WP/15/151

IMF Working Paper

China's Labor Market in the "New Normal"

by W. Raphael Lam, Xiaoguang Liu, and Alfred Schipke

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INTERNATIONAL MONETARY FUND

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IMF Working Paper

Asia and Pacific Department

China's Labor Market in the "New Normal"[1]

Prepared by W. Raphael Lam, Xiaoguang Liu, and Alfred Schipke

Authorized for distribution by Alfred Schipke

July 2015

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Abstract

As China implements reforms under the "new normal," maintaining stability in the labor market is a priority. The country's demography and labor dynamics are changing, after benefitting in past decades from ample cheap labor. So far, the labor market appears to be resilient, even as growth slows, driven in part by expansion of the services sector. Migrant flows and possible labor hoarding in overcapacity sectors may also help explain this. Yet, while the latter two factors help serve as shock absorbers—contributing to labor market stability in the short term—if they persist, they may delay the needed adjustment process, contributing to an inefficient allocation of resources and curtailing productivity gains. This paper quantifies to what extent structural trends and the reform pace affect employment growth under the new normal. Delays in reform implementation would weaken growth prospects in the medium term, running the risk that job creation will fall below policy targets, leading to labor market pressures in the future. In contrast, successful transition might require faster reforms, including in the overcapacity and state-owned enterprise sectors, supported by well targeted social safety nets.

JEL Classification Numbers: E1, E2, J1,J2, J3, J6

Keywords: China, Labor Markets, Unemployment, Migration, Mobility
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[1] We are grateful for the assistance of Sung Eun Jung and Lesa Yee. Qin Li provided data and research assistance in the estimates of the unemployment rate, based on various labor surveys used in the Okun's law estimation. We thank Professor LU Feng for helpful advice and data on labor migration and are grateful for comments from Tamim Bayoumi, Hui He, Christina Kolerus, Markus Rodlauer, and seminar participants at the Joint IMF/Peking University seminar and at the Development Research Center.

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I. INTRODUCTION

China has embarked on the comprehensive, third-plenum reform blueprint. Its objective is to move toward more inclusive and sustainable growth through better allocation of credit and resources and improved social welfare. In this context, stable labor markets are a priority. The National People's Congress 2015 work report highlighted that China has begun transition toward a "new normal" as economic reforms progress. Under it, priority is on maintaining stable growth and ensuring ample employment while pursuing reforms (State Council, 2015).

Labor market conditions appear to be holding up well, despite slower growth. Newly created urban jobs have exceeded official targets by a significant margin, while the registered unemployment rate remains stable at about 4 percent.[2] Average wages have grown in line with nominal GDP, and the urban–rural income gap has not widened. High-frequency purchasing managers' indices (PMIs) on employment have softened somewhat, but the labor market remains resilient overall.

Structural trends—in addition to unique buffers from migrant flows and labor hoarding in state-owned enterprises (SOE)—tend to support labor market resilience, despite slowing growth. China is at a demographic turning point, part of which includes a decline in surplus rural labor, which could dampen the negative pressures on employment as economic growth slows. At the same time, an expansion of the more labor-intensive services sector is generating more jobs. Unique features in China's labor market—such as migrant flows and the employment of excess labor among SOEs and overcapacity sectors—also buffer employment against adverse shocks. However, even though this labor hoarding by SOEs may mitigate negative impact on employment as the economy slows, prolonged reliance on it could reduce labor flexibility, leading to its inefficient allocation, limiting productivity gains.

Migrant flows are key to understanding China's labor market conditions. The number of migrant workers is significant, at about 270 million in 2013, or a third of the total labor force (Meng, 2012) and half of urban employment. These migrant flows are closely related to GDP growth and better reflect short-term dynamics in labor markets than do unemployment rates. Our estimates further suggest that the urban-rural income gap and economic growth are key determinants of flows. However, *hukou* restrictions and the lack of social services for migrants could weaken long-term labor market flexibility.

Empirical analysis suggests that the long-term resilience of labor markets hinges on the progress of reform implementation. A scenario analysis to quantify the effects on employment of reforms across sectors finds that delays in their implementation could cause further distortions, which would weaken medium-term employment prospects. It demonstrates that new employment levels risk falling below the current official job target. In contrast, faster reforms in overcapacity sectors and SOEs may, in the near term, release excess labor and push up the interim unemployment rate by ½–¾ percentage point, but facilitate structural transition—such as urbanization and services sector expansion—to more sustainable growth and job creation in the medium term.

[2] The official surveyed unemployment rate was also stable, at about 5 percent, in the first quarter of 2015.

The key policy implication of this analysis is that stronger labor market flexibility will facilitate China's economic transition to the new normal. First, labor market stability during economic restructuring can be achieved more effectively with policies that foster the reallocation of surplus labor through effective, on-budget social policies. This is rather than by relying solely on inherent buffers against cyclical shocks (such as the employment of excess labor among SOEs noted earlier). Third, steadfast implementation of reforms will facilitate migrant flows and structural trends, which in turn will help generate jobs and urban employment in the medium term. This includes opening up the services sector and reforming *hukou* regulations to enhance labor market flexibility (Whalley and Zhang, 2007). At the same time, fiscal reforms on taxation, pension portability, and higher social spending will help narrow the urban–rural income gap (Lam and Wingender, 2015). Finally, broadening the coverage and timeliness of data, especially related to migrant flows, will facilitate policy design and assessment.

The paper is structured as follows. Section II discusses recent labor market developments, and Section III helps explain why labor markets have been resilient, despite slower growth, in light of migrant flows and some signs of labor hoarding in SOEs and overcapacity sectors. Section IV discusses the recent development of migrant flows and analyzes the key determinants of the movement of migrant workers across provinces. Section V uses a scenario analysis to quantify the effects on labor markets when China implements reforms and transits to the new normal. Section VI discusses the policy implications and Section VII concludes.

II. Labor Market Developments

Until recently, labor market conditions appeared resilient, despite slower growth (Figure 1).

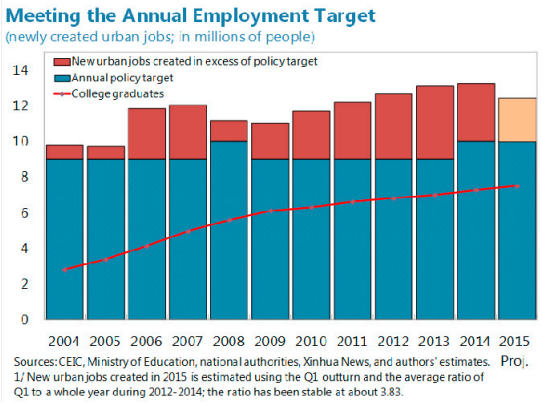
- *Employment is holding up well.* Newly created urban jobs reached 13.6 million in 2014, exceeding the official target of 10 million.[3] New jobs reached 3.2 million in the first quarter of 2015, slightly lower than 2014:Q1, but still estimated to exceed the target this year. In fact, during the past decade, new jobs have always surpassed annual policy targets and with significant margins.[4] Demand in urban labor markets has also outpaced supply since the global financial crisis across regions in China, suggesting some tightness in the labor market. Over the past few years, the official registered unemployment rate has been stable at about

[3] The indicator on new urban jobs is based on cumulative urban jobs that are newly created net of natural attrition during a given period. Natural attrition includes those retiring or leaving jobs due to accidents and deaths, according to national regulation policies. The statistics on new urban jobs are adjusted for the possibility that a worker may take on a few jobs within a year.

[4] Total employment rose by about 250 million during 1990–2014, largely driven by growth and large-scale rural-to-urban migrant flows. Nearly two-thirds of the gain in employment was from newly created jobs—at more than 10 million per year—according to the National Bureau of Statistics, while reemployment from layoffs and other circumstances has been stable at a small base.

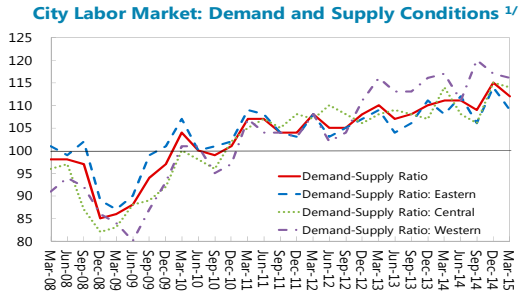
Figure 1. Labor Market Developments

Newly created urban jobs exceeded the policy targets in 2014…



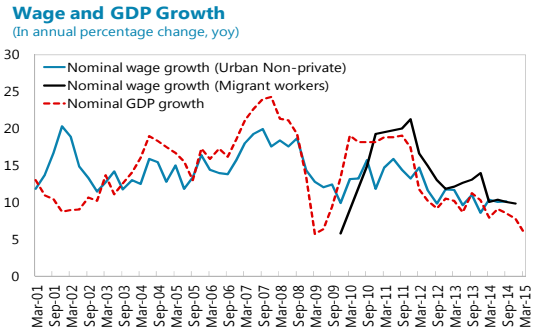
Sources: CEIC, Ministry of Education, national authorities, Xinhua News, and authors' estimates. Proj.
1/ New urban jobs created in 2015 is estimated using the Q1 outturn and the average ratio of Q1 to a whole year during 2012-2014; the ratio has been stable at about 3.83.

… and demand-supply conditions for labor have been favorable since the global financial crisis.



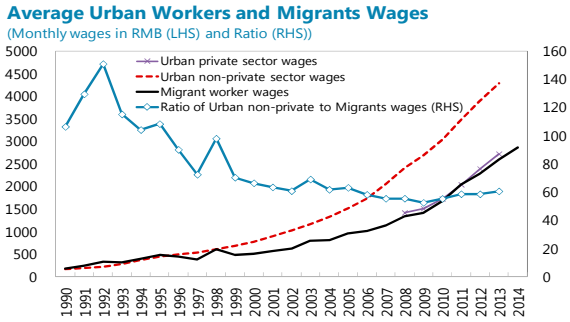
Sources: CEIC
1/ If the ratio exceeds 100, it indicates demand conditions for labor market is stronger than supply conditions.

Average wage growth has outpaced nominal GDP growth in recent years …



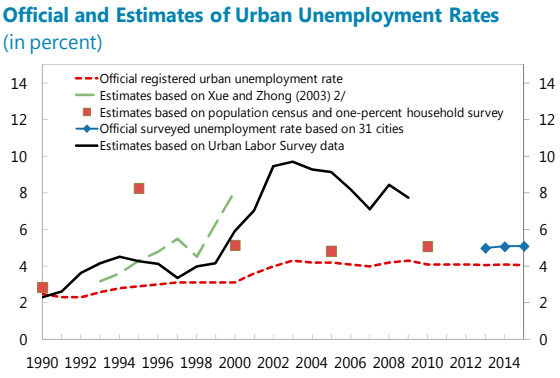
Sources: CEIC; and IMF staff calculations.

… while wages for migrant workers have grown at a similar pace as those of urban workers.



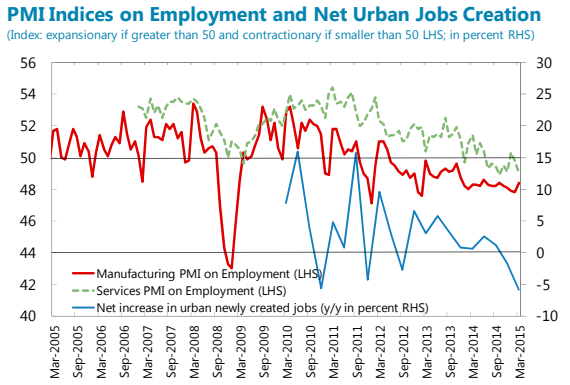
Sources: CEIC and Lu (2012).
1/ Based on Lu (2012) estimates in "Trend in China Migrant Workers' Wages" in Journal of China Social Science, Vol.7 on migrant worker wages before 2007.

The official unemployment rate appears to be muted during economic cycles.



Sources: National Bureau of Statistics, Urban Labor Survey, Xue and Zhong (2003), and authors' estimates.

But high-frequency indicators showed some softening signs.



Sources: CEIC.

4 percent; the official surveyed unemployment rate has also held steady, at about 5 percent. Tracking employment is difficult because of data shortcomings (Annex 1). High-frequency indicators such as the purchasing managers' indices (PMI) show some softening signs. Both the manufacturing and services PMIs for employment—available on a monthly basis—fell below 50 in 2014 (indicating a contraction). And the PMIs on employment seem to correlate with year-over-year growth in urban job creation, a key policy target.

- *Wage growth has slowed, but it outperformed output growth.* Average wage growth for urban and migrant workers has slowed, but has remained higher than nominal GDP growth and labor productivity in recent years. The average monthly income of migrant workers grew 9.5 percent in 2014, higher than nominal GDP growth of 8.2 percent. But migrant wages have stayed at about 60 percent of urban workers' wages over the past few years, after significant convergence during the late 1990s and early 2000s.

III. Explaining Labor Market Resilience

Structural trends, such as changing demography and expansion of the services sector, tend to support labor market resilience during the current growth slowdown. Specifically:

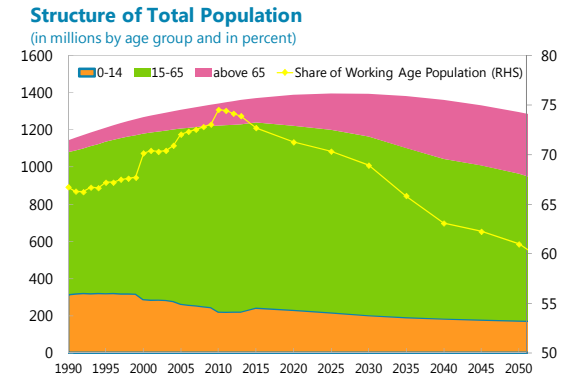
- *Demography.* China may now be at a demographic turning point (often termed as the Lewis turning point), with less surplus labor from rural areas (Das and N'Diaye 2013; Zhang, Yang, and Wang, 2011). A decline in surplus labor could also dampen new pressures on employment, which partly explains why labor markets have held up well as the economy slows (Figure 2). How demography will affect labor markets going forward is less certain. On the one hand, China's population is aging. The fertility rate remains low and the dependency ratio will climb. The working-age population will soon begin to contract.[5] And these demographic headwinds may reduce growth and wage prospects. On the other hand, the labor force participation rate remains near 80 percent, one of the highest globally.[6] Plans to raise the retirement age could also boost the shrinking labor force (Zhang and Zhao, 2012; Gruber, Milligan, and Wise, 2009). Average labor productivity is likely to rise because incoming cohorts have, on average, more years of schooling than those exiting the labor force.

[5] The working-age population (ages 15–64) grew by about 100–120 million during 1990–2013 (averaging about 1.2 percent per year), but will begin to shrink in 2015. Easing of the one-child policy may eventually mitigate the impact on long-term growth, but it is not likely to address the decline within the next decade.

[6] The participation rate was consistently above 80 percent for urban workers, but has been declining since the onset of the 2000s, particularly after state-sector restructuring in 2001.

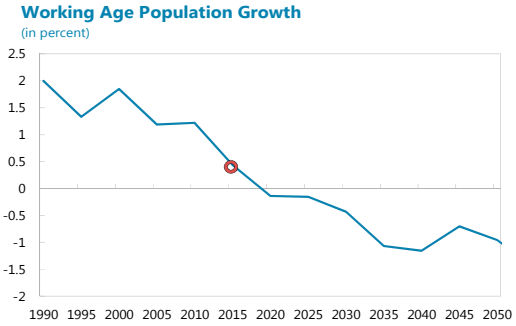
Figure 2. Demography in China

The population is aging rapidly in China …



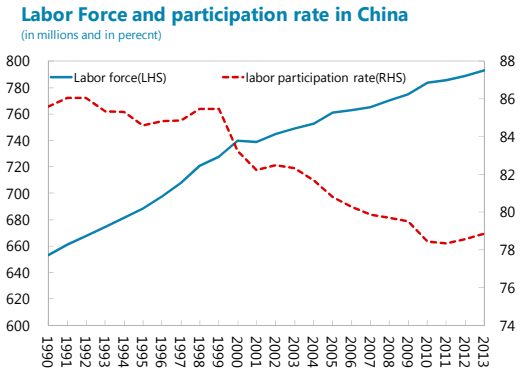
Sources: United Nations Projections.

… with a declining working-age population.



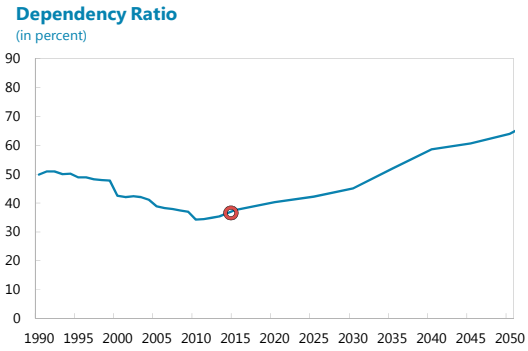
Sources: NBS, and United Nations Projections.

The labor participation rate has fallen but remains relatively high at nearly 80 percent…



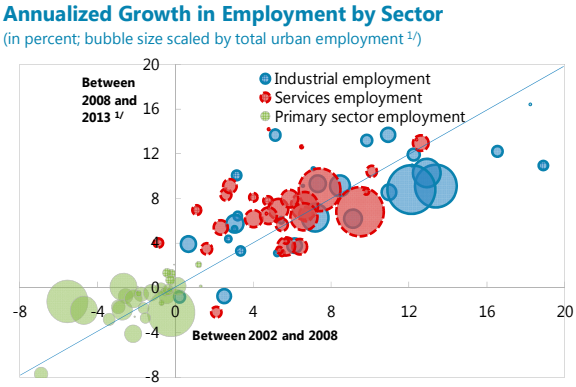
Sources: NBS

… and the dependency ratio is set to rise further, reaching nearly 50 percent by 2030.



Sources: NBS, and United Nations Projections.

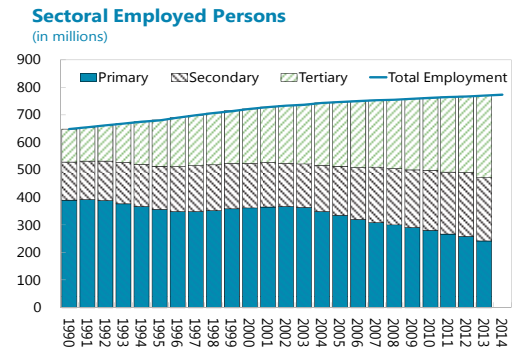
- *Expansion of the services sector.* The growing services sector is often cited as a key reason for labor market resilience amid slowing growth. It tends to be more labor intensive and low skilled, on average, and is thereby able to absorb surplus labor. For instance, jobs created from a 1 percentage point increase of the services sector share in GDP could offset the employment loss from a 0.4 percentage point decline in GDP growth (Ma and others, 2014). Both employment in and output of the services sector have expanded rapidly, particularly after 2008 (text figure). Services sector employment accounted for about 40 percent of the labor force in 2014, and value-added from the services sector reached 48.2 percent in 2014, surpassing that of the manufacturing sector (Figure 3). The contributions of the services sector to total employment are large, often exceeding



Sources: CEIC and authors' estimates.
1/ between 2002 and the latest year available.

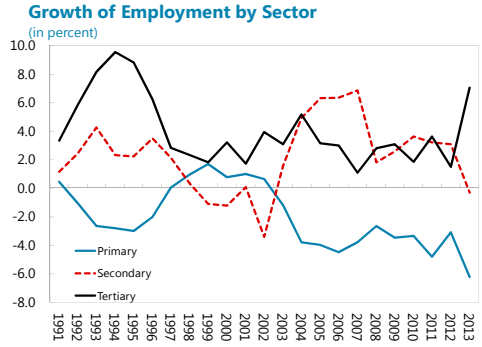
Figure 3. China: Services Sector Expansion

Employment in the services sector has expanded …



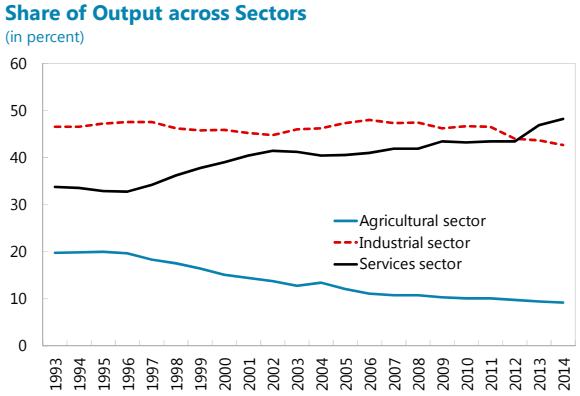
Sources: NBS

… noticably after 2008.



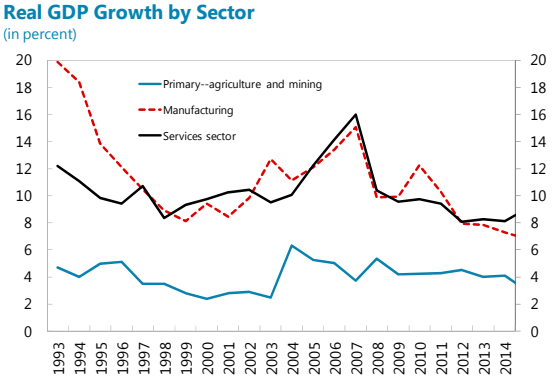
Sources: NBS

Services sector account for a higher share of output …



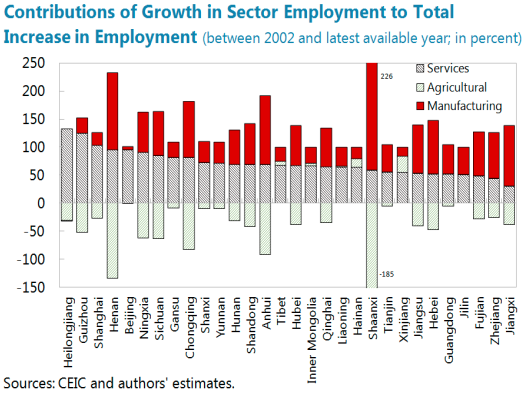
Sources: CEIC

… and growing faster than the industrial sector since 2013.



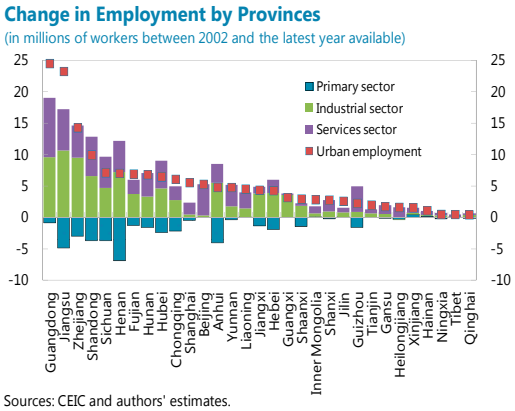
Sources: CEIC and authors' estimates.

It has contributed significantly to growth in employment in all provinces …



Sources: CEIC and authors' estimates.

… and accounts for a greater share of employment.



Sources: CEIC and authors' estimates.

half in most provinces.[7] Meanwhile, while employment may remain firm, labor productivity in the services sector is, in general, lower than that in manufacturing.

At the same time, unique features in China's labor market—such as migrant flows and surplus workers in SOEs—buffer against adverse shocks, but come at a cost (Figure 4)**.**

- Rural–urban migrant flows, which for the most part are not fully reflected in unemployment statistics, have acted as a shock absorber. Migrants seek opportunities in urban areas (which account for about 35.5 percent of total employment and 50.9 percent of nonagricultural employment). During an economic downturn or a temporary slowdown from the implementation of structural reforms, declining job opportunities in cities may keep rural workers from migrating, and migrants in cities return to rural areas. Migrant worker jobs, largely in the private sector and in low-skill industries, are usually more vulnerable to a growth slowdown than are urban workers' jobs. Rural–urban migrant flows start to slow before the unemployment rate rises. For instance, when the global financial crisis hit in mid-2008, it was reported that about 20–45 million migrant workers returned to their rural homes, helping mute the impact on urban unemployment (Meng, 2012).

- SOEs also provide buffers against adverse shocks by hoarding excess labor instead of laying off workers during downturns (Friedman, 1996; Bidani, Goh, and O'Leary, 2002; Dong and Putterman, 2001and 2003). SOEs favor a gradual adjustment through relocation, buyouts, and severance pay. Although their share of total employment has declined, SOEs are often concentrated in overcapacity sectors in which excess labor is more common (text chart).[8] Data on the size of excess labor among SOEs are limited, though anecdotal evidence suggests the scale may be large for individual SOEs (see Annex 2).

While these buffers may temporarily mitigate the impact on employment of an economic slowdown, if they persist for a prolonged period of time, they could delay the reforms necessary for economic transition. For instance, limited migrant flows could imply inefficient allocation of labor that limits productivity gains, while having SOEs hold on to excess labor delays the unwinding of overcapacity sectors.

[7] There could also be a "replacement" effect, in which migrant workers got laid off from manufacturing sector jobs, but stayed in cities and got jobs in the services sector.

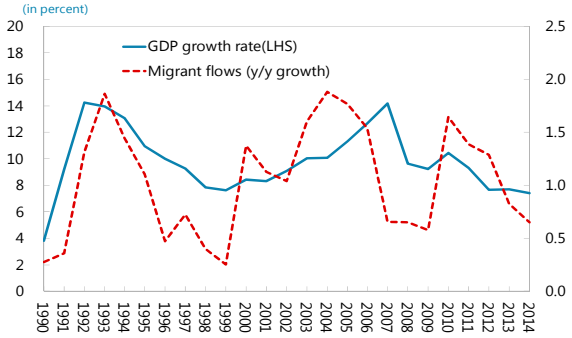
[8] In 1990, more than 97 percent of urban *hukou* workers were employed in state and collective sectors. Since the restructuring of the state sector beginning in the mid-1990s, the private sector has become a key demand source for employment in both manufacturing and services. The employment share of the state sector has continued to decline, falling below 50 percent in recent years, and almost half of urban *hukou* workers have shifted to the private sector.

Figure 4. Short-Term Buffers in Labor Markets against Adverse Shocks

Growth in migrant flows tends to track GDP growth more closely …

GDP Growth and Migrant Flows

(in percent)

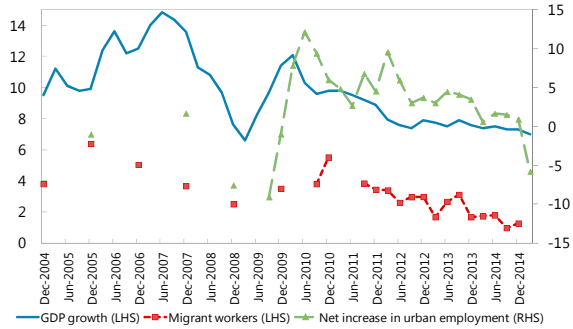


Note: Migrant flow rate is measured as ratio of annual net change of migrant workers to total employment.
Sources: NBS.

… acting as a shock absorber against a rise in unemployment.

GDP Growth, Migrant Workers, and Urban Employment

(in percent; year-on-year growth on migrant workers and employment)

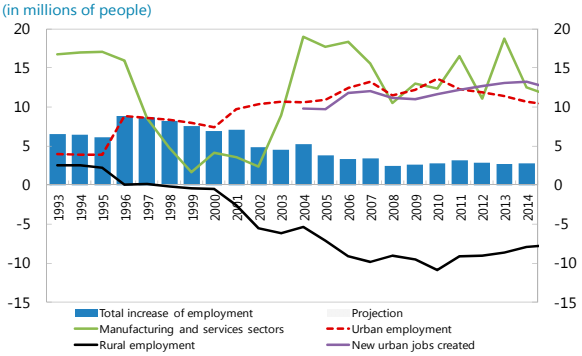


Source: CEIC

Urban employment, mostly in the nonagricultural sectors, continues to rise …

China: Net Change of Employment

(in millions of people)

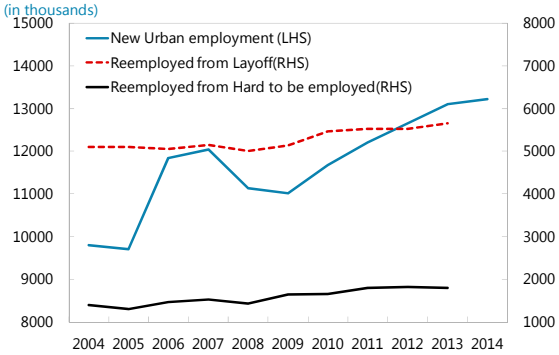


Sources: CEIC and authors' estimates.

… mostly driven by new migrant flows from rural areas.

China: New Employment

(in thousands)

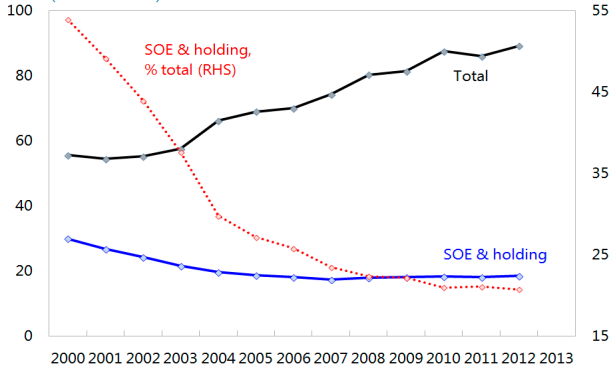


Sources: NBS

SOEs may be hoarding excess labor during the slowdown, but theire share in the economy is shrinking.

Industrial Enterprises: Average Number of Employees

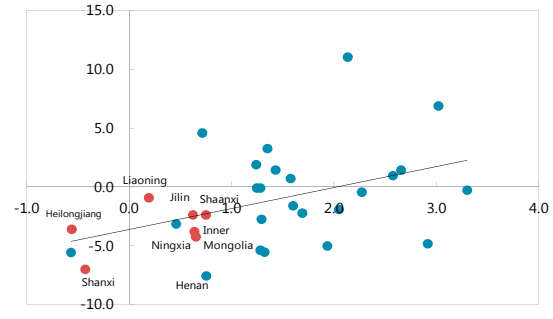
(Person million)



Provinces with more of SOEs and the overcapcity sector tend to have weaker wages and output growth.

Real GDP Growth and Average Wages

(in percent y/y)



Sources: CEIC

IV. Empirical Analysis on Migrant Flows

Migrant flows are key to understanding China's labor market conditions.[9] Migrant flows are closely related to GDP growth and better reflect short-term dynamics in labor markets than unemployment rates (Lu, Liu, Jiang, and Zhang, 2014). In fact, migrant flows also grew more mildly in 2014 (year-over-year), in line with the growth slowdown (Figures 4 and 5). The correlation between GDP growth and migrant flows is 0.8, relative to 0.4 for the unemployment rate.[10] There were about 270 million migrant workers in China in 2013, about a third of the total labor force (Meng, 2012) and half of urban employment.[11] Increasingly, migrants have stayed close to local areas—perhaps because local job prospects are improving and firms are relocating inland. At the same time, migrant flows also contributed to urbanization in China. The urbanization rate, now at 54.8 percent, is expected to rise to about 60 percent by 2020. Urban employment has more than doubled during the past two decades to about 393 million, and for the first time, in 2014, exceeded rural employment (Hu, 1998; Young, 2003; Liu and Lu, 2014).[12] The annual increase in urban employment has been broadly in line with the increase in nonagricultural employment, except the latter is more volatile.

Table. Characteristics of Migrant Workers
in percent unless otherwise stated

	Migrants	Urban hukou residents
Labor market indicators		
Labor force participation rate	95.9	69.5
Employment rate	94.3	62.9
of which: self-employed	27.7	8.4
Average weekly hours	63.2	43.8
Average hourly wage (2013)	55.6	100.0
Education level		
Years of schooling (average in years)	9.2	12.3
Share of senior high and above	33.0	77.7
Employment industries		
Professional and office work	10.5	52.9
Sales / services workers	55.9	24.7
Manufacturing	32.7	15.5
Social welfare and benefits		
Access to unemployment insurance (2008-2010)	12.0 - 13.5	60.0 - 66.0
Access to urban health insurance (2010)	20.0	87.0
Average duration stayed in cities (in years) 1/	7.0	n.a.

Sources: CEIC, Meng (2012), labor survey (2009).
1/ Measured in calendar year and subject to some selection bias.

Even after moving to the cities for work, migrant workers often have limited access to social welfare and services there. The *hukou* restrictions and the lack of social services discourage migrants from staying permanently in cities (Gruber, Milligan, and Wise, 2009). The participation rate and employment rate for migrant workers was very high (nearly 95 percent), mostly in manufacturing and the unskilled services sector, but migrants were only earning slightly more than half of urban workers' income (text table).

[9] The literature on the role of informal sector labor, notably on Latin America, also shares similar characteristics and explains the low sensitivity of the official unemployment rate to output fluctuations, though the scale of migrant flows in China is much greater.

[10] We calculate the annual net change of migrant worker flows as a percentage of total employment for each year. Data on migrant workers before 2007 are based on the cumulative sum of rural employment outside the agriculture sector, published by Ministry of Agriculture. Migrant worker data after 2007 are from the Rural Division of the National Bureau of Statistics.

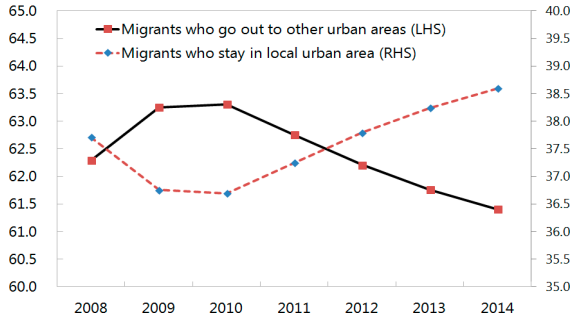
[11] During the rise of urban unemployment in the early 2000s, more than 100 million rural *hukou* workers moved to cities. Thus, unemployment at that time might have been a structural mismatch between skills and available jobs and the voluntary migration to cities in search of prospects in urban areas (Seeborg, Jin, and Zhu, 2000; Hu and Cheng, 2003; Kuijs and Wang, 2005; Hertel and Zhai 2006; Cai and Wang, 2010; Zhang, Liu, and Fan, 2014).

[12] Manufacturing jobs initially drove employment gains. Accession to the World Trade Organization caused manufacturing employment to expand sharply; it grew more than 5 percent a year on average during 2003–08. It began to slow after the global financial crisis, in part driven by rising labor costs and a gradual shift toward high value-added manufacturing sectors.

Figure 5. Summary of Conditions for Migrant Workers

Migrant workers have increasingly stayed closer to local areas…

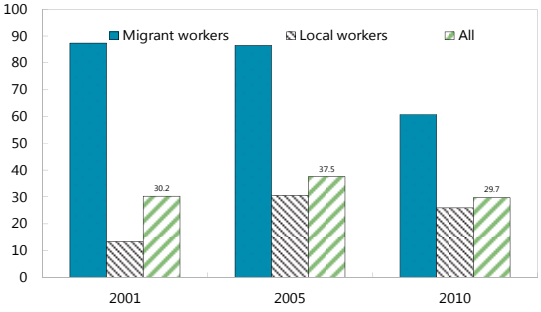
Share of Migrant Workers who Stay Local or Go Out
(in percent)



Sources: CEIC

… and participated less in the informal sector.

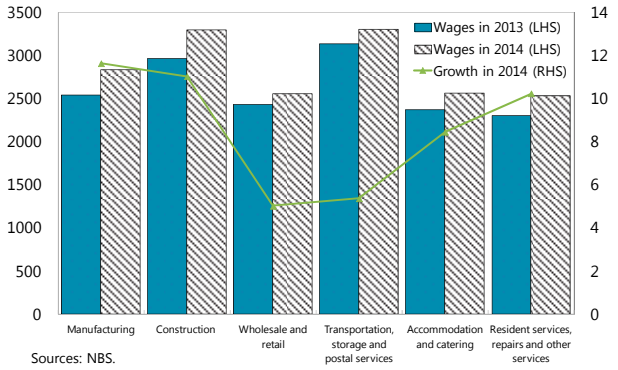
Size and Composition of Informal Employment
(in percent)



Sources: World Bank (2014) and Cai, Du, and Wang (2011)

Wage growth for migrant workers remained resilient in 2014.

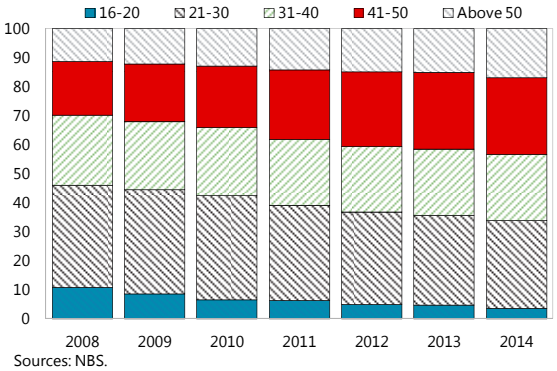
Migrant Workers' Wages by Industry
(wages in RMB, growth rate in percent)



Sources: NBS.

Migrant workers who moved out to urban areas are aging fast too.

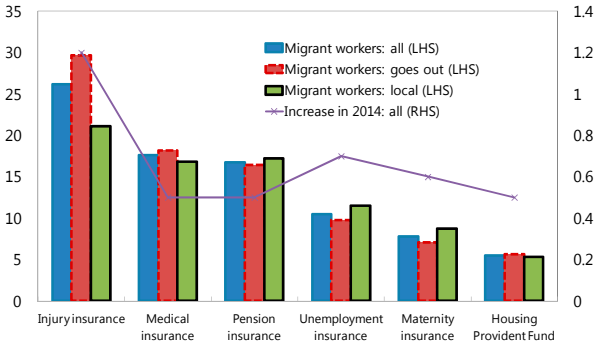
Aging Trend of Migrant Workers
(In percent)



Sources: NBS.

They are less covered in social welfare and benefits …

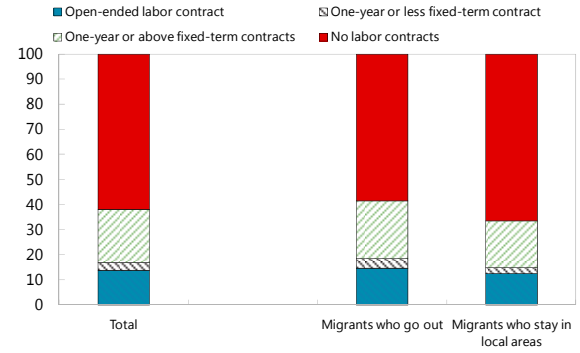
Migrant Workers' Access to Social Welfare and Benefits in 2014
(in percent)



Sources: NBS.

… in part because they do not have labor contracts at their jobs.

Migrant Workers and Labor Contract
(in percent of total migrant workers as of 2014)



Sources: NBS.

Migrant workers' wages have also increased in line with urban workers in recent years, partly driven by expansion of the services sector and the rise of minimum wages.[13] Nonetheless, migrant workers still account for most of the employment in the informal sector.

A. Okun's Law Estimates

Migrant flows, rather than the unemployment rate, are closely related to growth fluctuations. The typical specification Okun's law uses growth (or the output gap) as the dependent variable, while the unemployment rate (or gap with the nonaccelerating inflation rate of unemployment) is the independent variable, or vice versa (Okun 1962). Taking the features of China's labor market into consideration, the estimation model conducted for this paper is given in equation (1):

$$g_{yt} = \beta_0 + \beta_1 \Delta u_t + \beta_2 D_t(k) + \beta_3 [D_t(k) \times \Delta u_t] + \beta_4 Mig_t + \varepsilon_t (1)$$

in which g_{yt} is the real GDP growth rate, u_t is either the official registered urban unemployment rate or the estimated unemployment rate based on Urban Household Survey data from 1989–2009, variable D_t is a dummy for the year of urban employment reform, k is the year of structural reform in the labor market, and Mig_t denotes the annual change in the migrants as a share of total employment.[14] The empirical results suggest a correlation between the fluctuations of output and the cyclical conditions of China's labor market. The Chow test implies the structural break occurred in 1993 (F-statistic is 3.67 with p-value of 0.047 when using the Urban Household Survey urban unemployment rate; the F-statistic is 2.79 with p-value of 0.092 when using the official registered rate). The Okun coefficient is β_1 before the structural reform and $\beta_1 + \beta_3$ afterward.

Estimates suggest the registered unemployment rate has little relationship with GDP growth, while the estimate using unemployment rates from surveys shows a negative and significant relationship (Table 1).[15] For instance, a 1 percentage point increase in unemployment after 1993 is associated with a reduction in the growth rate by about 0.8–1.0 percentage point. Moreover, the inclusion of the migrant share in employment also improves the overall fit of the regression. Growth in migrant flows is strongly correlated with GDP growth. A 1 percentage point increase in migrant flows is associated with GDP growth of nearly 2 percentage points. Migrant workers have a closer link to economic fluctuations, possibly because they are more vulnerable to job losses. These estimates suggest that migrant flows may better reflect labor market conditions.

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[13] Evidence suggests that the impact of the recent rise in minimum wages on employment in China has been small, on average, but the extent has varied across firms. On average, a 10 percent increase in the minimum wage would lower employment by slightly more than 1 percent, but the impact tends to be higher, as much as 2.5 percent on employment, for low-wage and smaller firms, according to Huang, Loungani, and Wang (2014).

[14] Until recently, UHS have significantly under-sampled migrant workers. As a result, Δu_t in the equation likely does not include unemployment rate of migrant workers. An inclusion of migrant workers as a separate explanatory variable (*Mig*) intends to capture the possible effects on growth from movements of migrant workers.

[15] Okun (1962) estimates that a 1 percentage point rise in the unemployment rate is associated with about 3 percentage points fall in output. Other studies on China that use the official unemployment rate also find a significant deviation from Okun's results (Zou and Hu,2003; Cai, 2007; Fang and Sun, 2010).

Table 1. Estimation of Okun's Law for China

Model / Variable	Dependent Variable: GDP Growth Rate			
	Official Unemployment Rate		Survey Unemployment Rate	
	(O.1)	(O.2)	(S.1)	(S.2)
Δ				
	-5.503*	-3.090	6.242***	4.543***
(D1993)	(3.103)	(2.637)	(1.436)	(1.419)
	2.293	0.793	3.998***	2.399
	(2.460)	(2.090)	(1.367)	(1.407)
(Δ	3.741	0.529	-7.154***	-5.489***
Mig	(4.364)	(4.185)	(1.489)	(1.534)
		2.750**		1.950**
		(1.061)		(0.849)
Constant	8.246***	6.851***	6.553***	6.041***
	(2.362)	(1.755)	(1.265)	(1.235)
Observations	21	21	21	21
R-squared	0.208	0.467	0.547	0.660

1/ Dummy variable (D1993) for year 1993 to reflect the structural change related to reforms

2/ Standard error is in parentheses. *, **, *** indicates statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively. Dependent variables in columns (O.2) and (S.2) are authors' calculations based on Urban Household Survey data, while others are from NBS.
Sources: NBS, Urban Household Survey; IMF staff calculations.

B. Determinants of Migrant Flows

Cross-province analysis finds that the urban–rural income gap and GDP growth are key determinants of migrant flows. The empirical analysis uses provincial-level panel data. The sample period begins in 1992, the year that marked the start of a series of reforms after Deng Xiaoping's famous southern tour. The dependent variable, migrant flows, is based on the annual change in the rural labor force net of agricultural employment. In that context, it is assumed that the rural labor force in the agricultural sector is fully employed.

Core, cross-province explanatory variables include (1) the urban-rural income gap (measured as the gap between urban household income and rural household net income per capita); (2) GDP growth rate; (3) infrastructure level (proxied by road density); (4) total factor productivity (TFP, estimated using provincial panel data on industrial output, net values of fixed assets and labors with system GMM estimation methods) and (5) agricultural labor productivity (measured as the ratio of total agricultural capital use to agricultural employment). In addition, a set of control variables is included, such as the degree of openness (proxied by the ratio of foreign direct investment to GDP and the ratio of trade to GDP), share of SOE output in total industrial output, financial sector size (loans-to-GDP ratio), and per capita public expenditure on education. Other potential variables are included in the third specification, including the urban unemployment rate (both registered and surveyed), the rate of return on capital (ratio of profits to net fixed assets for industrial enterprises), and inflation rate (Table 2).

Table 2. Descriptive Statistics

Variables	Observations	Mean	Standard Error	Minimum	Maximum
Migrant Flows (log)	530	2.694	1.454	-1.609	5.205
Urban-rural income gap (log)	589	8.285	0.518	6.975	9.570
GDP growth rate	589	0.108	0.045	-0.043	0.345
Infrastructure (log)	584	7.825	0.932	5.092	9.839
Loans/GDP	589	0.996	0.286	0.533	2.260
Loans/savings	589	0.870	0.251	0.233	1.890
TFP (log)	587	-1.001	0.344	-1.805	-0.070
Rural productivity (log)	583	2.882	0.698	0.846	4.364
FDI/GDP	576	0.035	0.036	0.000	0.243
Trade/GDP	589	0.299	0.397	0.032	2.173
SOE share	584	0.511	0.202	0.094	0.899
Public expenditure on education	483	3.280	3.099	0.374	20.15
Urban registered unemployment rate (%)	565	3.370	0.966	0.400	7.400
Urban surveyed unemployment rate (%)	162	6.367	3.184	1.338	14.49
Capital returns	589	0.096	0.083	-0.055	0.461
CPI (%)	589	5.178	7.021	-3.900	29.70

Data sources: China Statistical Yearbooks, China Compendium of Statistics 1949-2008, China Compendium of Statistics in Agriculture 1949-2008, Provincial Statistical Yearbooks, Provincial Traffic Statistical Yearbooks, and the official websites of Provincial Department of Transportation, and CEIC. Urban surveyed unemployment rate is estimated using micro data of urban household survey. The regression sample spans from 1992 to 2010. Due to data missing, the numbers of observations are not equal for all variables.

In consideration of the spatial correlation of the migrant flows and corresponding explanatory variables across provinces, two spatial econometric models are used in our regression analysis. Urban–rural income gaps as well as infrastructure may have varying spatial impacts on migrant flows across provinces (Xu and Wang 2010; Luo 2010; Zhang, Hong, and Chen, 2013). The spatial correlation of economic variables may come from explanatory variables or from the unexplained residual terms. As a result, the analysis considers both a spatial autoregressive model (SAR) and a spatial error model (SEM) using maximum likelihood estimation to account for potential different sources of the spatial correlation effects. Specifically, the regression can be expressed as:

$$\text{SAR: } Y_{i,t} = \rho W_{i,t} Y_{i,t-1} + \beta \boldsymbol{X}_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$\text{SEM: } Y_{i,t} = \beta \boldsymbol{X}_{i,t} + u_{i,t}, u_{i,t} = \lambda W_{i,t} u_{i,t} + \varepsilon_{i,t} \quad (3)$$

in which Y is migrant flows, $\boldsymbol{X}$ is a matrix of explanatory variables listed above, W is the spatial weighting matrix, with coefficients ρ and λ, respectively. The weight is selected as 1 for neighboring

provinces, and 0 otherwise, and the weight matrix is then standardized in the estimation as in Luo (2010) and Zhang, Hong, and Chen (2013).

The regression results show that the coefficients mostly have the expected signs. The urban–rural income gap is a key driver of migrant flows across provinces. A larger urban–rural income gap would encourage migrants to move to cities for nonagricultural jobs. Higher GDP growth is associated with shifting labor out of the agriculture sector and encouraging the shift of workers to urban areas. Infrastructure is also statistically significant, suggesting that better developed infrastructure would help reduce migrant mobility costs.

Table 3. Determinants of Migrant Flows

Variables:	Spatial Auto Regressive Model (SAR)			Spatial Error Model (SEM)		
Migrant flows	(1)	(2)	(3)	(4)	(5)	(6)
Urban-rural income gap	0.399***	0.919***	0.853***	0.524***	0.943***	0.872***
	(0.133)	(0.168)	(0.166)	(0.149)	(0.177)	(0.175)
GDP growth rate	3.147***	3.469***	3.279***	3.301**	3.011***	2.861***
	(1.19)	(0.99)	(1.01)	(1.28)	(1.05)	(1.06)
Infrastructure (log)	0.500***	0.549***	0.545***	0.518***	0.547***	0.534***
	(0.049)	(0.048)	(0.047)	(0.052)	(0.050)	(0.050)
TFP(log)	-0.580***	-0.620***	-1.045***	-0.643***	-0.631***	-1.056***
	(0.202)	(0.176)	(0.193)	(0.206)	(0.176)	(0.194)
Rural productivity (log)	-0.462***	-0.289***	-0.351***	-0.549***	-0.345***	-0.400***
	(0.075)	(0.068)	(0.068)	(0.084)	(0.071)	(0.071)
FDI/GDP		-9.683***	-8.770***		-10.23***	-9.306***
		(1.480)	(1.480)		(1.517)	(1.509)
Trade/GDP		(0.018)	(0.209)		0.060	(0.127)
		(0.155)	(0.156)		(0.154)	(0.156)
SOE share		-1.511***	-1.446***		-1.852***	-1.790***
		(0.256)	(0.252)		(0.281)	(0.283)
Loans/GDP		-1.116***	-0.839***		-1.023***	-0.794***
		(0.185)	(0.188)		(0.189)	(0.189)
Loans/savings		0.453*	0.164		0.321	0.134
		(0.257)	(0.259)		(0.261)	(0.259)
Public expenditure on education		-0.118***	-0.135***		-0.133***	-0.143***
		(0.024)	(0.024)		(0.026)	(0.025)
Change of urban unemployment rate (%)			0.04			0.012
			(0.077)			(0.079)
Capital returns			3.503***			3.500***
			(0.730)			(0.724)
CPI（%）			0.006			0.002
			(0.007)			(0.008)
ρ	0.230***	0.114***	0.096**	/	/	/
	(0.045)	(0.041)	(0.041)	/	/	/
λ	/	/	/	0.257***	0.217***	0.196***
	/	/	/	(0.051)	(0.049)	(0.052)
Moran's I	0.248***	0.217***	0.173***	0.253***	0.229***	0.195***
R^2	0.891	0.885	0.892	0.89	0.883	0.889
Adjusted R^2	0.884	0.877	0.883	0.883	0.874	0.88
Log-likelihood	-721.7	-616.9	-603.6	-722.3	-611.7	-599.8
Observations	589	589	589	589	589	589

The estimation results for other variables are also broadly in line with our expectations: the higher share of SOE employment in a province would be associated with lower migrant flows. It could possibly be that under the *hukou* systems, migrant workers rarely work in SOEs. At the same time, as the share of SOE employment decreases (possibly due to structural reforms that led to massive layoffs in the mid-1990s and early 2000s), private enterprise increases, and laid-off workers would seek opportunities as migrant workers outside their local rural areas. The negative coefficients on TFP seem counter-intuitive. But since the regression includes GDP growth, the TFP coefficients may capture the replacement effect between capital and workers, especially when the technology is capital oriented. Public expenditure on education is negative and significant, indicating that the increase in public education expenditure is not conducive to improving the productivity of the agricultural labor force. It is because current public expenditures on education are seriously biased toward urban households, which further reduces the competitiveness and employment opportunities of the rural labor force. Size of the provincial financial sector and agricultural labor productivity are generally correlated with migrant flows. Returns to capital also have a strong positive effect on migrant flows, likely suggesting complementarities of capital and labor inputs when China was opening up. The inflation coefficient is not significant, possibly because variation between provinces is fairly small, with free movement of workers and goods. Unemployment rates also do not have a strong effect, perhaps due to data shortcomings in these indicators.

V. Scenario Analysis on the Labor Market under the New Normal

Implementation of the reform blueprint will have long-lasting effects on the labor market. Measures in the third-plenum reform blueprint (State Council, 2013) will affect economic growth over the medium term. Moreover, other reforms such as *hukou* reforms and expanding coverage of social security and raising the minimum wage will have direct effects on labor markets (He, Lei, and Zhu, 2015). At the same time, reform implementation may well reinforce the course of structural trends, which in turn will affect labor market conditions.

The scenario analysis shows that a steady implementation of reforms is crucial for the resilience of labor markets. Our approach first obtains historical estimates on the relationship between employment and growth across sectors (subsection A below). Using cross-country experience, the speed of services sector expansion—important for employment—was estimated based on panel regression on per-capita income (subsection B). The design of the scenarios in subsection C is identical to that in the IMF staff report on China (2015) and Lam and Maliszewski (2015). The simulation is based on the Flexible System of Global Models (Andrle and others, 2015), which is widely used in simulating policy responses. In areas related to labor market conditions, the scenario incorporates key elements of the reform blueprint, including financial, fiscal, SOE, and *hukou* reforms. *Hukou* reforms will improve labor mobility and support urbanization (Annex 3). The reform plan commits to raising the urbanization rate to about 60 percent by 2020 (about 1 percentage point per year). This paper complements those studies, which do not directly consider responses in labor markets in the model framework.

A. Elasticity between Employment and Growth across Sectors

The elasticity measures the extent to which employment in a sector will increase if growth in that sector rises by 1 percentage point. We estimate the average elasticity over the sample period between 1993 and 2013 for the agriculture, manufacturing, and services sectors (Table 4).

Table 4. Elasticity of Employment in China across Sectors

Annual Elasticity of Sector Employment with Growth				
Year	Whole Economy	Primary	Secondary	Tertiary
1993–2000	0.11	-0.13	0.10	0.52
2001–2008	0.06	-0.45	0.23	0.28
2009–2013	0.04	-0.85	0.32	0.27
Average (1993–2013	0.08	-0.41	0.19	0.37
Estimated elasticity 1/	0.0762***	-0.459***	0.212***	0.313***
	(0.005)	(0.050)	(0.020)	(0.014)

1/ Estimated based on data from 1993-2013. Standard errors are in parentheses.

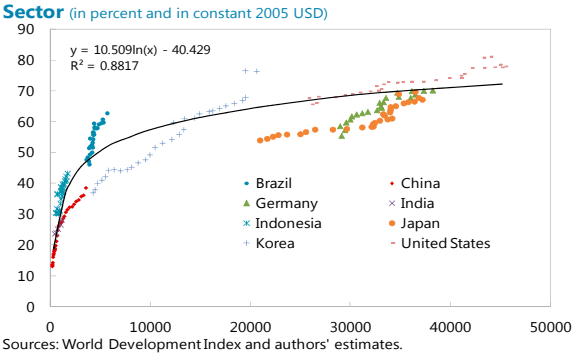
*, **, *** indicates significances at 10 percent, 5 percent and 1 percent level respectively

Based on the estimated aggregate elasticity, a 1 percentage point increase in employment is associated with GDP growth of 0.08 percentage point, on average. The elasticity declined to about 0.04 after the global financial crisis, about half its historical level. The elasticity for the primary sector is negative because rural workers moving to nonagricultural employment would likely boost growth. The elasticity of the services sector tends to be about 0.1 percentage point higher than elasticity of manufacturing, suggesting that the services sector is more labor intensive and has lower labor productivity.[16] The result seems consistent with the observation that labor markets have held up well despite the slowdown in growth, driven in part by an expansion of the services sector.

B. Estimation of Services Sector Share

An international comparison may help estimate how much the services sector share of economic output could expand in China (Guo and N'Diaye 2009). There is a close, positive linkage between per capita income and services sector employment. Countries at a similar development stage as China often experience a continual expansion of services as income rises. For instance, estimates suggest that a 1 percent increase in per capita GDP would drive up

Per-capita Income and Share of Employment in Services Sector (in percent and in constant 2005 USD)



Sources: World Development Index and authors' estimates.

[16] The yearly elasticity across sectors is subject to wide fluctuation in 2013 due to a sharp change in employment growth in the services and manufacturing sectors (see Figure 1).

the services sector share of employment and output by 0.09 and 0.06 percentage points, respectively (text chart and Table 5). The economic transformation in China that aims to lift per capita income therefore will further raise services sector employment (Song, Storesletten, and Zilibotti, 2011).

Table 5. The Relation between Service Sector Development and Income Level

Variables	Share of employment in services			Share of GDP in services		
	(1)	(2)	(3)	(1)	(2)	(3)
Ln(GDP per capita)	0.0906***	0.0922***	0.0260***	0.0671***	0.0809***	0.00591
	(0.00180)	(0.00121)	(0.00661)	(0.00225)	(0.00206)	(0.0105)
Constant	0.349***	0.350***	0.188***	0.404***	0.420***	0.212***
	(0.00277)	(0.00170)	(0.0164)	(0.00346)	(0.00290)	(0.0260)
Fixed effect	No	Yes	Yes	No	Yes	Yes
Year effect	No	No	Yes	No	No	Yes
Observations	899	899	899	899	899	899
R-squared	0.738	0.870	0.892	0.498	0.640	0.740
Number of province		28	28		28	28

Source: National Bureau of Statistics of China.
Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

C. Scenario Analysis

- *The baseline scenario assumes gradual yet steady progress in implementing reform* (IMF 2015). Growth slows in the near term as a reduction in unsustainable demand—needed to reduce vulnerabilities—weighs on activity. This includes slower credit growth to address debt overhang and a multiyear residential real estate adjustment to bring down excess housing inventories. Growth thus falls to 6¼ percent in 2016 and 6 percent in 2017, cushioned by productivity gains from structural reforms. Starting in 2018, overall growth picks up modestly as those productivity gains begin to dominate.[17]

- *Slow reform scenario.* This scenario assumes inadequate progress in advancing reforms and containing vulnerabilities. The unsustainable pattern of growth will persist if progress is too slow, and vulnerabilities will continue to rise. Over the medium term, the likelihood of China falling into a period of protracted weak growth would rise considerably, and a risk of a sharp and disorderly correction would also increase as the existing buffers—a still relatively healthy public sector balance sheet and large domestic savings—would diminish quickly.

Scenario simulations will give rise to a GDP growth path over the medium term (IMF, 2015). The estimated elasticity—estimated in subsection A—is used to determine the impact on employment in the manufacturing and services (nonagriculture) sectors for each scenario.[18] The simulated growth

[17] The analysis is based on the experience of other fast-growing Asian economies, modeling exercises, and growth convergence regressions, which suggest that growth of around 6.3 percent in 2020 is achievable with successful reforms.

[18] The estimated elasticity is 0.076 for aggregate employment, and 0.21 and 0.31 for manufacturing and services, respectively (see section V part B). Agricultural sector employment is taken to be the residual between total employment

(continued…)

path also allows us to derive per capita income growth to pin down—based on estimates in subsection B—the services sector share of employment and migrant flows, as well as the underlying unemployment rate using Okun's law estimates. The path for the urbanization rate would help cross-check the estimated change in urban employment. We use the annual increase in urban employment or nonagricultural employment as proxies for the official job targets.[19]

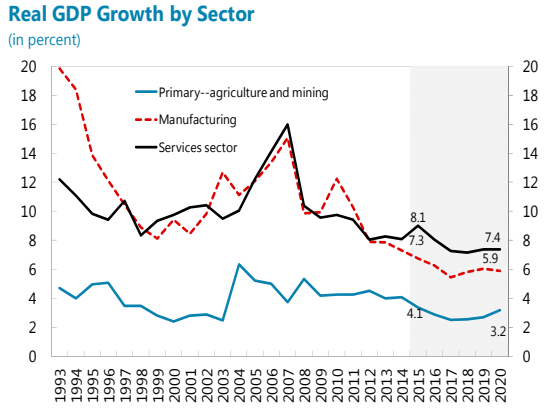
D. Simulation Results across Scenarios (Figure 6)**.**

- *Baseline scenario.* The baseline growth forecast would slow from 6.8 percent in 2015 to about 6 percent by 2017 before picking up to about 6.3 percent by 2020. Implementation of reforms would initially slow growth, but productivity gains would later lift growth to a more sustainable trajectory. In the baseline scenario, the services sector continues to expand to nearly 52.4 percent of output and 46 percent of employment by 2020 (text charts). The unemployment rate, while rising by about ½ percentage point, would remain stable in the medium term. The net increase in urban employment—a proxy for new urban jobs, an official job target—just exceeds 10 million people each year.

- *Slow reforms*. Although investment-led measures can support near-term growth, the likelihood of a sharp slowdown heightens as vulnerabilities build up in the medium term. Migrant flows would slow as the services sector expansion stalls and *hukou* restrictions pose obstacles. The net increase in urban employment would decline, at times about 10 million workers a year, while the unemployment rate would spike from initially stable levels.

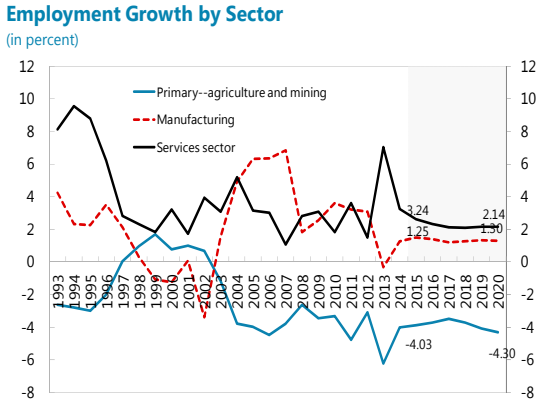
Figure 6. Scenario Analysis of Economic Transition under the New Normal

Advancing reforms, as in the baseilne scenario, will support ongoing economic transition to the services sector …



Sources: CEIC and authors' estimates.

… and generate more employment.



Sources: CEIC and authors' estimates.

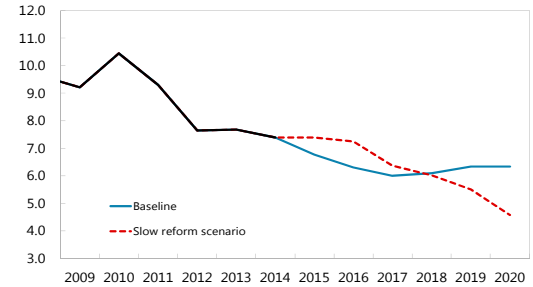
and that in the manufacturing and services sectors. Agricultural employment is expected to decline further to fewer than 200 million workers by 2020, a decline of about 3 percent per year.

[19] Official data on new urban jobs are less comparable to usual labor market statistics. The proxies based on net increases of nonagricultural or urban employment come quite close.

Figure 6. Scenario Analysis of Economic Transition under the New Normal *(concluded)*

Advancing reforms would initially slow growth but move toward a safer and more sustainable growth path.

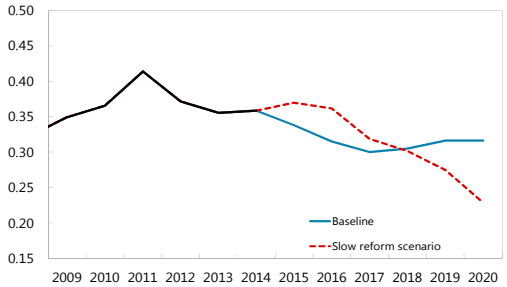
Scenario Analysis--Real GDP Growth
(in percent)



Sources: authors' estimates based on IMF Staff Report on China (2014).

Under the baseline scenario, total employment growth could also stay resilient despite the near-term slowdown.

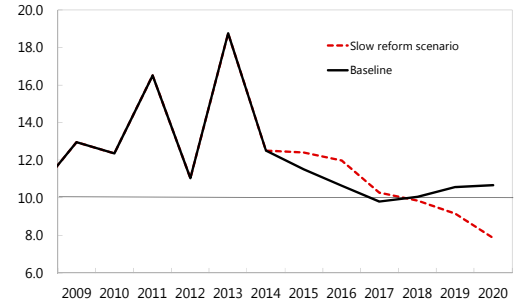
Scenario Analysis--Growth in Total Employment
(in percent)



Sources: authors' estimates.

Slow reform implementation could add pressure on job creation in nonagricultural sectors ...

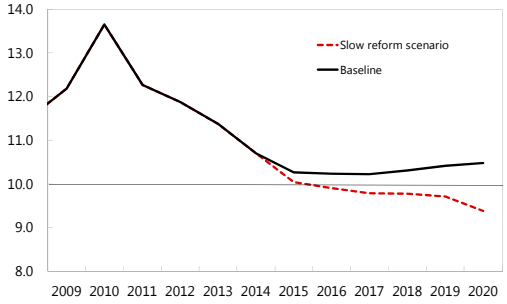
Scenario Analysis--Increase of Nonagricultural Employment
(in millions of people)



Sources: authors' estimates.

... and urban employment too.

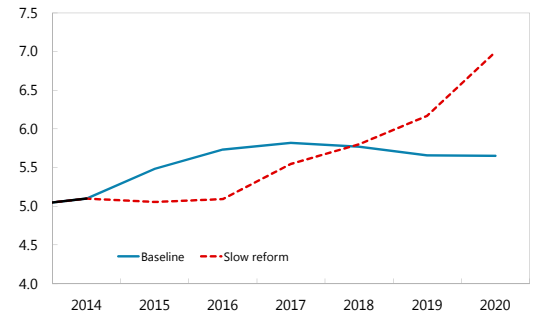
Scenario Analysis--Increase of Urban Employment
(in millions of people)



Sources: authors' estimates.

The unemployment rate could edge up when implementing reforms in the near term, as growth slowdown and excess labor is released from SOEs.

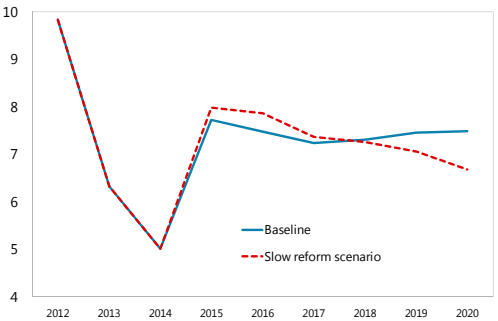
Scenario Analysis--Unemployment Rate
(in percent; 2013-14 levels based on surveyed unemployment rates)



Sources: authors' estimates.

A safer and more sustainable growth path will contribute to a sustained migrant flows.

Scenario Analysis--Migrant Flows
(in millions of people)



Sources: authors' estimates.

The scenario analysis is subject to several caveats. First, the effects on labor markets are based on elasticity estimates that rely on the long-term relationship between growth and employment. The elasticities could evolve as China's economy is transformed. Second, if aggregate productivity were to fall short of expectations, it could risk that the rise in urban employment falls short of target, or even if the employment target is met, GDP and wage growth are much lower because of stagnant productivity. A sensitivity analysis shows that if the increase in urban employment stays the same as in the baseline, but without reform-led productivity gains in the services sector, then GDP growth could slow by 0.2–0.4 percentage point (Table 6).

Table 6. Different Scenarios of Productivity Gains and Real GDP Growth
(In percent)

	Employment Elasticity		Real GDP Growth Rate (in percent)		Medium-term labor productivity growth in services	Medium-term labor productivity growth overall	Services share of output
	Manufacturing	Services	2015	2020			2020
Baseline	0.22	0.29	6.8	6.3	5.2	6.1	52.4
			Relative to baseline				
Higher productivity gains	0.22	0.22	0.8	0.8	7.5	6.9	54.9
Historical level	0.22	0.32	-0.2	-0.2	4.5	5.9	51.7
Stangant productivity	0.22	0.35	-0.4	-0.4	4.0	5.7	51.1

Source: authors' estimates.

VI. Policy Implications

The key policy implication of our analysis is that the elimination of impediments to labor market flexibility with on-budget and targeted social safety nets will facilitate to economic transition to the new normal in China.

Strengthen labor market flexibility rather than relying too much on buffers to shocks in the medium term. Although these buffers—for instance, migrant flows and SOEs' capacity to hoard labor—can temporarily lessen unemployment pressures during an economic downturn, they hinder reform efforts. Smaller migrant flows would imply lower productivity gains, whereas allowing SOEs to hold onto excess labor would delay the necessary adjustments. Policies such as retraining for work in the services sector could strengthen labor market flexibility while enhancing productivity.

Structural reforms are key to a strong labor market in the medium term. As seen in the scenario analysis, slow reforms would lead to significant downside risks for growth and employment in the medium term. The priorities should be to continue reforms to contain vulnerabilities and move China toward a more sustainable growth path.

- **Fiscal reforms**, including revenue reforms and pension portability, will support labor mobility across provinces. Broadening the value-added tax can help services sector expansion by removing the cascading effects on investment. Social security reforms, including pension portability, would significantly increase labor mobility, while also strengthening social safety nets. On-budget targeted social safety nets and retraining programs may facilitate labor market flexibility. Higher

social spending could further narrow the urban–rural income gap while lifting the quality of the labor force (Lam and Wingender, 2015).

- **Opening up the services sector** will contribute to the sector's expansion by encouraging entry and competition. Although increased competition may hurt individual workers and firms, the overall productivity gains will generate ample benefits by creating jobs and raising income.

- ***Hukou* and rural land reforms** help remove labor mobility obstacles and clarify property rights, which will speed up urbanization and encourage gainful employment of migrant workers in urban areas, where they will receive better social benefits (Annex 3).

Policy design and assessment would require timely and comprehensive data. Data shortcomings should be addressed to better reflect the underlying momentum. For instance, wider coverage of surveyed unemployment and the public release of labor and household surveys would significantly improve transparency, accountability, and policy research. Better data collection and coverage of migrant flows will go a long way toward improving the understanding of China's labor markets. The authorities are taking steps to improve data quality, including their intention to subscribe to the Special Data Dissemination Standard and the plan to expand coverage of the unemployment rate from 65 large cities to all prefecture-level cities at a monthly frequency.[20]

VII. Conclusions

Maintaining stability in the labor market as China implements structural reforms will be important. So far, labor market conditions have been holding up quite well despite the economic slowdown. However, there are signs of increased labor hoarding in overcapacity sectors. At the same time, migrant flows between rural and urban employment rather than measured unemployment are more correlated with growth. While labor hoarding absorbs some of the shock in the short term, if sustained, it can undermine needed adjustment and hence the more efficient allocation of resources and stronger productivity growth.

Changes in rural–urban migration and the growing services sector will have a profound impact on labor markets in China. Empirical estimates find that economic growth is a key contributing factor toward the structural trends of a growing services sector and rural–urban migrant flows. This would imply that managing the growth slowdown will be important for stabilizing labor markets as structural reforms continue.

Quantitative analysis shows that delays in reforms could lead to a weakening of labor market conditions over the medium term. In particular, it would give rise to a sustained increase in the unemployment rate and could cause job creation to fall short of policy targets. For a successful economic transition toward sustainable growth, it is critical that labor is reallocated to new growth

[20] See news release from the State Council: http://www.gov.cn/guowuyuan/2014-07/30/content_2727202.htm; http://www.gov.cn/xinwen/2015-06/11/content_2877913.htm; and National Bureau of Statistics: http://www.stats.gov.cn/tjsj/sjjd/201506/t20150612_1158116.html.

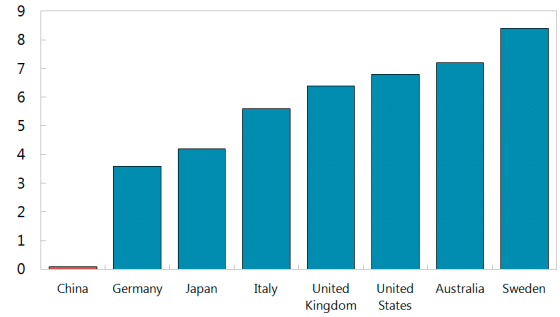
sectors. Labor market mobility and increased productivity should therefore be prioritized. In particular, government should support labor market mobility through on-budget, targeted social safety nets and retraining programs and the acceleration of *hukou* reforms, with less reliance on hoarding labor in overcapacity sectors.

ANNEX 1. DATA STATISTICS ON CHINA'S LABOR MARKETS

Labor market data in China are known to be far from ideal (Cai, Du, and Wang, 2013), and therefore may not fully reflect underlying conditions. Although China reports key labor market data, such as employment, wages, and unemployment rates, the coverage and disclosure are fairly limited (Annex Table 1.1). The official unemployment rate was, for a long time, based solely on self-registration by those seeking unemployment insurance from local governments, leaving a large share of workers not covered in the data. The National Bureau of Statistics began publishing surveyed unemployment rates on an occasional basis in 2013 and plans to expand coverage of the surveyed monthly unemployment rate from 65 large cities to all prefecture-level cities at monthly frequency.

The registered unemployment rate has stayed at 4 percent for the past two decades without significant variation, while the surveyed unemployment rate was about 5 percent in late 2014. The volatility of the unemployment rate relative to output is small compared to other advanced countries (text chart). The rise of the registered unemployment rate between 2001 and 2003 did not fully reflect the significant state-sector restructuring that started in the mid-1990s. One explanation is that laid-off workers continued to receive support from the enterprises until the centralized unemployment support system was formally established in the early 2000s.

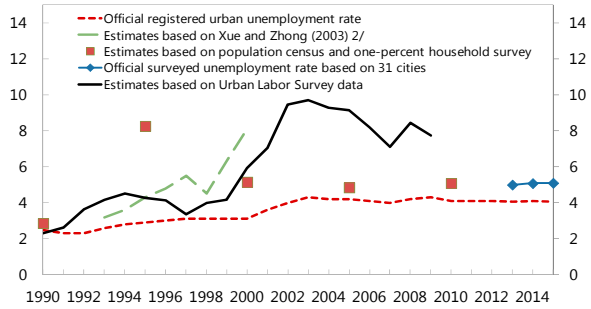
Volatility in Unemployment Rate across Countries
(Coefficient of variation)



Sources: OECD, Faccini and Bondibene (2012), and authors' estimates.
1/ Standard deviation of the detrended unemployment rate relative to the standard deviation of detrended GDP per capita

Many studies estimate underlying unemployment based on various labor surveys but with a margin as wide as 6 percentage points.[21] In addition, wage data mostly cover the nonprivate sector, and are less representative given that sector's declining employment share. Employment statistics across industries were discontinued in 2010. Several labor and household surveys, including those conducted by the National Bureau of Statistics, are not publicly available. These data deficiencies cloud the assessment of employment conditions, and any conclusions from the data is therefore subject to caveats and limitations.

Official and Estimates of Urban Unemployment Rates
(in percent)



Sources: National Bureau of Statistics, Urban Labor Survey, Xue and Zhong (2003), and authors' estimates.

[21] For instance, Meng (2012) uses the National Bureau of Statistics' annual Urban Household Survey, the Chinese Household Income Project, and Rural-Urban Migration in China and Indonesia Project data. The Urban Household Survey uses sampling techniques to collect data (for example, household income, consumption patterns, demographic characteristics, and so forth) from nonagricultural households across cities and counties.

Annex Table 1.1. Labor Market Statistics in China

Data Type	Sources	Variables	Key Indicators	Frequency	Coverage	Remarks
Aggregate data	NBS (Department of Population and Employment Statistics, the National Bureau of Statistics.)	Employment and wage data are collected and compiled through the Reporting Form System on Labour Statistics, the Sample Survey System on Labour Force, and the System of Rural Social and Economic Surveys.	·Employment	Monthly, Quarterly, and Annually	Covers nationwide with provincial and industrial data.	Data starting from 1952
			·Wage	Quarterly, and Annually	Covers nationwide with provincial and city-level data.	Data starting from 1952
			·Migrant worker	Quarterly	Covers nationwide with national and regional data.	Data starting from 2008
	NBS	PMI	·Employment index.	Monthly		
	MoHRSS (Ministry of Human Resources and Social Security)	Data on the employment services and the change of labour force and on the number of registered unemployed persons in urban areas are collected through the Reporting Form System on Training and Employment Statistics.	·Registered Unemployment in Urban Areas	Quarterly	Covers nationwide with provincial data.	Data starting from 1980
			·Registered Unemployment Rate in Urban Areas	Quarterly	Covers nationwide with provincial data.	Data starting from 1980
		Data on labor market conditions	·Labor market Demand-Supply Ratio	Quarterly	Covers main cities with city-level data.	Monitored by city community employment services cente (mostly on low-skilled labor)
	SAIC (State Administration for Industry and Commerce)	Data on the number of employed persons in private enterprises and self-employed individuals	·Employment	Annually	Employment in private enterprises and self-employed individuals in both urban and rual areas.	Data starting from 1990
Survey-based data	NBS	Urban Household Survey (UHS)	Detailed income and expenditure information	Annually	Covers nationwide.	Limited availability to academics for a few years and a few provinces.
	NBS	Rural Household Survey (RHS)	Detailed income and expenditure information	Annually	Covers nationwide.	Limited availability to academics for a few years and a few provinces.
	NBS	Censuses and population survey	Population data	Every 10 years	Covers nationwide.	No detailed labor market information.
	The China Institute for Income Distribution of Beijing Normal University.	China Income Project Surveys (CHIPs)	Detailed data on individual income and labor market information.	1988, 1995, 2002, 2007	A series of repeated cross-sections for year 1988, 1995 (for 6 provinces) and 2002 (11 provinces), 2007. In 2002, it covers around 15000 rural and urban households in 11 provinces and it also includeds 2000 non-random sampling of migrant workers.	Limited availability.
	Carolina Population Center at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention	China Health and Nutrition Survey (CHNS)	Detailed data on individual economic, demograph-ic, social factor, health and nutritional status.	1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009, 2011	Panel data for 1989, 1991, 1993, 1997, 2000, 2004 and 2006. Covers 7 provinces and total of 4400 households, including rural and urban samples, but without migrants.	Limited availability.
	National School of Development, Peking University	China Health and Retirement Longitudinal Study (CHARLS)	Detailed income and health information of middle-age and elderly people who are over 45 years old.	Starting from 2011, every two years	Covers about 17000 persons in 10000 households.	Limited availability.
	Chinese Academy of Social Sciences (CASS)	China Urban Labor Survey(CULS)	Detailed labor information	2001, 2005, 2010	Covers five cities with less than 3000 households, including urban and migrant households. Repeated cross-sections for 2001, 2005 and 2010.	Limited availability.
	Australian National University	Rural-Urban Migration in China and Indonesia (RUMiCI)	Detailed labor information	Inititated in 2008	Consists of three samples in China: 8000 rural hukou households, 5000 urban hukou households, and 5000 migrant households, in 15 cities in 9 provinces.	Limited availability.

Sources: National Bureau of Statistics (NBS), Ministry of Human Resources and Social Security (MoHRSS), the State Administration for Industry andCommerce (SAIC), and CEIC.
References: Cai, Du and Wang (2013).

ANNEX 2. A TALE OF TWO STATE-OWNED ENTERPRISES

State-owned enterprises (SOEs), despite their shrinking role in the economy, often provide great insight into understanding China's economic transition and vulnerabilities. Some SOEs ran losses in their core businesses, which motivated change and investments in new (non-core) areas even though the new investments could be unprofitable. High levels of surplus labor suggest that overall labor market conditions might not be as resilient as the unemployment rate would suggest.

One of the largest steel enterprises in the province of Hebei is an SOE at the center of the overcapacity sector. Yet the firm has not scaled back either production or employment. Instead, it expanded along vertical lines and diversified into finance and real estate, and is now faced with surplus labor (for example, as much as half of current employment at the Tangshan plant). Social considerations constrain the company from laying off redundant workers; instead, it intends to create new employment opportunities over time by venturing into new business activities (e-commerce, for instance). SOEs also enjoy preferential access to finance from the biggest banks (loose credit limits without collateral and the ability to borrow at below benchmark rates) and have increased their financing abroad.

In contrast, a medium-sized textile SOE in Hebei is a "mini China in transition." Output of cotton yard and textile cloth has fallen by half, while the SOE has strived to improve quality and productivity by upgrading machinery. The company hired about 8,000 workers in 2014, down from the peak of 30,000 in 2010. The local SOE bears social responsibility for its workers, guided by local governments, and increases wages by a certain percentage each year. About one-third of the textile SOE's redundant workers went back to their rural homes, taking a lump sum package when they left. Another one-third was reemployed in nearby services, often with comparable or higher wages. The SOE also offered a buy-out package to older workers, paying them 80 percent of the minimum wage for five years until they reached retirement age. Rising wages also put pressure on the competitiveness of the SOE's core business. The company indicates that it can cope with the rising wage by moving production plants to rural areas and upgrading its machinery. The SOE also occupied sizable land resources (with substantial unrealized gains), which could be pledged to finance losses for many years to come or could be leased or sold to generate revenues.

ANNEX 3. *HUKOU* REFORMS UNDER THE THIRD PLENUM BLUEPRINT

The government took additional steps in August 2014 to phase out the household registration system (*hukou*) that divides urban and rural households. The ultimate objective is to give 100 million migrants residency status in cities by 2020, in line with the urbanization target of 60 percent. The reform envisages providing migrants with better access to health and education benefits in cities, though how to finance the additional spending remains uncertain. Resident status in mega cities such as Beijing and Shanghai will be strictly controlled. As of April 2015, 14 provinces have issued work plans to implement reforms, but few at coastal areas that are more attractive for migrants.

Under the current plan, the objective is to (1) fold the current *hukou* system into a standard residency status, (2) put in place a scheme that determines quotas and settlement arrangements for cities, and (3) expand social services and gradually equalize benefits between residents and migrants.

As noted, residency in cities such as Beijing and Shanghai will continue to be strictly controlled under a point system (Annex Table 3.1). Migrants may not obtain residency status in those metropolises even after five years of having lived there. Individuals who live in other large cities outside their residency status location for more than half a year can apply for a residency identity, but will not yet be granted residency status in that city. Residency identity allows migrants and their dependents to enjoy the same employment treatment (in principle), and basic education and health care benefits, as those with residency status. As they gradually fulfill the conditions for residency status, they become eligible for social benefits such as housing and unemployment insurance.

Annex Table 3.1 Summary of Settlement Schemes and Quotas for Cities

City-level	Population	Openness	Criteria 2/
Towns and small cities: County-level communities	<500,000	Fully-open	• Anyone who lives in a legal stable residential unit (including rental unit)
Middle-level cities	Between 500,000 to 1 million	Graduallly open	• Legal and stable employment 1/ • Live in a legal and stable residential unit (including rental unit) 1/ • participate in city social security system for certain years (up to 3 years)
Large cities	Between 1 million to 3 million	Gradually open	• Legal and stable employment up for a certain period • Live in a legal and stable residential unit (including rental unit) 1/ • participate in city social security system for certain years
Large cities	Between 3 million to 5 million	Graudally open but controls on the scale and pace	• Same as large cities with 3 million or less but with tighter conditions on employment and residential units • participate in city social security system for certain years (up to 5 years) • May introduce a point-based system to obtain residency
Metropolitans	5 million or above	Strcit controls on the population scale	A point-baesd system for granting residency status based on: • Legal and stable employment up for a certain period • Live in a legal and stable residential unit (including rental unit) 1/ • participate in city social security system for certain years • requires consecutive living duration

1/ The preicse definition and duration of employment and living area (except square footage and price) will be set in accordance to individual cities.
2/ The applicant and spouse who lives together, and their dependent children and parents can register for residency status

Hukou reforms will need to be accompanied by fiscal, social security, and rural land reforms. The government will continue to rely on residency status as a policy tool. The reforms are intended to expand social services coverage and eligibility to migrant workers (Du and others 2014). But the fiscal implications of this expanded coverage and its financing, as well as the criteria set by cities to attract or restrict migrant flows, are uncertain. Ultimately, local government revenues must be better aligned with spending responsibilities, including intergovernmental transfers. The government intends to provide consolidated basic pensions and basic health care nationally to improve portability.

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