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Employment Effects of Growth Rebalancing in China

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Abstract

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This paper gauges the potential effects on employment of rebalancing China's export-oriented growth model toward domestic demand, particularly private consumption. Shifting to a private consumption-led growth likely means more demand for existing and new services as well as reorienting the production of tradable goods toward domestic markets. In China's case, this would also imply moving a large number of less skilled labor from the tradable sector to the nontradable sector. The paper shows that while rebalancing China's growth toward a domestic-demand-led economy would likely raise aggregate employment and employment opportunities in the longer term, there could be employment losses in the short run as the economy moves away from the tradable sector toward the nontradable sector. Mitigating these costs will require active labor market policies to cushion the employment impact in the transition, particularly in meeting the skills gap of associated with this transition.

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I. INTRODUCTION

There is a growing sense that China's export-oriented growth will be difficult to sustain over the medium to longer term (Guo and N'Diaye, 2009) and that shifting toward a more consumption-based economy, where the nontradable sector plays a larger role than it does now, could be a more viable alternative. Engineering a successful rebalancing of China's growth will require action on several fronts, including structural reforms (to level the playing field between the tradable and the nontradable sector, opening up further the economy to foreign competition, etc.), developing the domestic financial market, and increasing government spending on health and education (Blanchard and Giavazzi, 2005; and N'Diaye and others, 2009). Such actions are considered by many, including the Chinese government, as necessary to lift private consumption and transfer resources from the externally-oriented tradable industries to the domestic market-oriented sectors. Shifting to a private consumption-led growth would likely mean more demand for existing and new services as well as reorienting the production of tradable goods toward domestic markets. In China's case, this would also imply moving a large number of less skilled labor from the tradable sector to the nontradable sector. This process of rebalancing growth would hence likely present both opportunities and challenges, and while the longer-term benefits of rebalancing growth are now widely recognized (particularly in terms of sustainability), there could be short-term costs, especially in terms of employment. Mitigating these costs will require active labor market policies to cushion the employment impact in the transition, particularly in meeting the skills gap of associated with this transition.

This paper gauges the potential effects on employment of rebalancing China's economic growth model. The first section presents some key features of the labor market in China. The second section evaluates China's sectoral allocation of employment against a panel of economies and uses model-based simulations to gauge the likely effects on employment of rebalancing growth.

Preliminary conclusions are as follows:

- In the **longer term,** rebalancing China's growth toward a domestic demand-led economy would likely raise aggregate employment and employment opportunities.

- In the **shorter term**, however, there could be employment losses as the economy moves away from the tradable sector toward the nontradable sector. In the tradable sector, reduced opportunities for profits would prompt firms to shed labor initially and adapt to the more challenging environment. These job losses will be offset in part by job creation in the nontradable sector where firms will see more opportunities for profits and new businesses will likely be created. However, given time-to-build constraints, the process of new job creation is likely to be slower and evolve only with a lag.

- The short-term employment costs of rebalancing China's growth could be mitigated both in terms of magnitude and duration by measures to retrain workers, to reduce skills mismatches, to further promote labor mobility across sectors and regions, and to raise productivity in (all) sectors of the economy.

- The short-term employment costs could also be largely reduced if the shift from the tradable to the nontradable sector is done as part of a broader strategy that aims at lowering private savings and developing the domestic financial system.

II. SECTORAL EMPLOYMENT ALLOCATION

This section presents some stylized facts on employment by sector and regions using available employment data from the National Bureau of Statistics (NBS). Employment data in China are of poor quality. There are two main sources of data on employment: the labor force survey and the establishment survey. In both the labor force and the establishment surveys, employed persons are defined as active individuals aged 16 or older. The labor force survey is done on a bi-annual basis and covers 1 million people. The establishment survey covers over 2 million units (enterprises) in urban areas, excluding the private sector. Data from the labor force survey are published on an annual basis, while those from the establishment survey are disseminated on a quarterly basis.

A. Sectoral Distribution of Employment

By industry, the primary, secondary, and tertiary industries account for 40¾ percent, 26¾ percent, and 32⅓ percent of employment as at end 2007, respectively.[1] With the construction industry employing about 15 percent of workers in the secondary sector, the nontradable sector (defined as the sum of the tertiary and construction) accounts for around 36 percent of employment. This share has risen from about 30 percent in the mid 1990s, reflecting rapid growth in the sector.

China: Employment Share of Tradable and Nontradable

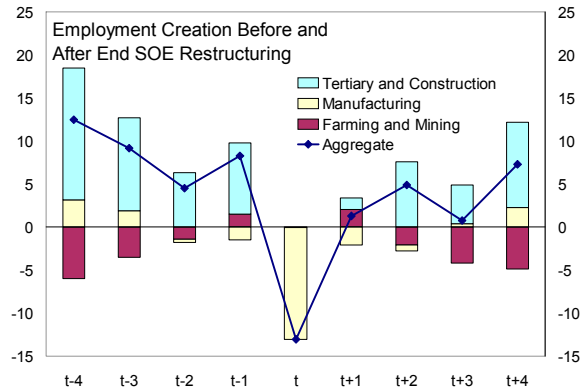Sources: CEIC database; and Fund staff estimates.

The nontradable sector has expanded rapidly in the aftermath of the restructuring of state-owned enterprises (SOEs) at the end of the 1990s, which led to the layoff of over 40 million workers.[2]
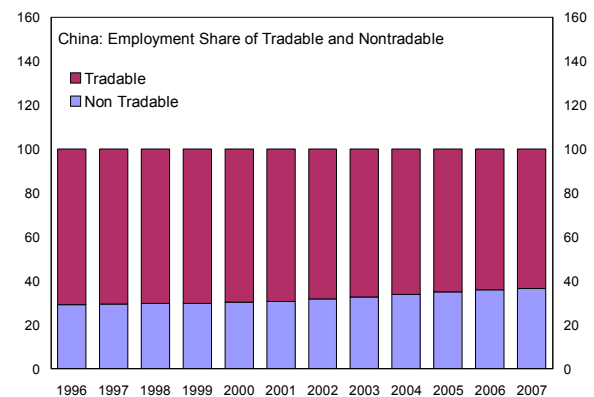
[1] Available industry data are from the labor force survey.

An event study that looks at the SOE restructuring of the end of the 1990s shows that the nontradable sector has been responsible for most job creation in recent years. This favorable outcome in terms of employment has been possible only with the government's commitment to provide alternative employment to laid-off workers: SOEs were obliged to set up

reemployment centers. The reemployment centers provided subsistence and training to workers. In terms of overall labor market flexibility, China performs better than the OECD average according to the *2008 World Bank Doing Business* survey, but has a relatively poor performance in the "cost of firing workers" category.[3] China's relatively elevated cost of firing could somewhat slow down a potential shift of labor from the tradable to the nontradable sector, if market forces were allowed to play.

Sources: CEIC database; and Fund staff estimates.

B. Regional Distribution of Employment

Employment is more evenly distributed across industries in coastal areas than inland where the primary sector (agriculture for the most part) takes up the lion share. Coastal areas have

seen a faster job growth than inland—particularly in services—reflecting the creation of special economic zones, strong growth, as well as structural reforms to increase competition, to open up the economy, and to improve access to credit (Brooks and Tao, 2003). However, looking ahead, uncertainty over the portability of pensions and restrictions on the flow of labor between rural and urban areas could limit labor mobility across regions.
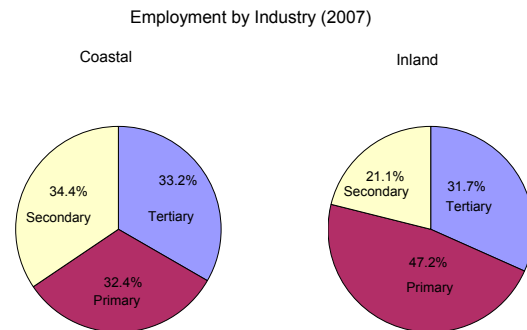
Sources: CEIC database; and Fund staff estimates.

C. Skills Intensity of Employment by Sector

In terms of skills, about 80 percent of the workforce has attained junior school level or less. This proportion is higher for female workers than for male. By sector, the manufacturing

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[2] See Garnaut and others (2005) for details on the impact of the SOEs restructuring on labor.

[3] On a scale of 0 to 100 (with higher scores indicating a poor performance), China scores 27 in terms of overall labor market rigidity (compared with 31.4 for the OECD average).

sector employs less skilled people than the services sector, with over 70 percent of workforce with less than a junior school degree compared with around 35–50 percent in the services sector. This difference in skills intensity between sectors suggest that there could be some skills mismatches in the shift of labor resources from the tradable sector to the nontradable sector. In that context, female workers may be more affected than male workers. Nevertheless, such skills mismatches could be reduced through job retraining programs and job centers, similar to those introduced by the government after the 1990s SOE reform.

Table 1. Sectoral Education Attainment (2006)

	Total	Manufacturing	Services		
			Weighted Average 1/	Weighted Average 2/	Simple Average
Total	100.0	100.0	100.0	100.0	100.0
Illiterate	6.7	1.3	0.7	1.0	0.8
Primary school	29.9	15.1	7.3	11.1	7.7
Junior school	44.9	55.0	27.9	40.6	31.8
Senior school	11.8	21.0	25.4	24.5	27.0
College	4.3	5.2	23.3	13.9	19.6
University	2.1	2.2	13.7	7.9	11.6
Graduate	0.2	0.2	1.7	0.9	1.6

Source: China Labor Statistical Yearbook.

1/ Weighted using sectoral employment data in urban areas.
2/ Weighted using 2002 sectoral national employment data.

D. Labor Intensity by Sector

The tertiary sector is more labor intensive than the secondary sector. Labor productivity in the tertiary sector is about 60 percent less than that of the secondary sector (which includes manufacturing). Therefore a shift from the manufacturing sector toward the tertiary sector could present more job opportunities for any given level of output. However, within the manufacturing sector, there is a large heterogeneity with some industries being as labor intensive as the tertiary industry (e.g., textile, garment, culture, and education and sports), suggesting that there could also be net job losses in the transition from these industries to services.[4]

III. EMPLOYMENT EFFECTS OF REBALANCING

This section presents two simulation exercises: (1) one that is based on a cross country model of the determinants of the sectoral allocation of labor, and (2) one that uses the IMF Global

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[4] Sectoral employment and output data suggest that labor productivity in textile, garment, culture, and education and sports is 45 percent, 60 percent, and 65 percent, respectively, below the average of the manufacturing sector.

Integrated Monetary and Fiscal model (GIMF) to illustrate the potential effects on employment of rebalancing China's growth toward the nontradable sector.[5]

A. Determinants of the Sectoral Allocation of Employment from Cross-Country Experience

Several factors can influence the sectoral allocation of labor including the ability and willingness of labor to move, income per capita, relative productivity of the different sectors, demographics, and urbanization. Of all these factors, empirically, income per capita has been found to be the most robust determinant of the sectoral allocation of labor across economies and over time. It explains the shift of labor from agriculture or the primary sector toward services, with the share of employment in the services sector growing as economies get richer. Relative productivity between sectors captures the concept of the Baumol disease (Baumol, 1967)—the tendency for an increasing share of employment to be channeled through the services sector as an economy develops despite that sector's lower productivity.[6] Demographic factors, such as the labor participation of women, have been found to be important determinants of the share of employment in services. Institutional specificities, such as union density, the extent of wage centralization, employment protection laws, and product market regulations, which affect the ability and willingness of labor and capital to move—that is the flexibility of the labor and product markets—could also play a key role.[7] However, the empirical evidence of a statistically significant impact of institutions on the sectoral allocation of labor is relatively limited.

To evaluate the employment structure of China's economy, we use cross-country data and regress the share of employment in services, agriculture, and manufacturing on per capita GDP, relative productivity between the tradable and the nontradable sector, the deviation of the real effective exchange rate (REER) from its long-run value, and government consumption in relation to GDP. Formally, the model takes the following form:[8]

$$SH = 1 - \exp\left(\alpha_1 Y^{\alpha_2} + \alpha_3 \frac{A^T}{A^N} + \alpha_4 REERGAP + \alpha_5 G \right) \qquad (1)$$

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[5] The GIMF was developed by Michael Kumhof and Douglas Laxton. For details see Kumhof and Laxton (2007) and N'Diaye and others (2009).

[6] With labor productivity in the services sector lower than in the manufacturing sector, a rise in total factor productivity would lead to higher wages across sectors. Unit labor costs would eventually fall in the manufacturing sector, but rise in the services sector, and hence leads to higher prices in the services sector.

[7] See D'Agostino and others (2006) for an analysis of the role of institutions on the sectoral allocation of employment.

[8] This model is an extension of Fuchs (1980).

Where SH is alternatively the share of employment in the services, agriculture, and manufacturing. Y is GDP per capita on a ppp basis. A^T and A^N are indices of total factor productivity in the tradable and nontradable sectors, respectively. $REERGAP$ is the deviation of the REER from it's long-run value. The long-run value of the REER is defined as the fitted value of an estimated cointegration relationship between the REER and a set of fundamentals, including (relative) productivity growth in the tradable and nontradable sectors (Balassa-Samuelson effect), the net foreign assets position, terms of trade, openness, and the fiscal balance. G is the ratio of government consumption to GDP.

The model is estimated using the Generalized Methods of Moments estimator with an unbalanced sample of 29 economies for a total of 575 observations.[9] The set of instruments include per capita income, lagged relative productivity, lagged REER gap, lagged change in REER, lagged government consumption, and country dummies. The data on the share of employment in the agriculture, manufacturing, and services sectors are from the OECD main economic indicators and CEIC databases. The per capita GDP and government consumption data are from the IMF World Economic Outlook database. The relative productivity data are from the Consultative Group on Exchange Rate database.

Share of employment in services

Table 2 shows the estimation results for the share of employment in the services sector.

- Per capita income, relative productivity, and the REER gap have a statistically significant impact on the share of employment in the services sector. As typically found in the literature, the share of employment in the services sector rises as economies get richer.

- Faster productivity in the tradable sector relative to the nontradable sector lowers the share of employment in the services sector, contrary to the Baumol disease effect. This could reflect a relative price effects on demand, with lower productivity in the nontradable sector increasing the relative price of services and reducing the demand for nontradable goods. On the supply side, such an effect could be consistent with cases where higher wages in the tradable sector attract more labor in that sector.

- The share of employment in the services sector increases as the exchange rate rises above its long-run value (a positive exchange rate gap), reflecting the increased purchasing power of households which spills into greater demand for imported goods

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[9] Selected economies include 21 OECD members (Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, Germany, Ireland, Italy, Japan, Korea, New Zealand, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, and United States), 6 EMEAP members (China, Hong Kong SAR, Indonesia, Malaysia, Singapore, and Thailand) and Taiwan Province of China.

(which become more attractive) and the larger profitability of the nontradable sector. But, although significant, the role of the REER gap in explaining employment in the services sector appears small (the share of employment in the services sector rising by 1 percentage point for every 10 percent increase of the exchange rate above its long-run value.)

- Government consumption increases the share of employment in the services sector, albeit this effect does not seem statistically significant. This latter result might be due to the heterogeneity in the paneled economies which include both economies with large spending on or subsidies for social services (such as EU economies) and some with less spending (such as Korea).

Table 2. Determinants of the Share of Employment in Service Sector
(In percent)

	Equation (1)
GDP per capita ($ thousands, ppp)	
intercept (b1)	-0.29 [0.00] ***
curvature (b2)	0.43 [0.00] ***
Relative productivity (percent)	0.04 [0.07] *
Deviation in REER (percentage point)	-1 10e-3 [0.03] **
Government consumption/GDP (percentage point)	-0.07 [0.56]

Source: Fund staff estimates.

Figures in brackets are p-values. *, **, and *** denote the 10 percent, 5 percent, and 1 percent significance levels, respectively.

Figure 1 plots China's actual and fitted values of the sampled share of employment in the services sector against income per capita. China appears to have a low share of employment given its level of income per capita, and this gap has been rising in recent years. Given that services are relatively labor intensive, this has translated into relatively low employment intensive growth compared with other economies.

Figure 1: Model's Prediction vs. Actual

Figure 2. Employment Intensity of Growth (Average 2003-07)
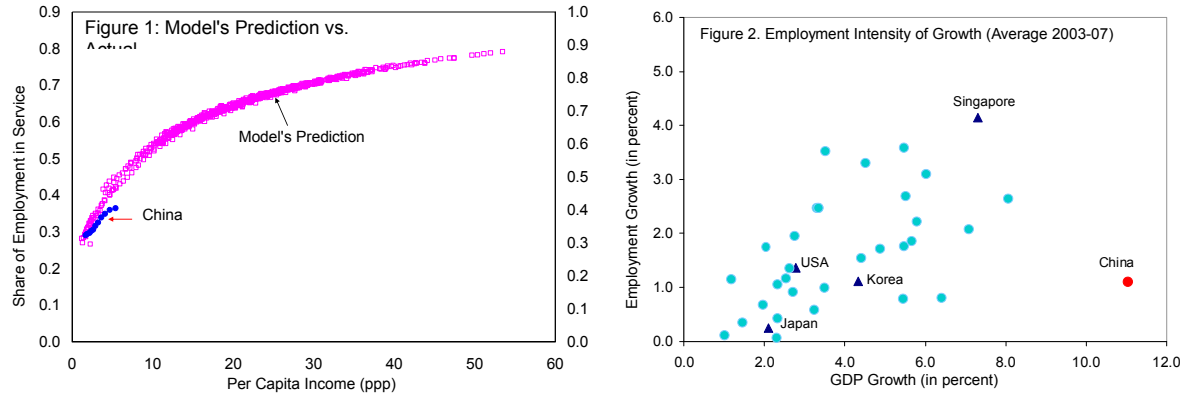
Share of employment in agriculture

Equation (1) was estimated for the share of employment in agriculture and manufacturing. The results are displayed in Table 3, and Figures 3 and 4. Per capita income, relative productivity, and government consumption have a statistically significant impact on the share of employment in agriculture and in manufacturing. The REER gap is significant only for the share of employment in agriculture.

- For agriculture, the share of employment in agriculture declines as economies get richer, and as the exchange rate rises above its long-run value, reflecting the lower demand for tradable goods. Government consumption reduces the share of employment in agriculture, probably reflecting its larger services-related content.

- For manufacturing, the effect of per capita GDP on the share of employment in manufacturing is positive but small. Faster productivity in the tradable sector relative to the nontradable sector lowers the share of employment in the manufacturing sector, so does a positive REER gap, reflecting lower competitiveness, but the impact is small (smaller than for the services and agriculture sectors). Government consumption increases the share of employment in manufacturing.

Table 3. Determinants of the Share of Employment in Agriculture Sector
(In percent)

	Equation (1)
GDP per capita ($ thousands, ppp)	
intercept (b1)	-1.43 [0.00] ***
curvature (b2)	-0.92 [0.00] ***
Relative productivity (percent)	-0.02 [0.00] ***
Deviation in REER (percentage point)	1.02 10e-3 [0.00] ***
Government consumption/GDP (percentage point)	0.26[0.00] ***

Source: Fund staff estimates.

Figures in brackets are p-values. *, **, and *** denote the 10 percent, 5 percent, and 1 percent significance levels, respectively.
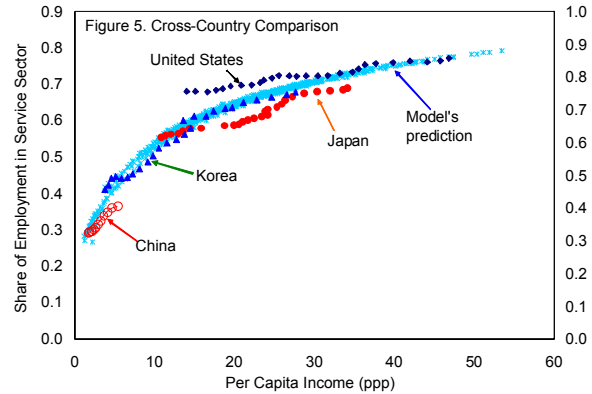
Figures 3 and 4 plot China's actual and fitted values of the sampled shares of employment in agriculture and in manufacturing against income per capita. China appears to have a high share of employment in agriculture given its level of income per capita, despite a rapid pace of urbanization in recent years. This large share of employment in agriculture is, however, undesirable given low productivity and income elasticity for agricultural goods. For manufacturing, China appears to have a share of employment consistent with its level of per capita income after controlling for relative productivity, the REER gap, and government consumption.
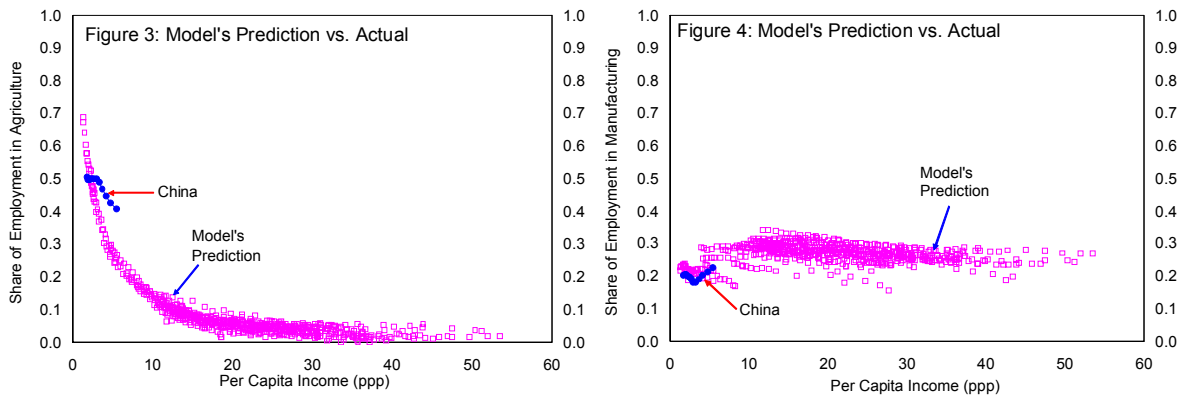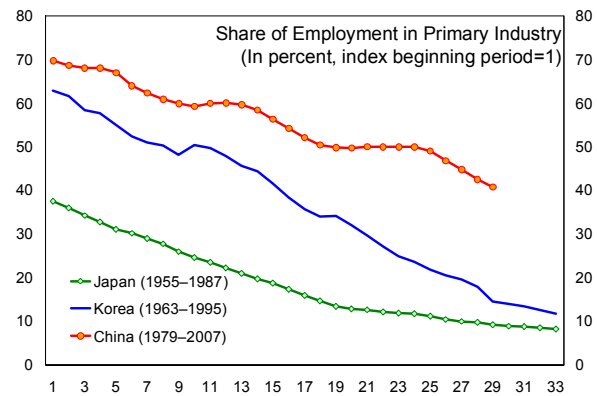

Source: Fund staff estimates.

The estimation results of equation (1) overall suggest that there is room for more labor in the services sectors, and that the labor could come from the agriculture sector (rather than the manufacturing sector, *ceteris paribus*).

Other economies in the region, such as Japan and Korea, that have had a similar reliance on exports have experienced significant transfer of labor to the services sector, consistent with international experience. For example in Japan, the share of employment in the services sector rose to slightly below 60 percent in 1987 (the end of its longest expansion period) from around 38 percent in 1955. In Korea, the amount of resources transferred to the services sector was even larger with the share of employment in services rising to around 65 percent in 1995, from around 30 percent in 1961. The factors that may have contributed to such a shift in the sectoral allocation of employment in Japan and Korea are those included in specification 3 of equation 1, namely GDP per capita, the REER, relative productivity, and (to a lesser extent) government consumption. There are however some differences in the evolution of the REER during the shift in the sectoral allocation of employment in the Japanese and Korean experiences. The labor shift was accompanied with a trend REER appreciation in the case of Japan; while in the case of Korea the REER depreciated, contrary to standard economic theory. Interestingly, the difference in the evolution of the share of employment between China and these economies seem to lie in the role played by the agriculture sector—China has reduced its share of employment in the agriculture at a slower pace than Japan and Korea.

Figure 5. Cross-Country Comparison

Sources: World Economic Outlook; OECD Main Economic Indicators; and Fund staff estimates.

Share of Employment in Primary Industry (In percent, index beginning period=1)

Japan (1955–1987)
Korea (1963–1995)
China (1979–2007)

Sources: Statistics Bureau of Japan; National Statistics Office of China; and Ministry of Labor and Social Services of China.

At its current per capita income level, relative productivity between the nontradable and the tradable sector, REER, and government consumption, China could potentially absorb 70 millions (about 9 percent of total employment) more workers to the services sector. Policies that could facilitate such a move could include tax deductions for setting up businesses, subsidies, transfers, urbanization, and job training programs. The shift to the services sector would be facilitated by structural reforms to improve productivity in the nontradable sector (across sectors with larger gains in the nontradable sector) and allowing the exchange rate to appreciate.

B. Model-Based Simulations of the Potential Impact on Employment of Rebalancing Growth

This section complements the analysis in the previous one by carrying out alternative simulation scenarios of shifts from the tradable to the nontradable sector and higher private consumption. Two scenarios are considered: (1) structural reforms that raise productivity in the nontradable sector accompanied with a shift in households' preference toward nontradable goods, and (2) in addition to raising productivity in the nontradable sector and shifting preferences, reforms that lower households' savings rate.

The model simulations are based on the GIMF Model.[10] The rich structure of the GIMF allows a detailed exploration of the interaction between different sectors of an economy and the transmission of shocks. There are wide-ranging nominal and real rigidities at the sectoral level that generate realistic inertial dynamics for the key macroeconomic aggregates.

The first scenario assumes that structural reforms raise productivity in the nontradable sector, and at the same time improvements in the quality of goods/services increases Chinese households' preferences for those nontradable goods. Those structural reforms could include measure that level the playing field between the tradable and nontradable sector and increase contestability in markets (through opening up further the economy, liberalizing the services sector).[11]

The second scenario adds to the assumptions made in the first scenario, reforms that are put in place to reduce Chinese households' precautionary savings (through for example reforms of the pension, healthcare, and education systems as well as the domestic financial market), resulting in an increase in households' consumption by about 3 percent of GDP.

The simulation results suggest that under the alternative scenarios considered above, rebalancing China's growth toward a domestic demand-led economy could likely raise aggregate employment and employment opportunities in the long run. Improving productivity in the nontradable sector and an increase in domestic demand create the incentives for higher employment in nontradable industries that compensate for short-term employment losses in the exporting sector. Those employment effects are larger when private consumption is promoted than when it is not.[12]

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[10] All scenarios assume that China pegs its currency to the US dollar, EMEAP6 pursues a managed float that allows some movements in its nominal effective exchange rate, and all other economies follow a floating exchange rate regime.

[11] Arguably, such measures could also raise productivity in the tradable sector (see N'Diaye, Zhang, and Zhang (2009) for more details).

[12] The results reported are deviations from a steady state. Assuming that the simulations are done from a situation of disequilibrium could alter the dynamics of the variables and hence the conclusions.

In the shorter term, however, it is likely that employment growth would be compromised as the economy moves away from the tradable sector and toward the nontradable sector, notwithstanding some short-lived initial employment gains as stronger consumption increases demand for both tradable and nontradable goods.

Reduced opportunities for profits in export-related industries would prompt firms to shed labor as they adapt to the more challenging environment. These job losses are offset in part by job creation in the nontradable sector where firms will see more opportunities for profits and new businesses will likely be created. Higher wages and stronger demand for labor in the nontradable sector would lead to higher employment in nontradable industries. However, time-to-build and other adjustment costs could create delays in new job creation that fully compensates for job losses in the export-oriented industries. In this context, increasing the flexibility of the labor market, providing training, information, and increasing transfers to displaced workers from the tradable sector would facilitate the transition to the nontradable sector and probably reduce the short-term employment losses.
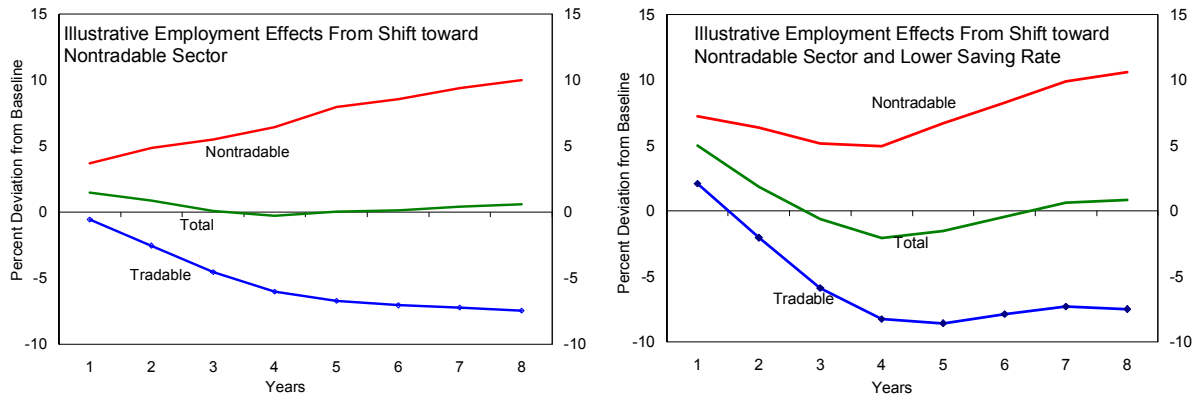
Sources: GIMF; and Fund staff estimates.

APPENDIX: KEY FEATURES OF THE GIMF MODEL

Without going through an exhaustive list of GIMF's features, unions, manufacturers, and distributors face nominal rigidity in price setting, while retailers and importers are subject to real rigidities as it is costly to rapidly adjust their sales volume. Manufacturers are also subject to real rigidity in capital accumulation.[13] Each economy is populated with two types of households, overlapping generations households and liquidity constrained households. The main difference between these two types of households is that the latter do not have access to financial markets, and hence are forced to consume their after tax income every period. Both types of households consume retail outputs and supply labor to unions. Unions buy labor services and sell them to manufacturers at a premium, while manufacturers purchase investment goods from distributors and combine them with labor to produce tradable and nontradable goods.

There is multilateral trade at several stages of the production process. The manufacturing goods, which serve as inputs in the production of final goods, are sold to domestic distributors and import agents who operate in foreign economies—this is the first layer of multilateral trade (intermediary goods). Distributors combine domestic and foreign-produced tradable goods with public infrastructure to produce an output that will be used in the production of domestic consumption and investment goods, and will be exported abroad— this is the second layer of multilateral trade (final goods). Investment goods producers sell their final composite to manufacturers and the government; consumption goods producers sell their final composite to the government and retailers, who in turn sell their output to households.

For our purpose, we use the eight-region version of the GIMF (N'Diaye and others, 2009), which includes the United States, Euro area, Japan, China, Korea, EMEAP6, and Australia and New Zealand (treated as one block because of their large commodity production).

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[13] For more details, see N'Diaye and others, (2009).

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