Citi Research
Economics

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Emerging Markets
Asia

China Macro View

A Reality Check on GDP Deflator and Job Creation

- **Growth and jobs seem disconnected** – Our analysis suggests that 1Q GDP growth could be much weaker than the officially reported number while job growth remained resilient. After augmenting the GDP deflator, the GDP growth in year-on-year terms might have fallen into the range of 6-7%. The service sector led the job creation since 2013 but may not be sustained, should past experience be indicative. The job pressure is likely to rise in the manufacturing and construction sectors as weak growth persists. Current mild policy easing may turn aggressive (e.g., RRR cuts) if not followed by path-breaking reforms to sustain job growth in the service sector.

- **GDP deflator understated** – There is consistent evidence suggesting that 1Q GDP growth could have hit even as low as 6% yoy. Firstly, the weighted average growth rate based on provincial data was only 0.5ppt above the national growth rate, down from the historical level of 2ppts. Secondly, the GDP deflator had dropped to 0.47%, 1.5ppts below the fitted value consisting of 59% CPI, 41% PPI and a constant factor of 1.5. Thirdly, the service sector GDP share surged to a record high of 49%, which often implies weaker GDP growth in the past decades.

- **The service sector-led job creation likely short-lived without reform** – In 1Q-3Q last year, the latest data point available, the service sector had contributed 74.5% of new urban jobs, up from 40% in 2010-2012. This trend could have extended to this year alongside falling GDP deflator. This surge should not be viewed as a consequence of structural change but rather a cyclical rebound normally seen in growth dips. Barring further policy action, job growth in the service sector is unlikely to offset job decline in manufacturing and construction (including property) sectors.

- **Job growth necessary to promote urbanization** – The labor data shows that the urban labor force had declined since 2004, and in the past three years (2011-2013), the urban labor force declined by 1.5mn per year. The urban job supply of about 8.9mn came from job shift of the existing rural labor force and 4.5mn from the net increase of rural labor pool each year.

- **Boosting growth or jobs? Policy matters** – Chinese policy-makers may continue to facilitate job creation in the manufacturing and construction sectors by stimulating growth, e.g., removing home purchase restriction and relaxing monetary policy, or in the service sector by speeding up the *hukou* reform, land reform and thus urbanization; deregulating the service sector, and enhancing productivity in related industries. Moving along the latter path, defending 7% growth may be unnecessary.

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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

A Reality Check on GDP Deflator and Job Creation

The Chinese government is targeting around 7.5% GDP growth this year but reluctant to stimulate the economy. This has caused uncertainty in the economy and market. Will current mild easing be followed by aggressive policy stimulus in order to defend the growth target, or will the Chinese authorities stick to current policy so that even sub-7% growth is possible? The job market is likely the key swing factor to affect policy.

According to official statistics, 1Q GDP growth fell within the reasonable range and thus the job market remained resilient. China's GDP growth achieved 7.357% yoy in 1Q this year, only marginally higher than the market consensus of 7.3% yoy. Meanwhile, the government said that in the first quarter, more than 3.44mn new urban jobs were created, which is more than 1/3 of this year's target of 10mn.

However, our reality check suggests that the relationship between growth and jobs may not be as the data has shown. The actual GDP growth is weaker than the reported number and should have fallen in the range of 6-7% in 1Q this year, and job creation was more dependent on the service sector, historically not the key driver of GDP growth. In order to understand the economic momentum, we need to dissect the available data to gauge the relationship between growth and jobs. Recent economic data has featured surprising structural changes. Some of the phenomena were new to both policy-makers and market participants:

- GDP deflator had hit historical low relative to inflation;
- The service sector share in GDP had risen to historical high.

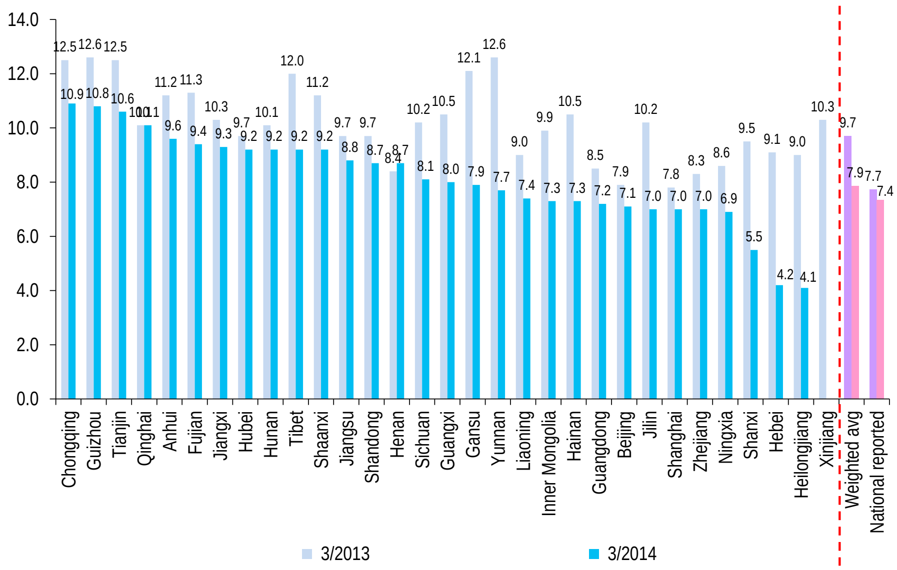
At first glance, this is not consistent. The GDP deflator should be higher if the economy is dominated more by the service sector because it is considered more inflationary. Historically, both the GDP deflator and the service sector were growth stabilizers in economic downturns. Unless there are path-breaking reforms, the structural changes may not be real. The service sector led job growth may not be able to offset job decline in cyclical sectors like manufacturing and construction.

If jobs matter, Chinese policy-makers may have to decide how to facilitate job creation going forward. It could promote jobs in the manufacturing and construction sectors by stimulating growth, e.g., removing home purchase restriction and relaxing monetary policy, or it could rely more on the service sector by speeding up the *hukou* reform, land reform and thus urbanization; deregulating the service sector, and enhancing productivity in related industries. Moving along the latter path, defending 7% growth may be unnecessary.

Growth deflator understated

China's economic growth in 1Q could be weaker than the official numbers had indicated. According to the National Bureau of Statistics (NBS), the national real GDP growth rate was 7.4% yoy, only 0.5 ppts below the provincial weighted average of 7.9% yoy (Figure 1). This is very unusual in China's history. In some provinces like Hebei and Heilongjiang, GDP growth rates were more than halved from a year ago, mainly due to slow investment growth and capacity cut. Historically, provincial averages were about 2ppts above the national rate due to, according to NBS, double counting across provinces (Figure 2). The gap in 1Q this year had been the narrowest in history. The smallest gap occurred in 2007 (0.48ppt) where the economy was near the peak of the boom cycle. In that circumstance, local leaders might have had incentive to prevent the disclosure of true growth numbers to delay policy tightening.

Figure 1. National vs. provincial GDP growth



Note: Xinjiang data is not available when this note is written. Source: CEIC and Citi Research

It seems that the national real GDP growth rate was roughly in line with industrial production (IP) growth. The empirical relationship between quarterly GDP growth and industrial production (measured by value added of industry, or VAI) is plotted in Figure 3, and can be formulated that

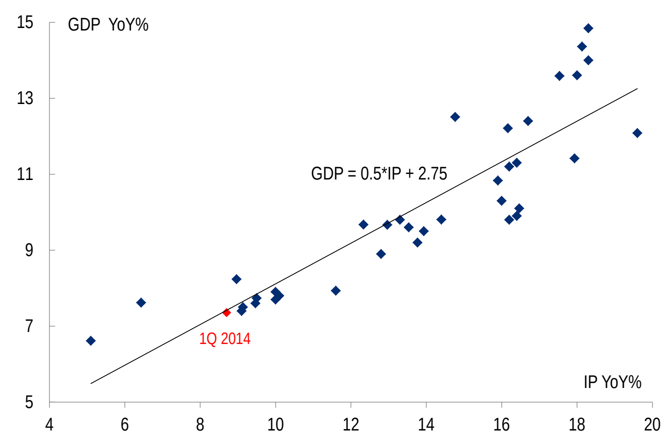
Quarterly real GDP growth rate = IP growth rate (in real terms)/2 + 2.75.

The 1Q GDP growth was roughly consistent with the historical evidence. However, this close relation does little to prove that the GDP growth number is fairly stated. In reality, it could be due to the closely related deflators in both GDP and IP. This is also inconsistent with the fact that recent GDP growth has been driven less by the manufacturing sector but more by the service sector (see below for further discussion).

Figure 2. Weighted average provincial GDP growth vs. National GDP growth

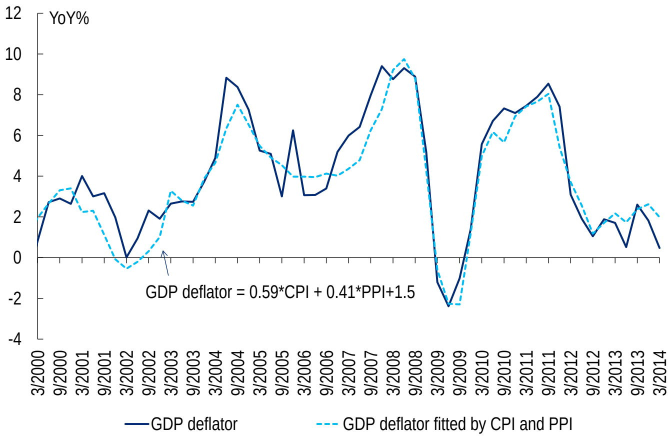
Source: CEIC and Citi Research

Figure 3. Real GDP Growth vs. Industrial production (value added of industry)



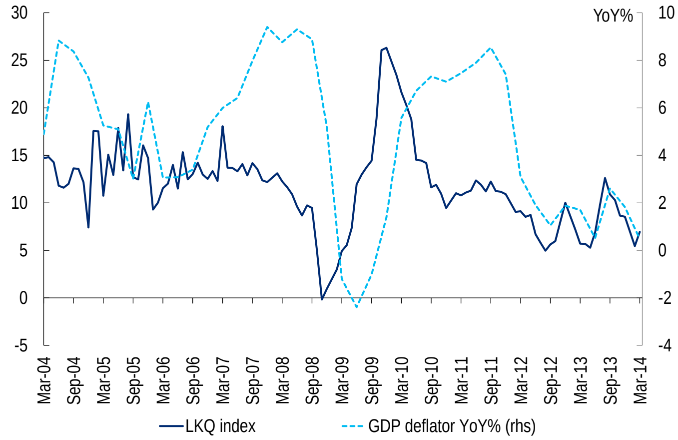
Source: CEIC and Citi Research

Figure 4. GDP Deflator vs. The fitted value of CPI and PPI



Source: CEIC and Citi Research

Figure 5. GDP Deflator vs. Li Keqiang Index



Source: CEIC and Citi Research

The GDP gap between national and provincial data can be explained by the under-stated GDP deflator rather than by less over-stated provincial data though the latter is a possibility. China's GDP deflator dropped to only 0.47% in 1Q, the smallest discount since 2000 when the historical data was available, with only exceptions in the deflationary periods when the headline CPI was negative briefly in 2002 and 2009 (Figure 4).

Historically, the GDP deflator fitted well with a weighted inflation indicator between CPI and PPI. The 1Q GDP deflator is now 1.73ppts below the headline inflation, also the smallest since the data history. Meanwhile, the GDP deflator has been persistently higher than PPI since 2H 2012, the longest period of time ever in recent history. According to our estimation, the empirical formula to project the GDP deflator based on CPI and PPI is

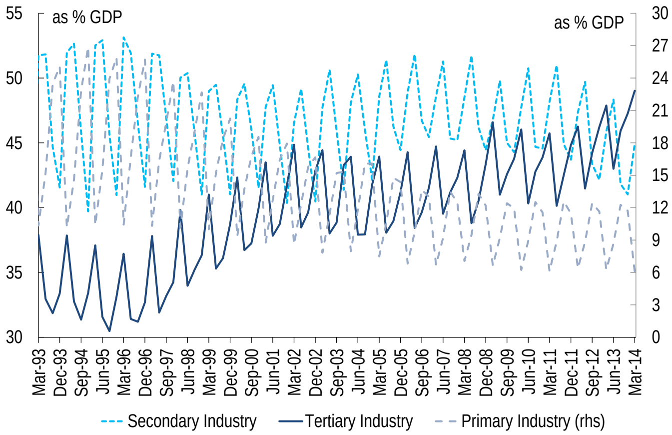
*Quarterly GDP deflator = 0.59*CPI + 0.41*PPI +1.5.*

The reported GDP deflator started to deviate from the weighted inflation indicator since 2013, and was 1.5ppts below the indicator in 1Q 2014.

The GDP deflator had helped smooth the path of real GDP growth reported by NBS. It is highly correlated with the Citi version of the Li Keqiang Index – a weighted index with 40% power consumption growth, 35% bank loan growth and 25% railway cargo growth, and thus could better explain why the reported GDP growth is much smoother than reality (Figure 5). When the economy was in a down cycle, the official GDP growth was overstated through the under-reported GDP deflator, and vice versa.

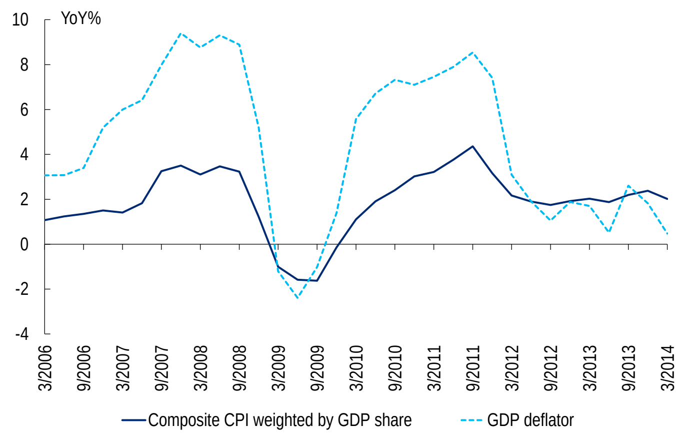
Meanwhile, another recent change was that China's GDP growth had been driven more by the tertiary sector. In 1Q this year, the service sector took 49% share in total GDP, up 4.6ppts since 1Q 2008 (Figure 6). This is the highest share ever in the data's history. As a result, the secondary industry's share in GDP dropped by 3.6ppts to 44.9% though there were significant variations among quarterly statistics during the year.

Figure 6. Quarterly GDP structure



Source: CEIC and Citi Research

Figure 7. GDP deflator vs. Composite CPI



Source: CEIC and Citi Research

Again, the falling GDP deflator is not consistent with rising GDP share of the service sector. Traditionally, the service CPI is persistently higher than industrial CPI. For example, the service CPI in Mar was 3.1% yoy vs. 0.6% yoy of the industrial CPI. The composite CPI using quarterly weights of GDP by primary, secondary and tertiary was consistently above the GDP deflator until recent years (Figure 7).

The above discussions point to the same conclusion, i.e., the GDP deflator was under-reported or the real GDP growth rate was overstated. The actual GDP growth in 1Q should have fallen in the range of between 6-7% yoy. It could go as low as around 5.9% yoy if using the weighted provincial average minus 2ppts, or if the weighted inflation indicator, i.e., the projected GDP deflator of 2% is used.

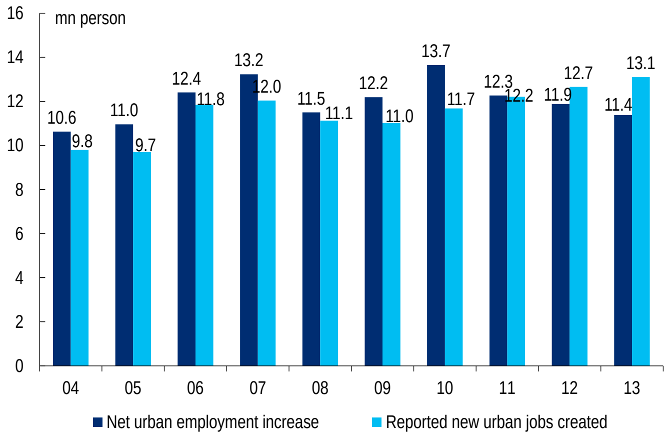
Sources of job creation

China's labor statistics are often incomplete and delayed. This makes it difficult for Chinese authorities to target job growth directly. We try to understand where the job growth came from and how sustainable the job demand is.

Despite the growth volatility, the official statistics suggest that China's job creation remained stable in the past few years and also the first quarter this year. The reported new jobs created in urban areas had gone up from 11mn persons in 2009 to 13.1mn persons in 2013 (Figure 8). The net urban employment increase calculated by the outstanding employment was slightly different from reported new urban jobs though both data were gathered by the Ministry of Human Capital and Social Security. The structural breakdown of new jobs discussed below is based on the outstanding employment.

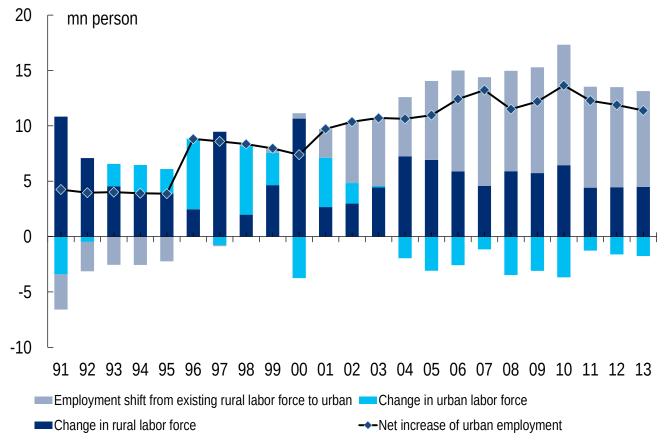
All job supply in urban areas came from the rural areas, a process of urbanization. The data show that the urban labor force had declined since 2004, more than two decades after then introduction of the one-child policy. In the past three years (2011-2013), urban labor force declined by 1.5mn per year, and urban job growth was mainly from the shift of jobs from rural to urban. We can break the latter down into two components, about 8.9mn job shift from the existing rural labor force and 4.5mn net increase of the rural labor pool each year (Figure 9).

Figure 8. Reported urban new jobs vs. Change of urban employment



Note: Both the reported new urban jobs created and the calculated net urban employment increase are provided by the Ministry of Human Resources and Social Security. Source: CEIC, MoHRSS and Citi Research

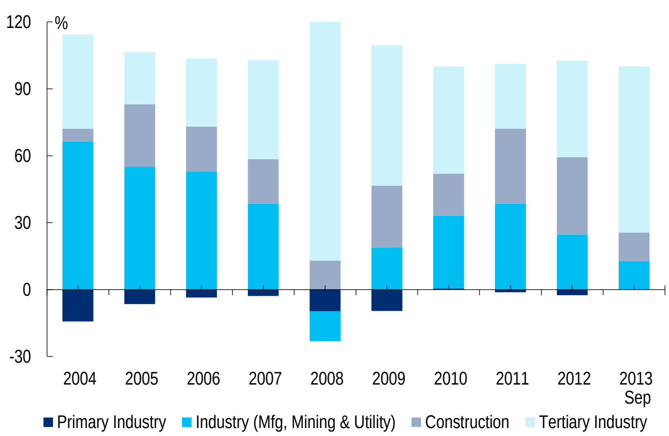
Figure 9. The breakdown of urban new jobs by job supply



Note: The rural labor force in 2012 and 2013 is extended assuming it grew at the same rate as in 2011. Net increase of urban employment = change in urban labor force + labor from rural to urban = change in Urban labor force + (change in rural labor force + employment shift from existing rural labor force to urban) Source: CEIC,NBS, MoHRSS and Citi Research

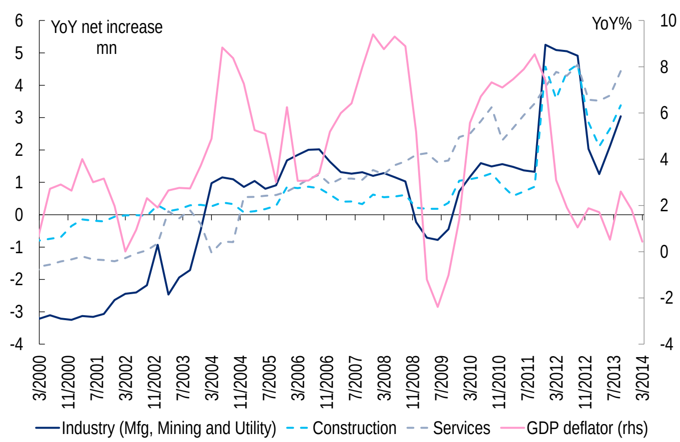
The overall job structure by 3Q last year had shown cyclical rather than structural changes. Historical data confirms that job growth in manufacturing and construction sectors is highly correlated with the GDP deflator, a proxy of cyclical momentum as discussed above. In normal years of growth (2010-2012), about 29% new jobs came from construction sector, 32% from the manufacturing sector and 40% from the service sector (Figure 10 and 11). The service sector's contribution to new jobs often surged in yeas when the economy was facing downward pressure which was coincident to the falling GDP deflator. In 2008, the service sector added 1.9mn new jobs, or 110% new urban jobs that year. Similarly, in 1Q-3Q last year, this ratio reached 74.5%. This trend should have been extended to this year as the GDP deflator dipped to new lows in 1Q.

Figure 10. The breakdown of urban new jobs by sector



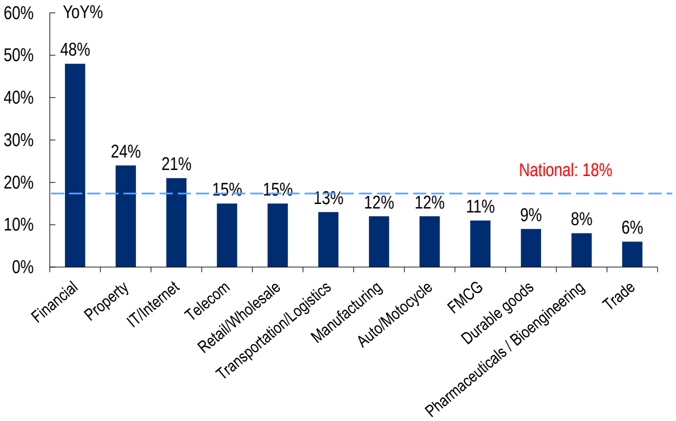
Source: CEIC and Citi Research

Figure 11. GDP deflator vs. Job growth by industry



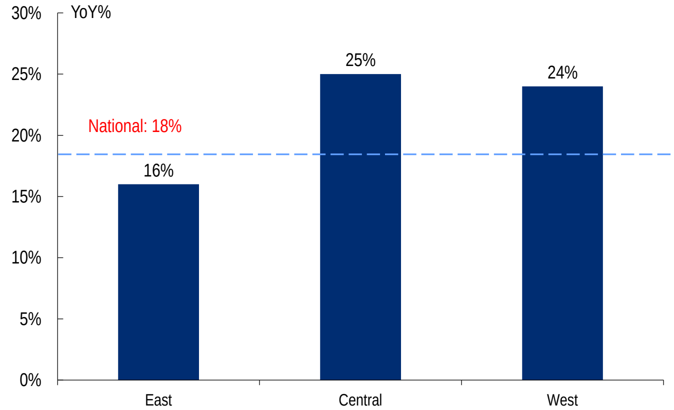
Source: CEIC and Citi Research

Figure 12. Job demand growth by sector, 1Q 2014



Source: www.zhaopin.com and Citi Research

Figure 13. Job demand growth by region, 1Q 2014



Source: www.zhaopin.com and Citi Research

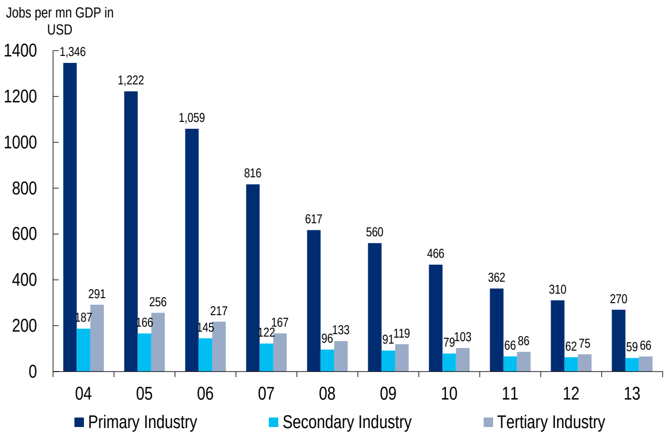
The resilient 1Q job market is confirmed by other data sources. According to zhaopin.com, one of the top online job service providers in China, total job demand went up 18% yoy in 1Q 2014. The financial sector with growth of 48% yoy led the boom (Figure 12). The IT/internet sector also had above average growth, but manufacturing and trade sectors saw weaker growth of 12% yoy and 6% yoy, respectively. However, the property sector's job demand of 24% yoy ranked No. 2 among key sectors. There is also data inconsistency here. If the job market boom was led by the service sector, we should not see faster job growth in inland China relative to the coastal region (Figure 13).

The question is if the economic growth is stuck at low levels, can the service sector alone sustain the job growth? Unless service sector deregulation speeds up, in our view, the service sector is unable to sustain job growth going forward. China's job market continues to see structural mismatch. According to China Association for Employment Promotion (CAEP), based on the survey of labor fairs in 100 cities, China's overall labor demand-supply (job vacancy vs. the number of job seekers) ratio had improved from the average of 0.95:1 between 2004-2009 to 1.04:1 between 2010-2012. This is roughly balanced, but the structural mismatch can be shown in the following areas.

- Firstly, there are labor shortages in both skilled and unskilled markets, but not college graduates. The labor demand-supply ratio for skilled labor had gone up from 1.5:1 around 2003 to 2:1 in 2010-2012. For unskilled labors, this had reached 1.2:1 in 2010-2012. This year, colleague graduates will reach new highs of 7.27mn, or about 47% of new labor supply nationwide. According to CAEP, the unemployment rate among youths aged 16-24 had increased steadily to 9% in Oct 2013.

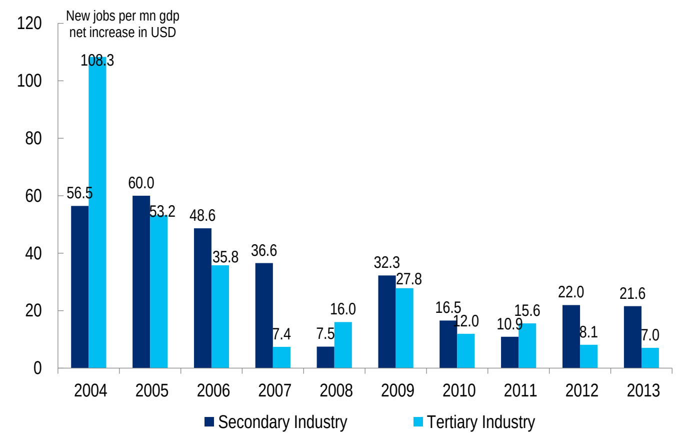
- Secondly, China's job intensity in the service sector was roughly the same as that in the manufacturing sector (Figure 14). This could be due to partly the under-reported service sector jobs and partly the monopolized and less productive service sectors. The new job growth mainly originated from the secondary industry, not the tertiary sectors. Its labor demand share had increased from 25.7% in 2001 up to 41.2% in 2012, according to CAEP. Meanwhile, the demand share of the tertiary industry had dropped from 72.5% to 57.1%. This can also be shown in the new job increase relative to net GDP increase (Figure 15). This trend is contrary to the structural rebalancing.

Figure 14. Job intensity by industry



Source: CEIC and Citi Research

Figure 15. Net job increase relative to net GDP increase

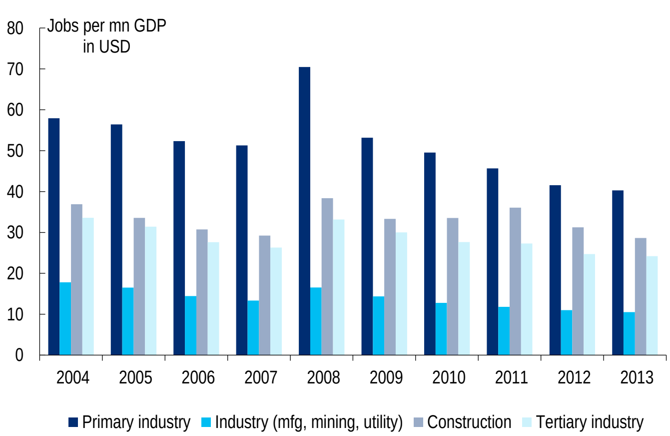


Source: CEIC and Citi Research

- Thirdly, there would be job losses if the labor intensive construction sector is overtaken by the less intensive service sector. The employment share of the construction sector was 13% of urban jobs, which is small relative to shares of 33% for the manufacturing sector and 51% for the service sector. However, according to the experiences in Korean and Taiwan, the construction sector is more labor intensive than the service sector (Figure 16 and 17). Possible correction in the property sector will likely lead to the surge of unemployment rate among migrant workers, more in inland China rather than the coastal region (Figure 18). More than a quarter of migrant workers were employed in the construction sector in central and western China which are more vulnerable during cyclical property sector downturns.

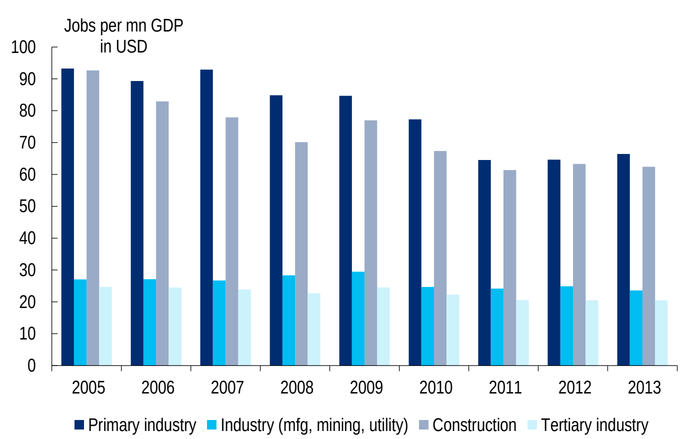
- Lastly, the export slowdown and industrial upgrading may weigh on job demand. China's job intensity peaked in early 1990s, almost one and half decades before the peak of the exports/GDP ratio (Figure 19). This implies that even the export sector will be less labor intensive going forward. Some small and medium sized enterprises that are labor intensive and export oriented will likely be wiped out.

Figure 16. Job intensity in Korea



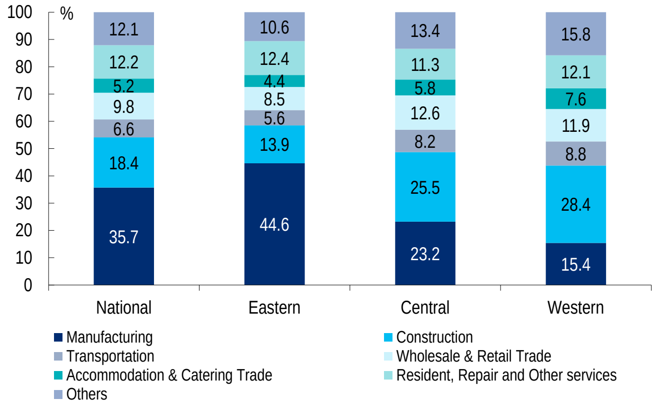
Source: CEIC and Citi Research

Figure 17. Job intensity in Taiwan



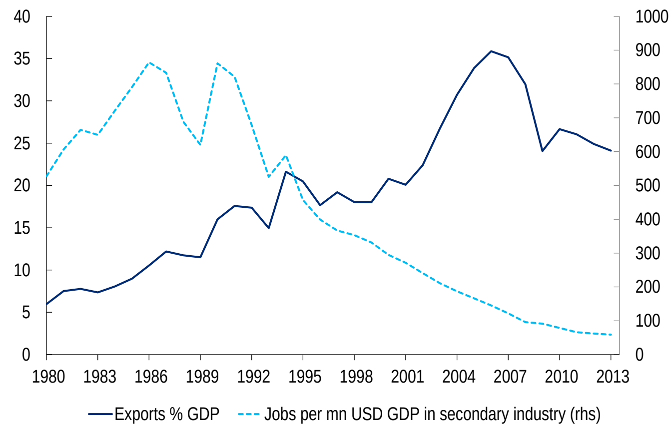
Source: CEIC and Citi Research

Figure 18. Job structure of migrant workers by region, 2012



Source: NBS and Citi Research

Figure 19. Exports/GDP ratio vs. Job intensity in the secondary industry

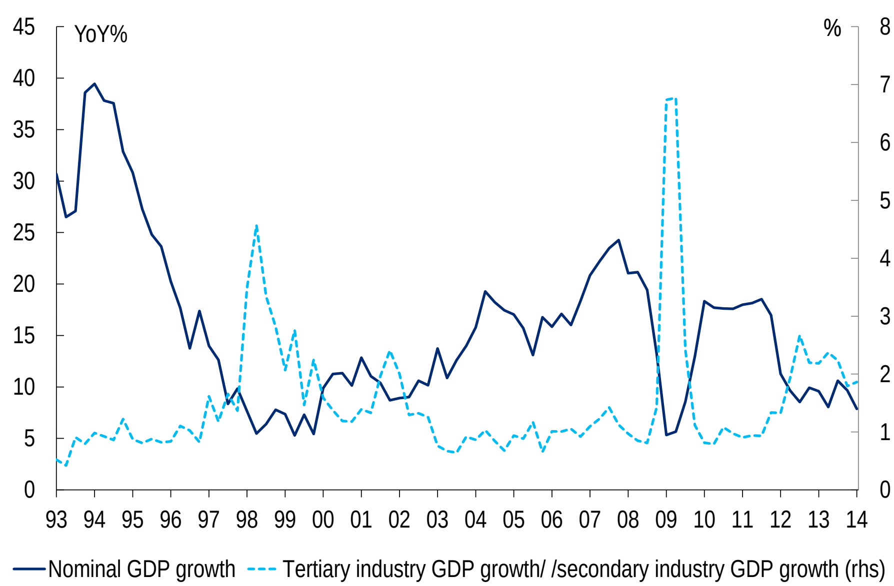


Source: CEIC and Citi Research

Will 7% GDP growth be compromised?

While our base case scenario for GDP growth this year remains unchanged at 7.3%, the risk lies in the downside. The market has been debating whether GDP growth will be above or below 7.5% since late last year. The base case of the debate now seems to be lowered to 7%. The government may want to defend above 7% growth but it could tolerate slightly slower growth as long as jobs are stable. Tolerating slower GDP growth is part of economic rebalancing, and we believe is positive to the economy and market in the longer term.

Figure 20. Nominal GDP growth vs. Relative growth performance between service and manufacturing



Source: CEIC and Citi Research

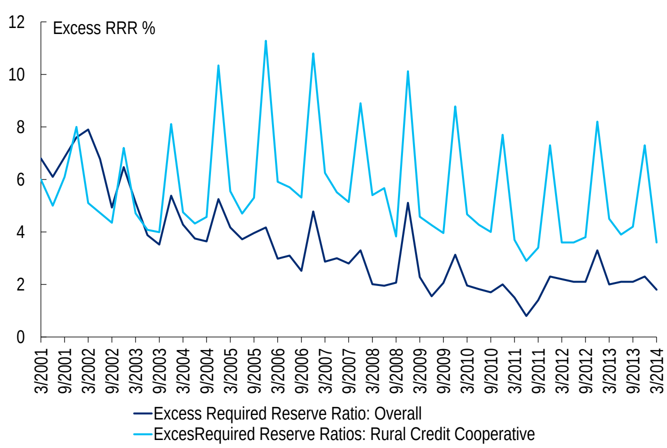
Historically, service sector led growth suggests slower economic growth. In the past decade, the service sector has played a critical role in stabilizing the economy, but all were short-lived. The growth rates in the service sector were always higher than in the manufacturing sector during the downturn of the nominal GDP growth (Figure 20). This suggests that the service sector led growth may imply slower growth unless the growth path is changed. For example, the service sector deregulation should generate reform dividends in the near term. More importantly, the service sector is generally less productive than the manufacturing sector.

Jobs in manufacturing and construction could be crowded out by reluctant lenders and more capital flight-to-safety. Recently, as concerns over over-capacity in the manufacturing sector and over-supply and price bubbles in the property sector exacerbate, the Chinese banks have been more reluctant to lend, though this has yet to be shown in the excessive reserves of commercial banks (Figure 21). But there are signs of "flight-to-safety" amid high cost of capital and uncertainty in a slow growth economy. Despite the concerns over local government debts, more credit is being allocated to local government financing vehicles (LGFV) that are equipped with implicit guarantees by the government. In the bond market, the share of bonds issued by local government agencies had gone up from sub-5% before 2012 to around 14-14.5% in 2012 and 2013, and then to 17.3% year-to-date (Figure 22). This could mean less jobs would be created in the manufacturing and property sectors though helpful for jobs in infrastructure related sectors.

Accommodative policies introduced since April are in line with our expectations but the degree of easing is milder than expected. Some of these policy measures are based on traditional tools and aim at creating jobs in the manufacturing and construction/property sectors: boosting manufacturing sector with more investment in railway, social housing and agriculture; promoting the export sector.

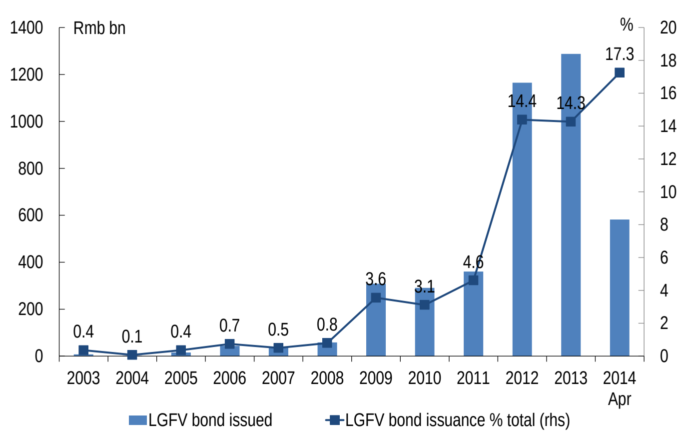
- Apr 2 – The State Council announced to extend SME tax cut, issue special bonds to fund the renovation of slum towns and urban infrastructure, and set up railway investment fund (about Rmb200-300bn) and railway construction bond (Rmb150bn) to support investment in the railway sector.

Figure 21. Excessive reserves by commercial banks and RCCs



Source: CEIC and Citi Research

Figure 22. Share of LGFV bond issuance of total



Source: WIND and Citi Research

- Apr 11 – In a joint announcement by securities regulators of both sides, mainland China and Hong Kong will launch the pilot of SH-HK Stock Connect in the next 6 months, enabling investors to trade eligible shares listed on the other's market through local brokers. This marks the beginning of China's capital market reform and one step further in liberalizing the capital account.

- Apr 16 – The State Council reiterated that it would fulfill the annual growth target. It decided to cut reserve requirement ratios of rural financial institutions and extend the tax support to hire colleague graduates and unemployed workers.

- Apr 23 – The State Council stated that 80 pilot projects in infrastructure (railway and ports), information technology, clean energy (hydro, wind and solar), and energy (oil pipeline and chemicals) will be open to the private sector.

- Apr 24 – The PBOC announced to cut the reserve requirement ratio (RRR) for rural commercial banks and rural cooperative banks chartered at county levels by 2ppts and 0.5ppts, respectively, effective from Apr 25th.

- Apr 30 – The Ministry of Finance, State Tax Administration and Ministry of Human Resources and Social Securities announced jointly that unemployed urban residents and new colleague graduates running small business can enjoy a tax cut of Rmb8000-9600 per year. Firms hiring unemployed workers can also enjoy a tax cut of Rmb4000-5200 per capita and calendar year.

- Apr 30 – The State Council reckoned that it's a challenge to achieve the annual target of 7.5% trade growth this year. It called for further streamlining trade process, accelerating timely export tax rebates and enhancing support for export credit insurance to boost trade growth.

These policy measures may not be enough to both defend 7% or above growth and secure jobs this year. To defend growth, more policy easing may come in order to support the property sector, e.g., removing purchase restriction and introducing subsidies and ease monetary policy, e.g., RRR cut. However, defending GDP growth may bring more jobs in manufacturing and construction sectors, while reform should help sustain current job growth led by the service sector.

How much policy efforts the Chinese authorities may put down depend on the need for job creation. If China no longer needs to create 10mn new jobs a year due to an aging population, then it could tolerate much slower GDP growth. This hints that current mild easing is appropriate and even 7% GDP growth could be compromised.

However, if sizable job creation is still necessary amid urbanization, we expect the policy shall focus on creating jobs. According to the New Urbanization Plan, China's residency based urbanization rate may reach 60% by 2020, implying that about 110mn farmers would migrate from rural to urban areas in 7 years. Even if only half of them need a job, this implies 8mn labor supply per year. To sustain current service sector-led job expansion, we believe reforms are be required to 1) speed up the *hukou* reform, land reform and thus urbanization; 2) deregulate the service sector, and 3) improve productivity in related industries. Again, this may no longer require above-7% GDP growth.

Appendix A-1

Analyst Certification

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