regressors. The upper bound of the range is found by regressing log real annual earnings on each of the characteristics alone. The upper bound is illustrated in Figure 3. The pattern for the lower bound adjusted R^2 's is very similar to that presented in Figure 3. It is available in the online Appendix B with this paper at <http://e-jep.org>.

3 percent. Education, on the other hand, explained only 2 percent of the variation in wages in 1988, but 13.3 percent of total variation in 2009. Occupation and ownership of employment, each taken alone, explain a slightly higher share of variation in wages from the mid-1990s forward.

Interestingly, the dummy variables on provinces, taken alone, explain more of the variation in wages than any other factor for several years in the mid-1990s, but have now shifted back to a similar level of contribution to that observed during the early reform era. China has always had significant regional price and wage variations, particularly in the 1990s when regional protectionism was at its peak (Young 2000; Jiang and Li 2005; Fan and Wei 2006; Brandt and Holz 2006; Gong and Meng 2009).

Finally, if one takes all the variables together, the proportion of wage variation that they can explain has fallen steadily over time (see the solid line in Figure 3). At the beginning of the period, a regression that includes all the independent variables explained about 43 percent of the total variance, while by the end of the period the adjusted R^2 had fallen to 30 percent, similar to the amount of wage variation that can be explained by individual characteristics in most Western countries. This change is to be expected when shifting from a national administrative system to a system in which wages are set in a more market-oriented environment.

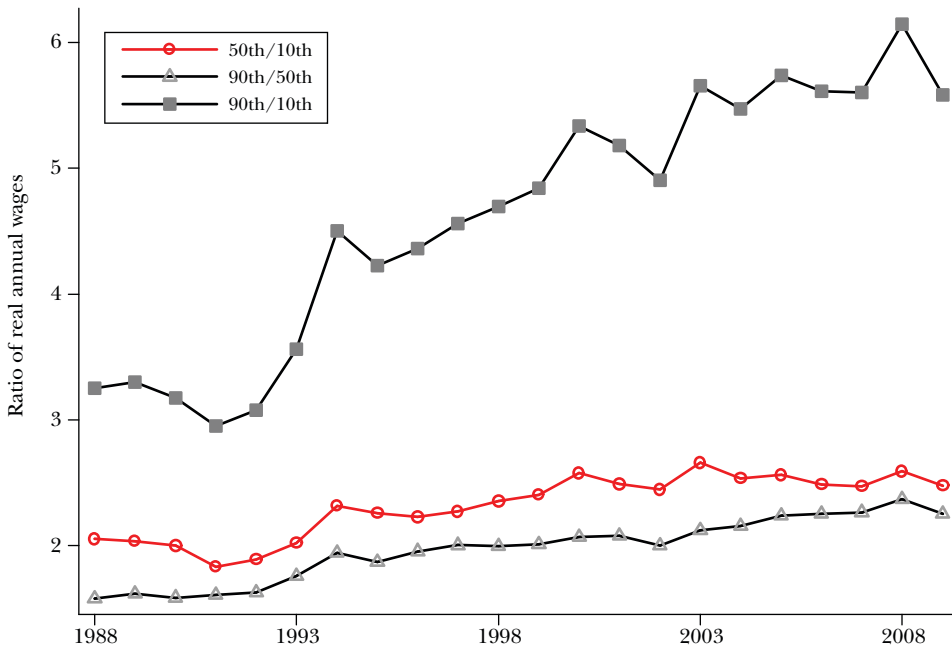
Another aspect of these wage changes is that inequality has increased dramatically in the urban population. Between 1988 and 2009, the Gini coefficient for annual wages increased from 0.26 to 0.38.⁷ The most significant increase in earnings inequality occurred during the 1990s, when state-sector restructuring was prominent, regional earnings variation was at its peak, returns to experience were falling, and returns to education began to increase significantly. In the 2000s, when returns to education stopped growing and regional earnings variation stabilized, the increase in earnings inequality ceased. The substantial increase in inequality during the 1990s was mainly driven by the disproportional increase in the earnings of the top of the distribution (Park, Song, Zhang, and Zhao 2004; Li, Zhao, and Lu 2007; Meng, Shen, and Xue 2012).⁸ Figure 4 shows that the 90th to the 10th decile ratio increased from 3 to 6; in contrast, the 50th to 10th decile ratio increases only modestly.

Studies on wage inequality among urban *hukou* workers exclude the rural-to-urban migrants who live in urban areas. Using RUMiCI data, the Gini coefficient of

⁷ The Gini coefficient is a measure of inequality ranging from 0 to 1, where zero implies everybody has the same income and one indicates that one person in the society has all of the income. The Gini coefficients presented here are for urban *hukou* workers only. OECD (2011) indicates that the Gini coefficient for household income for China as a whole is 0.33 in 1993 and 0.41 in 2008, whereas for OECD countries as a whole, the Gini coefficients in the same period changed from 0.30 to 0.31.

⁸ Li, Zhao, and Lu (2007) find that education was an equalizing force during the period 1988 to 1997, but became a driving force for earnings inequality between 1997 and 2003. In Meng, Shen, and Xue (2012), my coauthors and I decompose earnings inequality between 1988 and 2009 and find that the dominant factor driving the significant increase in the earnings variance in the 1990s was an increase in the price of unobserved skills. As an economy shifts from an administratively determined wage system to a market-oriented one, rewards to both observed and unobserved skills increase. In the mid-2000s, because the expansion in college attendance that started in 1999 has increased the supply of educated workers sharply, the increase in returns to both observed and unobserved skills has plateaued.

Figure 4
Urban Wage Inequality



Note: Figure 4 shows the evolution of the wage structure in terms of ratios of real annual wages for the 50th to 10th deciles, the 90th to 50th deciles, and the 90th to 10th deciles.

Source: Author's own estimation results based on data from the 1988–2009 Urban Household Survey conducted by China's National Bureau of Statistics.

monthly earnings in 2008 for urban workers alone is 0.38, while for the predominantly low-wage migrant workers it was just 0.23. Combining migrants with urban workers gives an overall Gini coefficient of 0.34. Although individual earnings inequality overall is reduced when migrant workers are added to the sample, inequality between the two groups is large and the sparse evidence available suggests that it is increasing. It is also important to note that earnings inequality discussed here does not include “gray” income—due to underreporting of income at higher income levels. Using data from a special survey, Wang and Woo (2011) found that without including gray income, the income of the highest 10 percentile is 23 times that of the lowest 10 percentile. If “gray” income is included, the multiple increases to 65.

Rural–Urban Migration

China's single most important labor market change over the past two decades is probably the rapid growth in rural-to-urban migration. From the late 1990s up

to the present, the number of rural migrants increased by more than 100 million to 145 million. In the next few decades, more than 300 million rural *hukou* workers may move to cities to work. The world has never seen such a large-scale human movement within such a short time. This large-scale movement of workers from the low-productivity agriculture sector to the high-productivity urban sector is one of the forces driving China's unprecedented economic growth (Bosworth and Collins 2008; Gong, Kong, Li, and Meng 2008).

However, rural–urban migration in China remains restricted. China follows a “guest worker” system with controls over the type of jobs rural migrants are allowed to have and the social welfare and social services to which migrants are entitled. China's rural migrants often take jobs which urban workers are unwilling to take (Zhao 2000; West and Zhao 2000; Meng 2000; Meng and Manning 2010). When in the cities, migrants have little access to unemployment supports, health care, retirement pensions, or the Minimum Living Allowance scheme available to urban *hukou* holders as a last resort for poverty alleviation in urban areas. In addition, migrant children are often denied access to urban public schools (Meng and Manning 2010). From 2008 to 2010, the proportion of migrant workers with access to unemployment insurance increased from 12 to 13.5 percent, while the proportion for workers with urban *hukou* increased from 60 to 66 percent. The proportion of migrants with access to urban health insurance is 20 percent in 2010, while for urban *hukou* workers it is 87 percent (Frijters, Gregory, and Meng forthcoming).

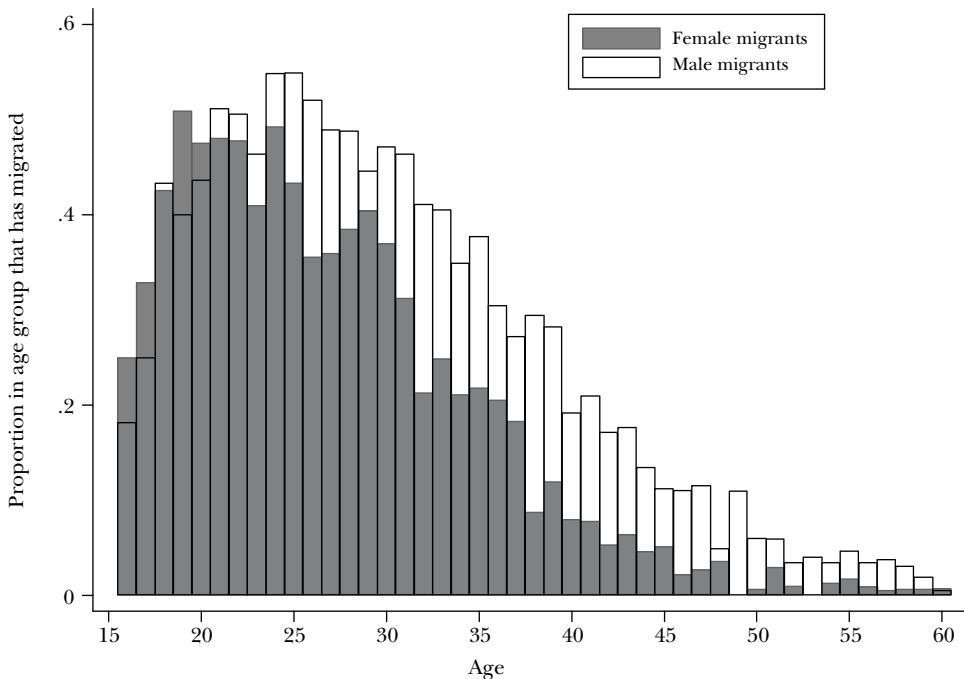
As a result of this institutionalized discrimination, most rural–urban migrants do not see their long–run future in cities. Instead, they leave their families behind and migrate to the cities hoping to earn as much as possible before returning home (Meng and Manning 2010). Migrants normally go to cities in their late teens. Women typically begin to return home in large numbers between age 25 and 35 to marry and have children, while men start returning in their mid-30s. On average, migrants stay in cities for only about seven years.⁹ At the peak of migration—an age of 25 for males and 20 for females—55 percent of the male and 50 percent of the female rural labor force has migrated, as shown in Figure 5. In total, 22 percent of the rural labor force was working in cities in 2009.¹⁰

When migrants lose a job or fall ill, their fallback position is to return to their home village. The global financial crisis hit China in mid-2008, causing 20 to 45 million migrant workers to return to their home villages during the end of 2008, which is a substantial part of the reason the unemployment rate increase

⁹ The length of stay is calculated using information on the year the migrant first moved to the city and the calendar year of the survey. As we have no information on churning (the number of spells in between the first migration and the survey date), this observed length of stay to the survey date may be an overestimate. In addition, this observed duration suffers from two potential biases. First, individuals who have completed their durations have left the city and cannot be observed. Second, the remaining individuals are those who have not completed their durations and hence are right-censored. Assuming a constant exit rate and a steady state, the two biases may largely offset each other.

¹⁰ These data are from the RUMiCI rural survey. The 145 million migrants number indicated earlier is an aggregated figure published by China's National Bureau of Statistics using Rural Household Survey data, which gives a slightly higher proportion, at around 27 percent of rural *hukou* labor force.

Figure 5

Rural Labor Force Migration by Age and Gender, 2009

Source: 2009 Rural Urban Migration in China and Indonesia (RUMiCI) Project data for China; author's own calculations.

in cities was muted (Huang, Zhi, Huang, Rozelle, and Giles 2011; MoHRSS 2010; Kong, Meng, and Zhang 2010).

Migrant Employment and Occupation

Because institutional restrictions discourage migrants from staying in cities when unemployed, it is no surprise that migrant employment rates are extremely high. The employment rate for migrants in 2009 was 94 percent, while for their urban *hukou* counterparts in the same cities it was 63 percent (as shown in Table 2). These striking differences extend to other labor market attributes. Migrants work an average of 63 hours per week, while their urban *hukou* counterparts work 44 hours. Wage-earning migrants work 15 hours more on a weekly basis than their urban *hukou* counterparts, while for self-employed the difference is 20 hours.

Few migrants working in cities are employed in the state sector: 7.3 percent in 2009, compared with 49.4 percent of urban *hukou* workers. Furthermore, migrants are more likely to be self-employed. In 2009, around 27 percent of employed migrants fall into the self-employed category, compared with 8.4 percent of urban workers. This gap, is, in part, a response to the discrimination against migrants in salaried sectors in

Table 2
Individual Characteristics by Migration Status

	<i>Migrants</i>			<i>Urban hukou holders</i>		
	<i>Females</i>	<i>Males</i>	<i>Total</i>	<i>Females</i>	<i>Males</i>	<i>Total</i>
Labor force participation rate (%)	93.36	97.73	95.87	60.78	78.55	69.45
Labor force employment rate (%)	91.66	96.26	94.30	54.18	72.08	62.91
% of employed work as self-employed	29.68	26.28	27.69	7.48	9.11	8.40
Ownership of employment:						
State	5.26	8.74	7.31	45.75	52.25	49.43
Collective	2.72	4.04	3.50	5.15	5.24	5.20
Private	92.02	87.21	89.19	49.10	42.51	45.37
Occupation						
Professional	0.66	0.58	0.61	20.42	24.74	22.88
Managers including shop owners	4.15	5.61	5.01	3.43	7.29	5.63
Clerks	6.68	3.67	4.90	27.54	22.05	24.41
Sales/Service workers	60.96	52.42	55.91	32.79	18.59	24.69
Production workers	26.20	37.15	32.67	9.04	20.29	15.46
Others	1.35	0.58	0.89	6.78	7.03	6.93
Age	31.43	32.31	31.95	38.13	41.81	40.20
% males			58.75			56.47
Years of schooling	9.04	9.38	9.24	12.29	12.31	12.30
Education level:						
Primary	19.94	11.90	15.24	3.60	3.00	3.26
Junior high	50.15	52.98	51.80	18.99	19.14	19.07
Senior high	24.04	29.45	27.21	36.11	36.01	36.06
3-year college	5.24	4.75	4.95	25.63	23.05	24.18
University or above	0.63	0.92	0.80	15.67	18.81	17.43
	<i>Wage earners</i>	<i>Self-employed</i>	<i>Total</i>	<i>Wage earners</i>	<i>Self-employed</i>	<i>Total</i>
Average weekly hours worked (hours)	57.65	77.47	63.21	42.49	57.23	43.77

Source: RUMiCI Migrant and Urban Surveys, 2009.

terms of job attainment and earnings (Frijters, Kong, and Meng 2011). For example, over 89 percent of migrant workers are employed as unskilled workers in sales/service or production jobs, while only 40 percent of urban *hukou* workers are in this category.¹¹

¹¹ What proportion of these large differences in occupational attainment is due to the difference in observable characteristics, such as age, gender, and education of the migrant workers? In the online Appendix B, Table B3, available with this paper at <http://e-jep.org>, a linear probability regression is estimated to predict whether an individual has a skilled (defined as professional, managerial, or clerical) or unskilled job (including retail/wholesale trade, services, production laborers, and not otherwise specified). Education and age are all significantly associated with being a skilled worker. Controlling for all observable characteristics, including city where employed, migrants are around 16 to 24 percent less likely to have a skilled job. This is true for both men and women, and indicates that over and above their attribute differences there is still a high level of disadvantage in the occupational choices that migrants face.

Migrants, on average, are younger than their urban local counterparts by around eight years. They are also more likely to be male and less educated. Although it is the better-educated rural workers who tend to migrate, they still have considerably less schooling (9.2 years) relative to their urban *hukou* counterparts (12.3 years), as shown in Table 2. In particular, 42 percent of urban *hukou* workers have a three-year college degree or above, while the proportion for migrant workers is around 6 percent, which is still higher than for those who did not migrate.

Migrant Wage Growth and Labor Market Discrimination

Migrants have always been at the lower end of the wage distribution, earning on average only 45 percent of the average urban *hukou* workers' hourly wage in 2009 (Frijters, Gregory, and Meng forthcoming). There are no representative and consistent migrant surveys extending through the last decades to allow a comparison of changes in migrant earnings with those of their urban *hukou* counterparts.

However, the RUMiCI survey does ask migrants to report information on their first job in cities, including the year, the duration, the first and last month pay of the first job, as well as other employment details. Combining these data with those from the Urban Household Survey, the monthly earnings of migrant and urban workers for the 15 cities between 2002 and 2008 can be constructed, although the sample sizes are not large.¹² During this period, real earnings during the first month of the first job for migrant workers rose about 3.8 percent per year, while pay on the last month of the first job for migrants rose about 2.1 percent per year in real terms. This increase is about one-quarter of the increase for an urban *hukou* new entrant (with up to one year of experience)—their real earnings increased by 16 percent per annum during this period. If we look at total urban *hukou* blue collar workers (the majority of migrant workers are blue collar workers), the change is 11.4 percent per annum. The raw difference in wages and in the growth rate of wages roughly remains if one adjusts for various observable characteristics. Using the log of monthly real earnings as the dependent variable and controls for age, city work experience, education levels, gender, a migrant indicator, regional dummies, and year dummy variables, and interacting each of the independent variables with a dummy variable for whether the worker is a migrant, the implied growth rate for urban blue-collar workers adjusted for these other factors is around 6.8 percent per annum, and for migrants is 2.3 percent per annum (see also Golley and Meng 2011). Thus, migrant wages are increasing in real terms but falling behind in relative terms. It is important to note that the data used here is not ideal. Lack of large-scale official earnings data which cover both urban *hukou* and migrant workers extending

¹² The reason only data for 2002 and after are used is to minimize recall errors and to increase the sample size for each year to around 300. Even so, there must be considerable doubt as to the precision of the migrant earnings data. To check whether the migrant earnings information is in the ballpark, I examined monthly earnings data from the CHIPs 2002 migrant survey. The data show that in 2002 an average migrant in the CHIPs sample was paid 783 yuan per month, while RUMiCI data for the first and last month pay of the first job is 685 yuan and 822 yuan in that year, respectively. Both are on the right-hand side of the distribution and are quite close to the mean, suggesting that recall errors may not be large.

back to the late 1990s or early 2000s is a serious impediment to our understanding of this important issue.

Several conjectures might explain the differential earnings growth between urban and migrant workers. First, labor supply conditions for the two types of workers are very different. Currently more than 70 percent of the population of China has rural *hukou*, and of the rural *hukou* workforce only 22 percent are working in urban areas. However, restrictions placed on rural–urban migrants in terms of job access prevent them from becoming perfect substitutes for urban *hukou* workers. The labor markets for urban *hukou* workers and migrant workers are segregated. The potential supply of migrant workers is significantly larger than for urban *hukou* workers, which should suppress wage growth for migrant workers. Second, if the economy adopts a skill-biased technology, demand for labor should be biased towards highly educated, skilled workers and hence favor predominantly urban *hukou* workers (see education levels in Table 2). These elements are all related to the long-standing policy of a rural–urban divide: urban workers are protected from competition from rural labor supply; they are directly protected so they may obtain good jobs; and indirectly, they receive better-quality education and hence are able to reap the rewards from skill-biased technologies.

A number of studies find that labor market discrimination suppresses migrant wages and wage growth (Meng and Zhang 2001; Zhang 2009; Frijter, Lee, and Meng 2011; Frijter, Gregory, and Meng forthcoming). In particular, in Frijter, Gregory, and Meng (forthcoming), my coauthors and I show that in 1995 migrant workers in Shanghai earned 50 percent of the hourly earnings of urban *hukou* workers, and that 47 percent of this gap could not be explained by differences in observed characteristics. By 2009, the hourly earnings gap between the two groups in the same city increased to 60 percent, and 53 percent of the gap could not be explained by differences in observable characteristics. The wage gaps between rural migrants and those with urban *hukou* do not seem to be narrowing.

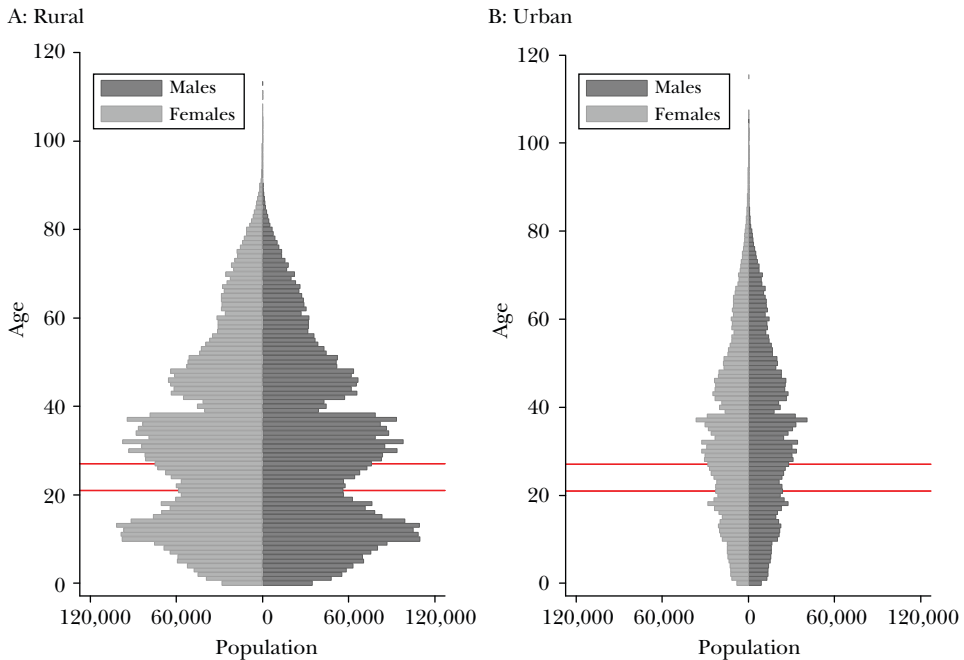
If migrants stayed longer in cities could they narrow the gap or “catch up” to urban workers? Zhang (2009) finds that migrants who stay longer do experience a statistically significant and weak narrowing of the gap, but not a complete catch-up. She also finds that the migrants’ experience-earnings profile peaks around the 15-year mark. But remember that migrants on average only stay in cities for seven years. Thus, the policies discouraging migrants from staying in cities longer not only lower migrant earnings but also disadvantage the economy by not allowing migrants to reach their potential productivity peak.

The Future of China’s Labor Force: Quantity and Quality

The One-Child Policy and Institutional Impediments to Future Labor Supply

At the end of the 1960s, low agricultural productivity was raising concerns as to whether China could feed its ever-growing population. In response, the government began discussing a series of policies to discourage fertility. For example,

Figure 6
Population Pyramid, 2000



Source: One percent sample of the 2000 Population Census data, author's own calculations.

the policy of “Later, Longer, and Fewer”—have children later, have a longer time between births, and have fewer children—was introduced in 1973. In 1978, the policy slogan was “One is the Best and Two is the Most,” and “Reward Having One Child and Punish Having Three.” In 1979 the “One Child per Couple” policy was implemented (Center for Population Studies et al. 1986; Peng 1991; Feeney and Wang 1993).

The one-child policy was strictly enforced in many urban areas, but in rural areas a second child, or even a third, has always been allowed if the previous births were girls (Peng 1991). The one-child policy was associated with a total fertility rate decline from 2.8 children per woman in 1979 to 1.8 in 2000. The total population reduction in the first 25 years of implementation relative to what the population otherwise would have been is 250 to 300 million people (Festini and de Martino 2004).

Figure 6 presents the population pyramids for the urban and rural *hukou* populations separately for the year 2000. The two horizontal lines indicate those who were born in 1973 (the introduction of the “Later, Longer, and Fewer” policy) and 1979 (the introduction of the “One Child per Couple” policy). The pyramid for the rural *hukou* population shows a low number of births between the early 1970s and mid-1980s. However, this is less about the one-child policy than it is an “echo” effect

of the Great Famine of the late 1950s.¹³ In fact, the cohorts after the echo effect are about the same size, if not larger than, the cohorts born immediately after the Great Famine, suggesting that the one-child policy did not significantly reduce the reproduction of the population for rural *hukou* population. Figure 6 also suggests that a new round of the echo effect may be underway. This can be observed in the small size of the population under 10 years of age. But this population reduction will not be huge. In 2000, the size of the 0–10 year-old rural *hukou* population was 85 percent that of the rural population aged 11–20, 98 percent that of the 20–30 age group, and 90 percent that of the rural population aged 31–40.

The urban pyramid depicts a different story. Below the horizontal lines, population size fell almost year after year so that the “pyramid” is diamond-shaped, indicating a shrinking urban *hukou* population size that started about the time of the one-child policy. The size of the urban *hukou* population aged 0–10, for example, is 58 and 55 percent that of the population aged 21–30 and 31–40, respectively.

Nevertheless, as more than 70 percent of the population has rural *hukou*, the limited effect of the one-child policy on the rural population dominates the total population story. The Chinese population is projected to grow to 1.46 billion in 2030 and then to decline to 1.41 billion by 2050 if there is only a very slight increase in fertility (United Nations, Department of Social and Economic Affairs, Population Division, 2007).¹⁴ The population pyramids illustrate that the new entrants to China’s labor force in the next decades will be predominantly drawn from the rural *hukou* population.

Since 2004, there have been reports of migrant labor shortages in coastal Chinese cities, along with debate as to whether China has reached the (Arthur) Lewis-style “turning point,” whereby rural labor supply is exhausted and unskilled wages in urban areas begin to rise substantially in response (for example, Cai 2007, 2010; Golley and Meng 2011; Knight, Deng, and Li 2011; Yang, Chen, and Monarch 2010). The discussion in the last section has shown that the earnings of migrants in real terms have been increasing, but this is unlikely to be the result of an absolute “labor shortage” but rather an effect of institutional restrictions on migration. As discussed earlier, as a result of the institutional restrictions on migrant access to social welfare and social services in cities, only 22 percent of the rural *hukou* labor force has migrated to cities so far, and they often stay for a relatively short time. It is unlikely that at the aggregate level there is a “shortage” of unskilled labor. Imagine if the restrictions on migrant access to social welfare and social services in cities were abolished and the duration of migration, say, doubles. Any conceivable “labor shortages” would disappear. Many more rural workers would also become available to migrate. When answering the question “if the policy restrictions on

¹³ The Chinese Great Famine occurred between 1959 and 1961. In 2000, those who were born during the famine were 39 to 41 years old.

¹⁴ Based on the same projection, if fertility were to increase by 0.5 child per woman, the population will continue to increase until 2050 to 1.65 billion. In fact, an increase in fertility by 0.5 per woman seems fairly likely to happen, because many provinces have already allowed couples who are both a single child to have two children.

migration were to be relaxed, how long would you be willing to stay in the city?” 62 percent of the migrants in the 2010 RUMiCI survey indicated that they would stay in the city forever. Another 24 percent answered that they do not know how long they would stay. The “labor shortages” currently observed in coastal regions are not generated by the lack of absolute numbers of potential workers but by the institutional restrictions.

Thus, one policy response to city labor shortages would be to change the institutional restrictions to increase both the inflow of migrants and their length of stay in cities. However, such a reform would not be a trivial undertaking: it raises many financial and political complications. For example, in 2008 the central government introduced a new law that requires all employers to pay the health, unemployment, work injury, and pension insurances for migrant workers. The policy should be enforced by the local governments, but they have limited incentive to do so. Enforcing the policy implies a significant increase in labor cost, which has direct implications for local economic growth, upon which local governments are evaluated. Employers, in turn, are unlikely to pay if they can avoid it (Meng and Manning 2010). As a result, although the new law has been in place for four years, very few improvements were made with regard to migrants’ access to social insurance. In addition, the portability of insurance is also an issue. Local governments are unwilling to let their social insurance funds move to somewhere else. Furthermore, when it comes to paying for social services, local governments only care about the welfare of local constituents and are unwilling to pay for rural migrants from other provinces. Policy issues also arise in rural areas. Should migrants who leave the countryside still be allowed to keep their land usage rights in rural areas once they are given the same welfare entitlement as urban *hukou* holders?¹⁵ To find answers and solutions for all these issues takes time.

Meanwhile, without the institutional changes, the unskilled labor “shortage” in cities may worsen and migrant workers’ wages in cities will rise further. This may induce capital outflow to other low-cost countries and Chinese industries will increasingly move to the capital and technology-intensive end of the spectrum—which may sound like a good outcome, but it does imply that China will not follow an optimal resource allocation growth path. In the meantime, maintaining the restrictions on rural migrants means that there is no obvious mechanism for the 50 percent of unskilled and underemployed farmers still in the rural areas to share in China’s economic growth.

Might it be possible that most of the current rural areas will be urbanized, so that rural workers do not have to move to cities to become “urbanized”? It has always been the Chinese government’s policy intention to develop small and medium-sized cities, precisely for the purpose of reducing large-scale rural–urban migration. The policy slogan is “leaving agricultural work, but not leaving rural areas.” As a result of this policy, China has many small cities. Recent studies on urbanization in China,

¹⁵ Currently, migrants who move to cities keep land usage rights as a de facto welfare insurance to support them if they lose their city job, fall ill, or become disabled.

however, have found that the majority of Chinese cities are too small to be economically viable (Wang and Xia 1999; Au and Henderson 2006; Wang 2011). Henderson (2009) estimates that if the average size of the Chinese prefecture-level cities can be doubled, their value added per worker can be increased by 20 to 35 percent.

Might it be possible to change the education system, so that the skill set of the future labor force from rural areas can fit China's new industrial structure? This leads to the question of the quality of China's future labor force.

Polarization in Education

During the Communist regime, China did well in reducing illiteracy. The literacy rate increased from less than 30 percent in the 1940s to 48 percent in 1964, 66 percent in 1978, and 96 percent by the early 2000s (Dreze and Loh 1995; Zhang 1997; Zhang and Kanbur 2005). The average years of schooling for the rural *hukou* population have risen steadily from about three years for those born in 1935 to eight years for those born in 1980. Meanwhile, the years of schooling for the urban *hukou* population have risen from seven years for those born in 1935 to 13 years for those born in 1980 (based on data from the 1% Population Survey of 2005).

Despite the rising literacy rate, the rural–urban divide in education has been growing. The average schooling gap between urban and rural *hukou* holders fell from 4.8 years for the cohort born before the communists took power (the before-1940 cohorts) to around 3.6 years for the cohort born in the 1950s and early 1960s, and then gradually increased to over 4.0 years again for those who were born in the 1970s. Wu (2011) also finds an increase in the senior high school enrollment gap between rural and urban *hukou* holders for cohorts born during the 1970s and 1980s. In 2008, the proportion of rural *hukou* holders with three years of college or above was less than 1 percent, and the proportion with senior high school or above was 12 percent. The corresponding ratios for urban *hukou* holders were 17 percent and 51 percent, respectively.

A number of factors may have contributed to the resurgence of the widening of the rural–urban education divide. First, when economic reform abolished the rural commune system, most rural services financed by communes deteriorated, including education.

Second, greater economic opportunities for rural young people at different stages of economic reform—working in the rural township and village enterprises during the early reform years and moving to cities to work in the later reform period—increased the opportunity cost of going to school (Unger 2002; Brown 2006; de Brauw and Giles 2006).

Third, as reform deepened, the Chinese government did not adequately replace education provision in rural areas, but instead, moved towards an education system that relied more on local and private funds. The central government spending on education as a proportion of GDP hovered between 2 to 3 percent (Tsang and Ding 2005; Hannum, Behrman, Wang, and Liu 2008; Robertson and Xu 2008; Hannum and Park 2007). The urban/rural income ratio increased from two-fold in the mid-1980s to 3.5-fold in the mid 2000s (NBS, various years). As this

income gap widened, access to education became less equal across the urban/rural divide. Hannum and Park (2007) find that even in a very poor rural setting, the education achievement of children is significantly affected by the wealth of their families. In Frijters, Luo, and Meng (2010), my coauthors and I also find a large gap in school performance between rural and urban children and a strong association between school performance and income within rural areas.

Fourth, the policy to expand university enrollment since 1999 benefited urban areas more than rural areas. From 1998 to 2007, university enrollment increased from 108 million to 565 million (NBS, various years). The proportion of urban *hukou* workforce aged 23 to 60 with three-years of college and above increased from 12 percent in 1988 to just below 40 percent in 2009. The differential impact of this large expansion for the rural and urban divide has not been fully documented. However, looking across provinces, in Luo and Meng (2010) we find that every 1 percentage point increase in the share of urban *hukou* population in a province is associated with an additional 0.49 percentage points higher university enrollment and this variable alone can explain 40 percent of the variation in university enrollment across different provinces. Li (2010) also finds that the probability of having a university education increases 6.5-fold if the father has urban *hukou*.

The increase in the urban–rural education divide has important implications for future Chinese economic growth patterns. As indicated above, the future labor supply will mainly come from the rural *hukou* population. As the economy grows, it will inevitably improve its technology, which will require a more educated labor force. If rural education does not catch up, it will place significant pressure on the quality of China’s future labor supply and generate a mismatch between demand and supply for labor. This situation may be worsened if institutional restrictions on rural–urban migration are not relaxed fast enough. These restrictions generate unskilled labor shortages in cities, which in turn will shift China towards a capital- and technology-intensive industrial structure further and faster than if development were based on optimal resource allocation. Thus, if rural education investment increasingly lags behind so that rural workers cannot fill the more-skilled urban job openings, we may see a slower urbanization process, an increase in rural underemployment, and a further widening of the income gap.

The increase in the supply of college graduates has slowed down the increase in the returns to education, which may indicate an oversupply of college graduates in the short run. However, in the long run, this increase in the supply of skilled workers might be preparing China for the upgrading of industries along the value-added chain. Nonetheless, the shrinking urban *hukou* population indicates that the key to China’s future growth will be how fast China narrows the rural–urban education divide.

Concluding Remarks

China has experienced exceptional labor market changes in recent decades, which will echo into the future. First, China has a shrinking urban *hukou* population,

and so new entrants to the labor market will come primarily from the rural *hukou* population. Second, the rural population is significantly less educated. Third, considerable institutional restrictions remain on access of rural migrants to jobs and to social welfare and social services in cities. As a result, Chinese cities have begun to experience some unskilled labor shortages even though more than 50 percent of the labor force is still in the rural sector. The clear policy implication is that China should adopt labor market reforms on all fronts to enable a better utilization of its abundant resources and a smooth transition to a more skill-intensive economy: it should reduce restrictions on access of rural migrants to cities and also adjust its educational investment in rural areas to increase the skill level of rural workers. Without substantial policy changes on these fronts, China may observe a continued or even faster increase in earnings for urban *hukou* holders in the next 10 to 20 years, but the rural–urban income divide—with most of the population on the rural side—could become very large.

Some adjustments on these fronts can be observed, but progress is slow. One reason is that while China’s central government passes laws and states policy intentions, resources and implementation are local government responsibilities. Thus, any real change to eliminate migration restrictions and the rural–urban education divide will have to be driven and paid for by the central government, or a significant reform on the current public finance system has to be implemented either to centralize the financing of China’s social welfare system or to increase significantly the resources of local governments.

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