China: The turning point of the labour market

Emerging Markets ● Economics ● Asia

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- Labour force growth has been critical to China's economic success and development over the past three decades. In our view, the Chinese economy is standing at a historical turning point. This is the beginning of the end of an era – China as the world's factory. This is the beginning of the end of an era – China as the anchor of global disinflation.

- China's labour force and population growth are falling, as shown in Exhibit 1. Labour force and population growth are projected to turn negative beginning in 2017 and 2032, respectively. Additionally, China faces large increases in labour demand, which will lead to a net labour shortage, in our view.

- We project that China will remain a labour surplus country until about 2014, but that surging demand from the service sector and reluctance of workers to leave the rural sector will make labour supply appear to be more stretched at the low end of the labour market. We forecast that the labour demand-supply gap will be 17.6 million in 2017, as shown in Exhibit 2. This gap of 17.6 million is equivalent to 11% of the current labour force of the US, 27% of Japan's labour force and 41% of Germany's labour force.

- The sharp turning of China's labour market will not only redefine China's own growth model, production, consumption and income distribution, but will also have a major impact on inflation, financial prices and the manufacturing outsourcing model for the rest of the world.

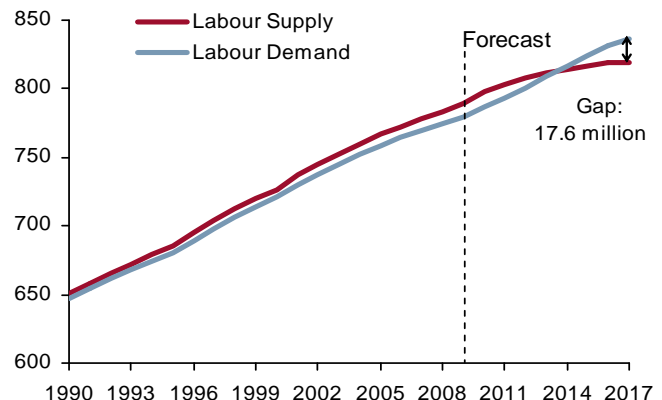**Exhibit 1: Population and labour growth**

Rate per annum (%) – UN, ILO Projections after 2008
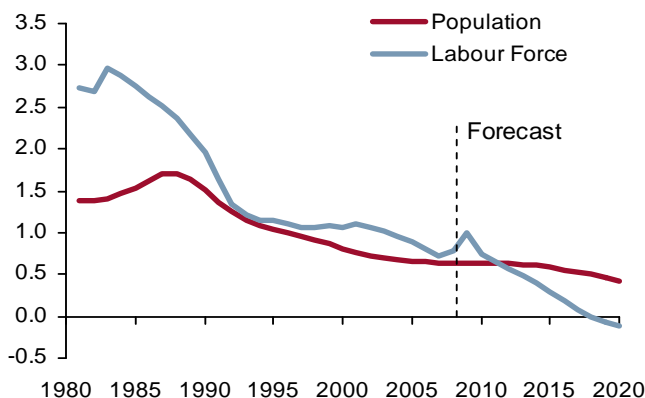
Source: UN, ILO, Credit Suisse

Exhibit 2: Total labour supply and demand

(In millions) – Credit Suisse Projections after 2009

Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistics Yearbook (2010), Credit Suisse forecasts

Executive Summary

- We estimate that migrant workers' salaries will rise on average by 30%-40% in 2010, and will likely rise by 20%-30% every year for the following three to five years. In our view, the Chinese economy is standing at a historical turning point. This is the beginning of the end of an era – China as the world's factory. This is the beginning of the end of an era – China as the anchor of global disinflation. It may take a decade for China to see its export competitiveness erode, but we have seen the beginning of this happening.

- There is a sea change in thinking by the Chinese authorities about salary, in our opinion. We think that in Beijing's mind, while raising workers' salary would reduce competitiveness and the current account surplus, the benefits would go to Chinese workers. Real exchange rate appreciation is a better policy option compared to nominal exchange rate appreciation, through which the benefits will go to trading partner countries. While this might add inflationary pressure, it could be a huge factor for strengthening domestic demand and improving the equality of income distribution. Facing heightened cost pressure, we think that some factories will close, and some will move out of China, but most will stay, perhaps with many being relocated to inland areas.

- It is our view that China's migrant worker market is turning, permanently. Since 2005, the influx of migrant workers has been on the decline. In 2010, factories suddenly noticed that it had become much harder to find workers, and a 30%-40% salary increase was almost a must if they were to have any chance of capturing those still interested in working in the coastal areas. This does not mean that China is suffering a net labour shortage, but that the labour supply curve is showing a sharp upward trend – higher salaries are needed in order to attract or incentivize more labour from the working age population. The situation is expected to worsen, as the service sector attracts more and more workers. As the inland economy expands and absorbs more labour locally, labour shortages will likely become more acute at the low-end of the manufacturing sector, which perhaps may become permanent in the coastal areas.

- China launched its birth control policy in the 1970s and made the 'one-child policy' official in 1980. As the baby boomers enter their fifties and the one-child generation starts to emerge as mainstream consumers, China is enjoying the last dividend of its demographic profile – consumption. However, a downside to the shift in demographics has also emerged. China's population growth declined from 1.42% pa in 1980-1985 to 0.63% pa, currently. According to UN projections, Chinese population growth is expected to turn negative from 2032 onwards, while China's labour supply is projected to peak in 2017. The pinch of labour shortages may get even stronger as demand rises quickly.

- A major swing factor in China's long-term labour supply is urbanization. We believe that, over the next two decades, industrialization will be achieved by bringing infrastructure and credit to rural areas. Industrialization is likely to be localized, with more jobs being created locally and villages transformed into towns. As urbanization takes place, we expect a rapid rise in the urban population and a reduced supply of migrant workers. We assume that the urban population will grow to one billion by 2025 in our projections.

- In this report, based on the theoretical framework of the Lewis model along with China's current economic and social trends, we projected labor demand and supply in rural and urban China for the period 2009-2025. The overall labour supply in China is projected to peak in 2017 and reach 809.2 million in 2025 from a current figure of 789.2 million. The rural labour supply is projected to decline at an accelerating pace from 468.8 million in 2009 to 268.4 million in 2025. This is mainly due to outward migration into cities, urbanization of rural areas, ageing, and increased education of the rural youth. The urban labour supply is projected to increase from 320.4 million in 2009 to 540.7 million in 2025. We expect that inward migration from rural areas and conversion of villages into towns will drive the increase.

- We project that overall labour demand will increase from 780 million (2009) to 857.1 million (2025). Labour demand growth in the next few years will likely be driven by a massive expansion in the services sector and infrastructure investment, which will accelerate the transition to a shortage of labour in the future. We estimate that urban labour demand will rise from 311.2 million (2009) to 588.7 million (2025). This will mainly be due to increased labour demand by urban services and conversion of villages into towns, in our view.

- Overall, China appears likely to remain a labour surplus country until about 2014, after which labour demand will surpass labour supply. We project a (labour demand minus labour supply) gap of 17.6 million in 2017 that may increase to 47.9 million in 2025. Effects of the labour shortage are already being felt in China with the rise in wages of migrant workers. Labour shortages are accelerating at a pace that points to a net shortage in the immediate future.

The beginning of the end of an era

We estimate that migrant workers' salaries will rise on average by 30%-40% in 2010, and will likely rise by 20-30% every year for the following three to five years. China's migrant workers, which account for 93% of the work force in the export sector, have been the pillar of China's manufacturing sector. In our view, the Chinese economy is standing at a historical turning point. This is the beginning of the end of an era – China as the world's factory. This is the beginning of the end of an era – China as the anchor of global disinflation. It may take a decade for China to see its export competitiveness erode, but we have seen the beginning of this happening.

In May 2010, it was widely reported that there were 13 cases of workers attempting to commit suicide at a Hong Kong listed electronics company that is the largest exporter in China. The company is the sole supplier of iPhones. While an iPhone was being sold for $499 in the US, that company was paid only $8.47 for each iPhone assembled, according to industry sources, which covered salaries, rents, shipping costs, and profits. This highlights China's awkward position in the global manufacturing sector. China has become the world's factory and products printed "made in China" have flooded the world's consumer markets. Yet, the benefits accruing to China have been limited, with even less reaching Chinese workers. The tragic suicides have triggered nationwide debates about China's role in the world, workers' compensation, and humane working environments. The electronics company mentioned above has reportedly now almost doubled its workers' salaries and, since then, salary hikes have been widespread.

Exhibit 3: Minimum wage changes

City/Province	New minimum wage (RMB per mth)	% change in 2010 from previous minimum wage
Shanghai	1,120	16.7
Zhejiang	1,100	14.6
Guangzhou	1,030	19.8
Beijing	960	20.0
Tianjin	920	12.0
Dongguan	920	20.0
Hainan	830	37.0
Qinghai	750	28.8

Source: Various local governments, Credit Suisse

Exhibit 4: Income growth: urban vs rural growth
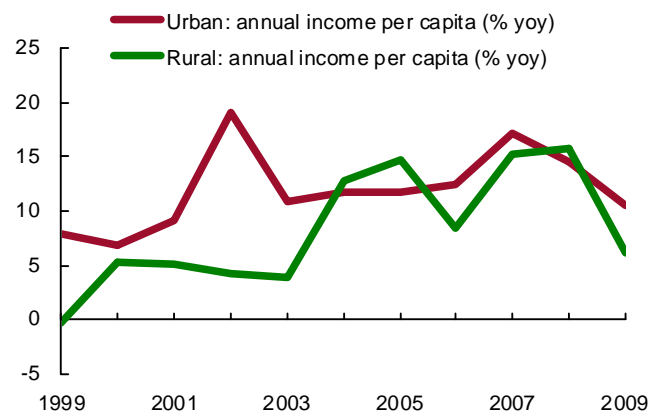
Source: CEIC, Credit Suisse

It is important to note that salary increases have now transcended the migrant workers market. Public servants, teachers and military staff have also seen a 20% wage hike on average this year. The government has been encouraging SOEs (State Owned Enterprises) to raise staff salaries, as well.

In 2010, all 31 provinces in China passed legislation to raise the minimum wage level. The average magnitude of minimum salary increase was about 23%, while the inland provinces saw a 30%-plus increase.

There is a sea change in thinking by the authorities in Beijing about salary, in our opinion. In the past, the Chinese government had been very cautious and conscious about letting salaries rise for reasons of competitiveness. But in recent years, Beijing has faced rising international criticism for not allowing the RMB exchange rate to appreciate. By appreciating the currency, China would likely see reduced export competitiveness and a lower current account surplus, as export orders flow to the other countries. We think that in

Beijing's mind, while raising workers' salaries would also reduce competitiveness and the current account surplus, at least the benefits would go to Chinese workers. While this might add inflationary pressure, it could be a huge factor for strengthening domestic demand and improving the equality of income distribution. Labour income as a percentage of GDP has been on the decline for 21 consecutive years. In our opinion, Beijing has been aggressive in pursuing real exchange rate appreciation, while being slow and reluctant to address nominal exchange rate appreciation. Behind that, there is a (sensible) strategy for economic transformation.

In our view, China is currently standing at a historical turning point. The beginning of the end of an era has just started. The best time for China as the world's factory is now behind us. The best time for China as the anchor of global dis-inflation is now behind us. It may take a long time for China's export manufacturing empire to fall, but we are witnessing a historical moment, in our opinion.

Will FDI stay?

In a recent Credit Suisse survey, 39% of executives from multinational corporates that have direct investments in China said that they were extremely or very worried about surging salaries, as against 18% who said the same about exchange rate appreciation. Given the importance of FDI in China's economic development, a crucial question is whether this could trigger a massive exodus of foreign investments from China, or whether companies will simply move to inland provinces where costs are cheaper.
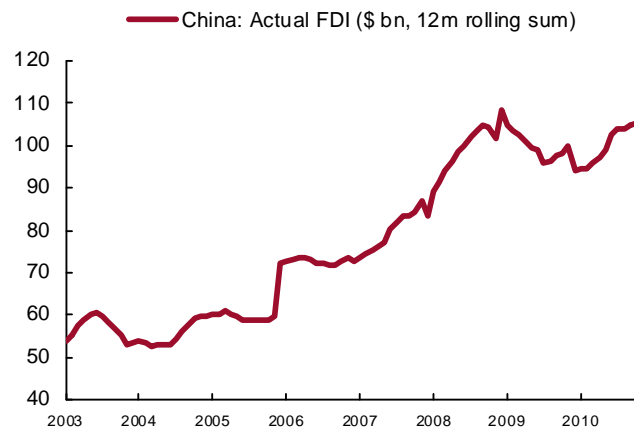
Exhibit 5: Multinational corporate survey

On a scale of 1 to 5, how worried are you about the following issues over the next 12 to 24 months?
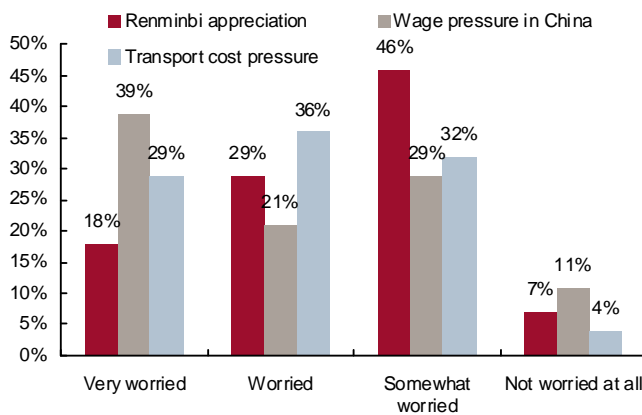
Source: Credit Suisse. Published in Executive Survey – The Rising Cost of Goods From China, 17 August 2010

Exhibit 6: Foreign direct investment

Source: Ministry of Commerce, Credit Suisse

Facing heightened cost pressure, some factories will likely be closed and some will move out of China, but we believe most will stay, perhaps with many being relocated to inland areas. There are four reasons for our view:

1) The supply chain effect will prove to be powerful. For instance, between Kunshan and Suzhou in Jiangsu province, there is an agglomeration of more than 40,000 electronics component producers. Almost 70% of the laptops for the world's market are assembled there. A mini-truck with electronics components could reach the back-door of an assembling factory in 15 minutes. Moving out of this area would be suicidal for an electronics company that wants to be competitive in terms of its supply chain.

2) From freeway to port, from tax rebate to custom clearance, the efficiency in infrastructure and government administration is unmatched by any other developing country that is competing with China. Infrastructure developments such as the high-speed rail network will further strengthen China's advantage.

3) While China's labour environment has tightened noticeably, it is still more pro-capitalist than many competing countries, such as India, Indonesia, or even Vietnam.

4) The vast domestic market will be a magnet for foreign companies, especially at a time when economic growth and consumer demand are generally weak in the world economy.

Still, if migrant workers' wages rise 20%-30% per year for consecutive years, as we predict, it would be a huge challenge for export manufacturers to survive. We believe that when production costs reach a certain threshold, some factories will likely close down or move out of China, but most will likely move deeper into China. In other words, we think the fall of China as the world's factory is unlikely to be a straight-line process, but a step-by-step process. Of course, China will climb up the export supply chain by producing higher value added products, (e.g., automobile and telecommunication equipment), committing more capital investment and introducing further production line automation (it will become easier to execute when production lines are relocated to new areas), but we think a gradual fading off of competitiveness is still likely.

A wide range of implications

First, we believe that Beijing has chosen a smart strategy for jump-starting domestic demand. The rise in salaries means that consumers will have stronger purchasing power, which should translate into rising domestic demand. This is a justified move after 20-plus consecutive years of falling labour income as a percentage of GDP. The issue is not just one of income distribution, but also social stability in the fastest growth economy in the world.

Second, rising wages are expected to create persistent inflationary pressure. As labour shortages spread from the manufacturing sector to the service sector, the ability of employers to pass on the increased cost pressure to the end-users increases.

Exhibit 7: World's CPI inflation
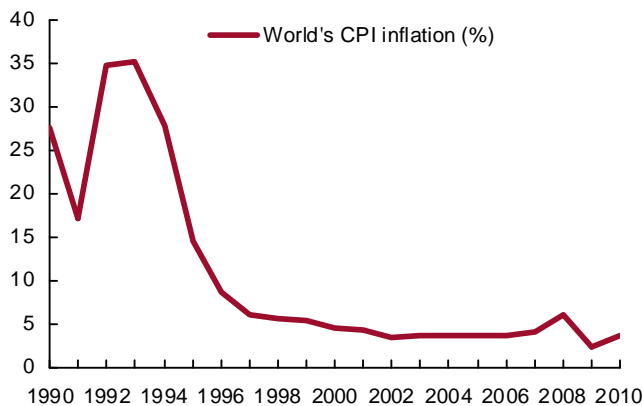
Source: IMF, Credit Suisse

Exhibit 8: US and China current account balance
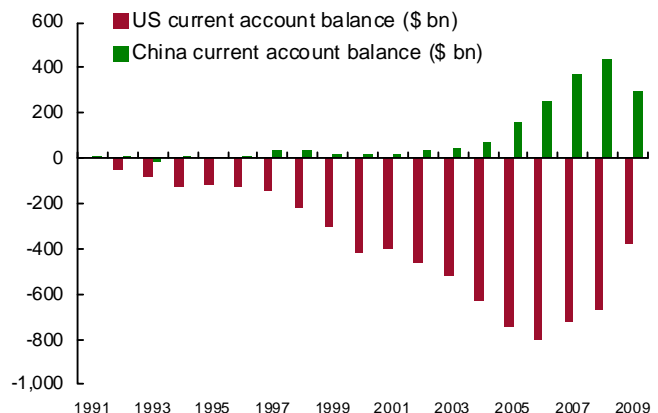
Source: CEIC, Credit Suisse

Third, the transition could be part of the solution to global rebalancing. Salary increases and urbanization could well create the second 'half a billion consumers', on top of the 'first half billion', which refer to urban white-collar workers. In our view, China's ultimate contribution to the global rebalancing story is through wage increases, or real exchange rate appreciation, instead of nominal exchange rate appreciation.

Fourth, the global outsourcing model in the manufacturing sector that China perfected may take a turn. There is no another China in the world, in terms of its pro-capitalist attitude, disciplined workers, smooth infrastructure, and producers' willingness to absorb rising costs without raising prices. This may have a lasting impact on the global inflation outlook in the long run.

Fifth, automation in the manufacturing sector may advance much quicker than before, with the aim of dampening the effects of rising labour costs.

A stretched migrant worker market

It is our view that China's migrant worker market is turning, permanently. Since 2005, the influx of migrant workers has been on the decline. In 2010, factories suddenly noticed that it had become much harder to find workers, and a 30-40% salary increase was almost a must if they were to have any chance of capturing those still interested in working in the coastal areas. Several reasons, in our view, contributed to the sudden shortage, which started a few years earlier but was masked during the global financial crisis. We list the reasons below:

a) The domestic sector is booming and is competing with the export sector for low-end labourers. Cashiers, janitors and domestic helpers have much better working conditions than factory workers who typically receive lower salaries, and who work longer hours and, often times, in hazardous or unsafe working conditions.

b) Jobs have become available nearer to home, so there is less need to travel to the coastal areas for jobs. Infrastructure projects are spreading to rural areas and factories are relocated to nearby locations.

c) Agricultural prices have surged and agricultural taxes have been removed. Farming may generate lower income, but incomes are not a lot lower anymore, while the quality of life is better staying at home.

d) The younger generation of migrant workers possesses IT skills and, hence, the market has become more efficient in terms of information flow. Workers in Guangdong can quickly learn about salaries in Tianjin through one SMS or email. This information transparency drives up labor costs across the nation.

e) Local governments have become more conscious about protecting labour rights.

Exhibit 9: Annual transfer of agriculture labour to non-agricultural activities

Millions
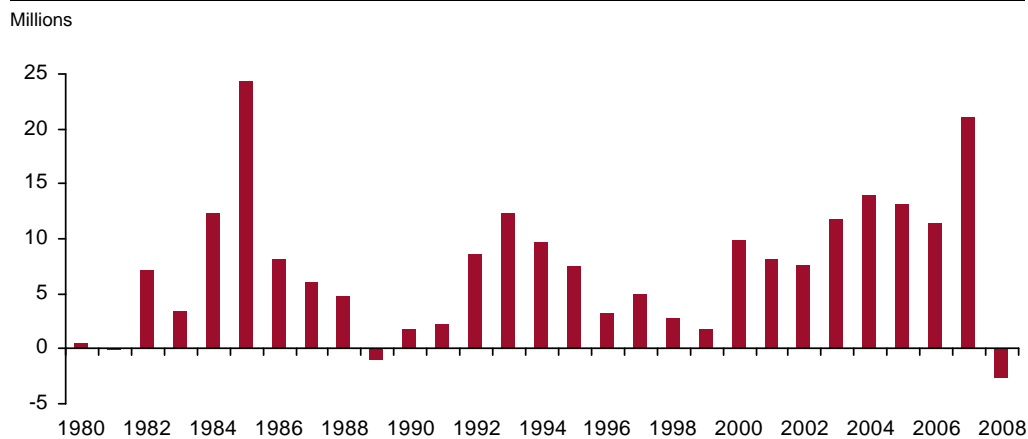
Source: *Dynamics of non-agricultural transfer of rural labour force in China* (Yufen Tong, 2010), Credit Suisse

Exhibit 10 shows that migrant workers' salaries hardly increased between 1994 and 2004, but started to take off after 2005. The salaries of migrant workers have surged over the last three years and we think this may well continue over the next four to five years. This does not mean that China is suffering a net labour shortage, but that the labour supply curve is showing an upward trend – higher salaries are needed in order to attract or incentivize more labour from the working age population. We expect the situation to worsen, as the service sector attracts more and more workers. In 2009, 39.1% of migrant workers were employed in manufacturing (a slight decline from the previous year), 17.3% in construction and 11.8% in services. Exhibit 11 displays the employment distribution across various Chinese provinces in 2009.

Exhibit 10: Rising migrant workers' wages
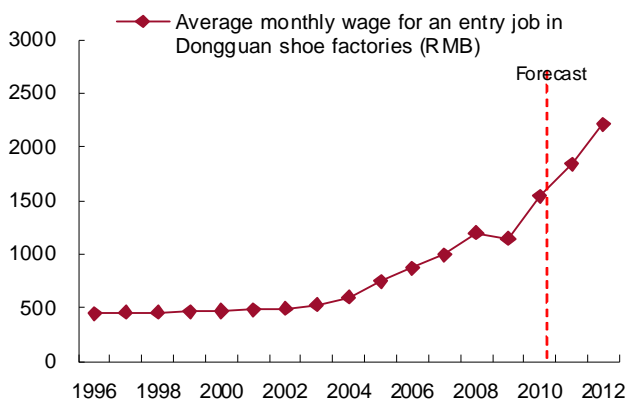
Source: Dongguan manufacturers, Credit Suisse forecast

Exhibit 11: Employment by province (2009)
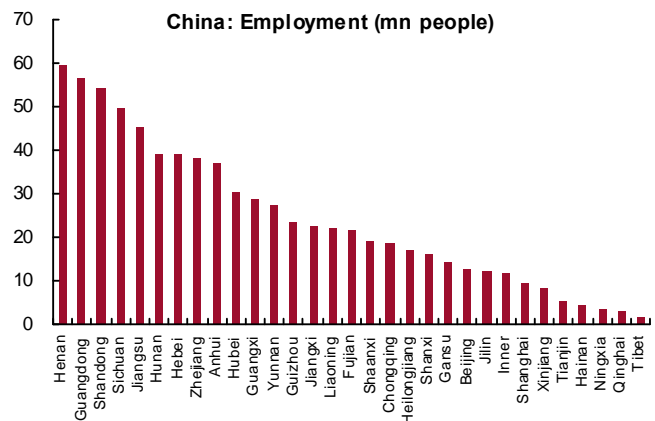
Source: CEIC, Credit Suisse

Exhibit 12 illustrates the distribution of migrant workers by region. In 2009, the number of migrant workers dropped in the eastern (coastal) region from 99.6 million to 90.8 million, while it increased in the central and western regions from 18.6 million and 21.7 million to 24.8 million and 29.4 million, respectively. In the Yangtze and the Pearl River Delta regions, the export centers on the coastal area, the number of migrant workers declined from 30.54 million and 42.36 million to 28.16 million and 32.82 million, respectively. This reflected the tightened labor conditions that were reported by the local press and the market. As the inland economy expands and absorbs more labour locally, labour shortages at the low end of the manufacturing sector will likely become more acute, which perhaps may become permanent in the coastal areas. This is the rationale for our projection of 20%-30% salary increases per year over the next three to five years in the migrant workers market.

Exhibit 12: Migrant worker distribution by destination

Year	Total	Regional Distribution (%)		
	Million	East	Central	West
2005	125.8	70.3%	14.4%	15.0%
2006	132.1	70.1%	14.8%	14.9%
2008	140.4	71.0%	13.2%	15.4%
2009	145.3	62.5%	17.0%	20.3%

Source: China Yearbook of Rural Household Survey, NBS Migrant Worker Report (2009), Credit Suisse

Exhibit 13: Migrant worker age distribution (2009)

By age group
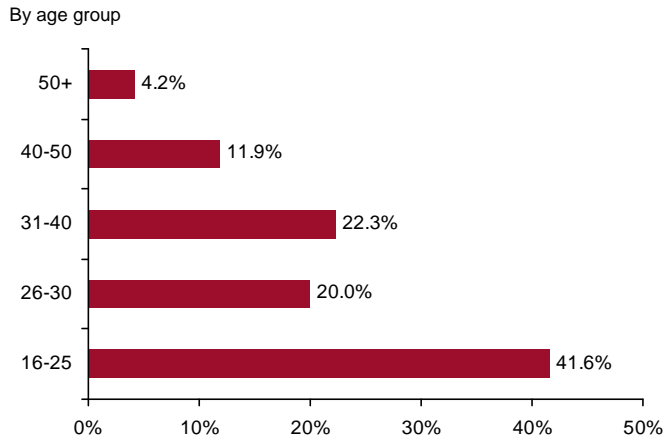
Source:NBS Migrant Worker Report (2009), Credit Suisse

Exhibit 14: Urban and rural population pyramid (2008)

Survey sample of 0.0887%

Source: China Population and Employment Statistics Yearbook (2009), Credit Suisse

The key factors that will impact the prospects and realization of rural-urban migration are the differences in terms of age distribution across rural versus urban regions, the differences in hours worked, the wages, the inflation prospects and consumer, as well as worker, preferences. We highlight some of these issues below.
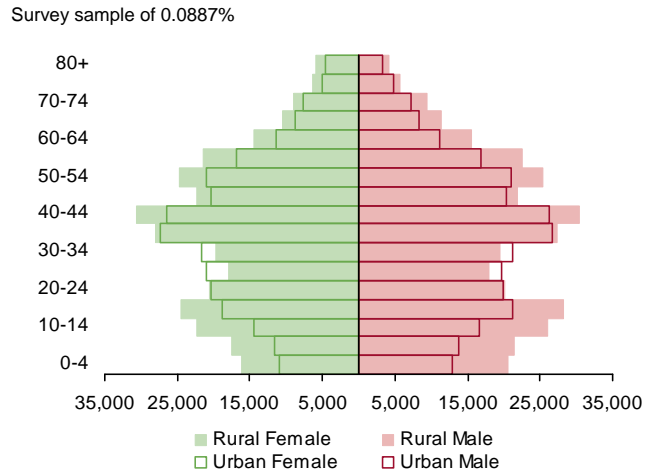
In 2009, migrant workers worked 26 days per month and 58.4 hours per week on average, compared with the legal working week of 44 hours. The average number of hours worked per week was 58.2 in manufacturing and 58.4 in construction.

It is mainly young rural workers that are being employed in urban areas. In 2009, 41.6% of migrant workers were aged 16-25 (Exhibit 13). In addition, 65.1% of migrant workers were males. This somewhat reflects the hiring preferences of urban manufacturers and construction firms, and, hence, points to the places where structural labour shortages exist. It is also evident in the urban and rural population pyramid (Exhibit 14) that a large part of workers in the 20-34 age group have migrated from rural to urban areas. Anecdotally, while there is still plenty of labour in the rural sector, people in the 20-34 age group are much less visible in the countryside. In our view, this is one of the key reasons for the disparity between the perception of abundant labour in rural areas and the reality of an increasingly stretched migrant workers market.

Demographics cliff-fall: 'one child policy'

China launched its birth control policy in the 1970s and made the 'one-child policy' official in 1980. Sound economic policies obviously have played an important role in guiding the economy from a backward-planned economy to the world's second largest economy, but demographics have run its course. The footprint of the baby boomer generation (born in 1955-1965) has matched the foot print of the Chinese economy – the production boom in the 1990s, the housing boom in 2000s and recently the consumption boom.

As the baby boomers enter their fifties and the one-child generation starts to emerge as mainstream consumers, China is enjoying the last dividend[1] of its demographic profile – consumption[2]. The baby boomer generation, parents of the one-child generation, are very generous in helping their 'only child' in the family by assisting them in buying homes and cars,

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[1] See Credit Suisse Demographics Research papers that highlight academic and policy research, which attributes one third to 40 percent of GDP per capita growth in South and East Asia over last three decades to the "Demographic Dividend"

[2] See *Changing demographics and consumers: EMG6,* Credit Suisse Demographic Research (2008)

which all ended up lowering the aggregate savings rate. The one child generation, on the other hand, behave very much like the baby boomer generation in the US, who love to spend, chase branded goods and hardly save. These basic characteristics are the foundation for our optimism that China is transforming to a more consumption-driven economy.

However, a downside to the shift in demographics has also emerged. China's population growth declined from 1.42% pa in 1980-1985 to 0.63% pa, currently. According to UN projections, Chinese population growth is projected to turn negative from 2032 onwards.

The current population pyramid that captures the age structure in China is presented in Exhibit 15. The highest proportion of the population currently belongs to the 15-24 years and 35-44 years age groups. The share of the 65+ population is projected to increase from a current level of 8.2% to 13.4% in 2025.

Exhibit 15: Population pyramid (2010)

(In thousands)
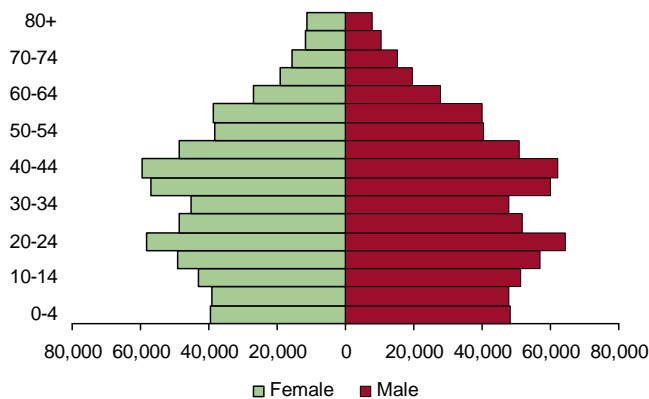
Source: Credit Suisse, UN

Exhibit 16: Labour force pyramid (2010)

(In thousands)
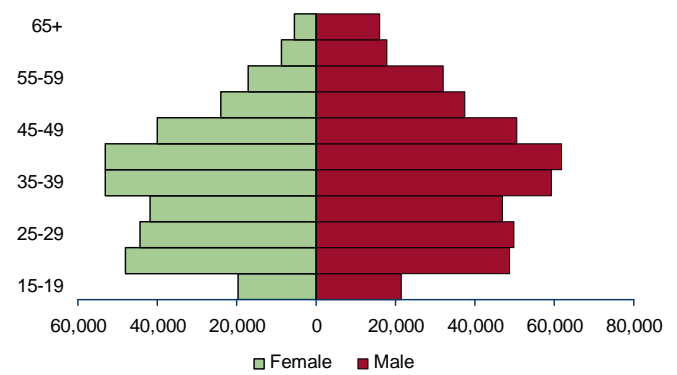
Source: Credit Suisse, ILO

The ageing of the population will seep into the labour market, as well. As Exhibit 16 shows, currently the highest proportion of the labour force belongs to 35-44 year age group. China's labour supply is projected to peak in 2017, as Exhibit 17 illustrates. The pinch of labour shortage may be felt even more strongly as a result of rapid labour demand increases.

Exhibit 17: Total labour supply

(In millions) - Credit Suisse Projections after 2009
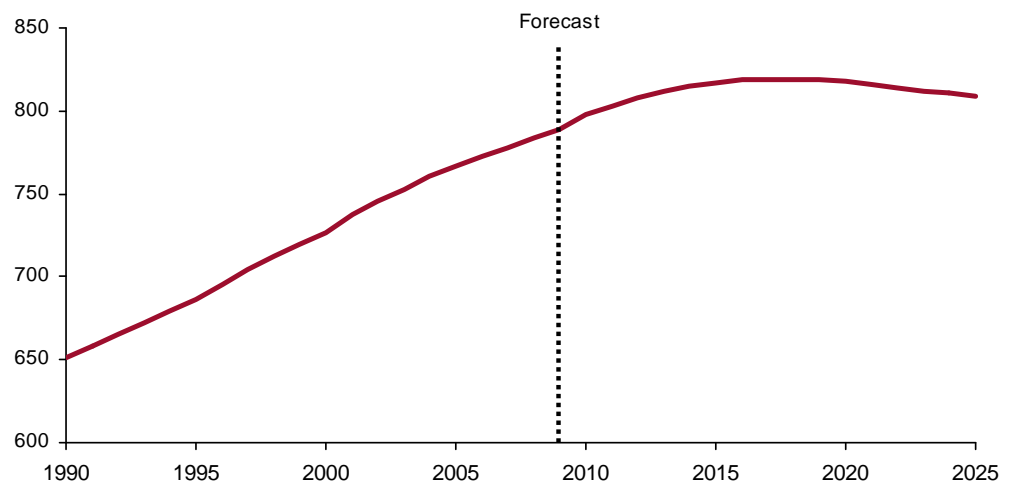
Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistics Yearbook (2010), Credit Suisse Projections

Of course, this also has other implications for policy issues including fiscal burden, healthcare system challenges, and the need for a pension system, as the population will not peak until 2032. While these issues are very important for China in the long run, they are beyond the scope of this research note[3].

Urbanization: two models

A major swing factor in China's long term labour supply is urbanization. Over the past two decades, China's industrialization model has been built on the strategy of drawing rural labour to coastal areas. This strategy has made China the world's factory. Urbanization was mainly achieved through absorbing rural people into cities. We believe that over the next two decades, industrialization will be achieved by bringing infrastructure and credit to rural areas. Industrialization is likely to be localized, with and more jobs being created locally and villages transformed into towns. This is an alternative model of urbanization. It is worth noting that urbanization is one of the statistically significant variables explaining the variation in Asian asset returns[4].

Exhibit 18: Average wage levels by province (2009)

Source: China News Agency, CEIC, Credit Suisse

This suggests all of the following:(i) less labour will become available in coastal areas and cities; (ii) more income will be generated and consumed locally, and (iii) as villages are transformed into towns, productivity will improve. As urbanization takes place, we expect a rapid rise in the urban population and a reduced supply of migrant workers.

Urbanization is clearly China's hope as a source of domestic demand. China has developed 500 million urban consumers over the past decade. There are more Buicks running on the Chinese streets than in the US now. Volkswagen has generated more revenues from the Chinese market than the German market. China has the biggest mobile phone market in the world. Internet subscription is running at a pace equivalent to creating a new UK market every year. The Chinese market will continue to grow, but we believe it will be difficult for the market to double in size again soon.

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[3] See *Spotlight on Demographic Giants: China and India*, Credit Suisse Demographics Research (November 2010) for a more detailed outlining and discussion of some of these issues
[4] See *Regional Economic Outlook: Asia and Pacific*, IMF (November 2008) for more details

What China can do and, we believe, will do is generate the second 500 million consumers through urbanization. The success of the urbanization process will not be judged by how many farmers come to town, but whether they will arrive with money in their pockets, in our view. We think the urbanization process will be handled gradually, but will still be huge in net terms – we forecast urbanization of 23.8 million people per year on average from 2010-2025 to reach an urban population of one billion in 2025 (see Exhibit 19).

Exhibit 19: Urban and rural populations

(In millions) - Credit Suisse Projections after 2009
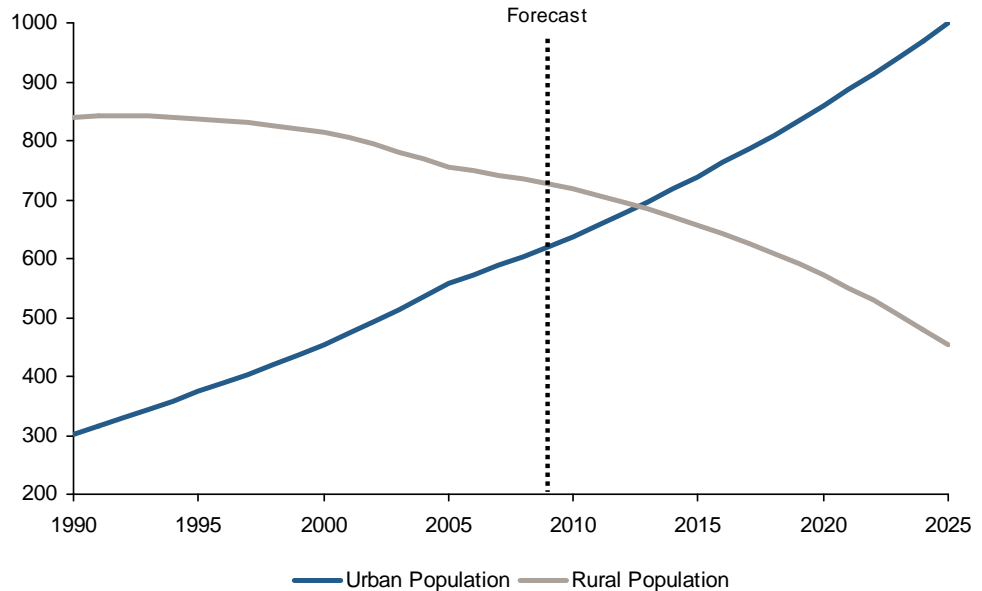
Source: UN, Credit Suisse Projections

Central to the migrant worker and urbanization phenomena in China is its 'Urban-Rural Dualism'[5], one of the two pillars of the old planned economy, the other being 'State-Ownership'. The dualism mechanism is instituted through separate household-registry accounts in urban and rural areas, where urban residents have access to social benefits and rural residents have rights to land use. The dualist structure divides urban and rural production, and limits the flow of resources. It further constrains rural productivity improvements and is the root of the urban-rural inequality problem. We are now observing a burgeoning reform of 'Urban-Rural Dualism', involving the Hukou System and the Land System. We expect the Hukou System to be removed by 2020, and this should improve the mobility of production factors including labour and land, transform small-scale household-based agriculture production, and free up excess labour tied to agriculture.

The key to success will require Beijing to grant farmers the right to sell their homes in a village or mortgage their farm land out for bank credit. Chinese urbanization patterns are very different from India, Brazil or Russia. We shall discuss the details of urbanization in a separate note later, but it is our view that urbanization is critical for the success of China's consumption-driven model. Another point to note is that urbanization does not necessarily mean that farmers will move into cities and create huge pressure on the mega cities, as experienced in some Latin American countries and also in India. Urbanization in China may mean converting villages into towns, in our opinion. That should lead to an upgrade of the rural areas, in terms of productivity, administrative efficiency, infrastructure development and economies of scale. This should also lead to a transformation in culture and social structure in these areas. The gradual and planned process of urbanization is likely to help define the next phase and scale of future Chinese industrialization.

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[5] See Yining Li, *The Reform of the Rural-Urban Dualism*, Journal of Peking University (2008)

Demographic Transition & Models of Sectoral Labour Migration

This section briefly discusses the theories of demographic transition and labour movement in development economies. This is done so as to better understand the economic, social and demographic changes in China, which have been described above.

The Demographic Transition model[6] is a model of population change attributed to Warren Thompson. It represents the transition from high birth and death rates to low birth and death rates as a country develops from a pre-industrial to an industrialized one. Stages of the demographic transition theory are described in Exhibit 20 and according to this framework, **China is in Stage 3.**

Exhibit 20: Demographic Transition Theory and its application to selected countries

Stages and Current Examples

Stage 1	Stage 2	Stage 3	Stage 4	Possible Stage 5
High & fluctuating death rates High & fluctuating birth rates Stationary population numbers	Falling death rates* High birth rates Large increase in population	Falling death rates Falling birth rates ** Stable population growth	Low birth rates Low death rates Stable population	Very low birth rates Death rates higher than birth rates Declining population/ Ageing
	India, Indonesia, Malaysia, Vietnam	Brazil, China, Thailand	USA, UK, France, Singapore, South Korea	Japan, Germany

Source: Credit Suisse, *Demographic Transition Theory*, John Caldwell (2006)

*Reasons- Improvements in food supply, sanitation, technology, basic healthcare and education
**Reasons- Contraception, increases in wages, urbanization, reduction in subsistence agriculture, increase in the status and education of women, reduction in the value of children's work

While the demographic transition theory focuses on population structure changes, the Lewis model (Sir Arthur Lewis, 1954) looks at labour structure and mobility across sectors and has been one of the most influential models in development economics. At the core of the Lewis model is **labour market dualism** i.e. the presence of two sectors: a 'formal', 'industrial' or 'urban' sector and an 'informal', 'agricultural' or 'rural' sector. Workers in the formal sector earn higher wages than those in the informal sector.

The novel feature of Lewis's framework was that the formal sector faces an unlimited supply of labour as population is large relative to capital and natural resources. In the informal sector, the marginal product of labour is zero or low. Employment in the formal sector is determined according to the marginal product of labour. Those not employed in the formal sector are assumed to take up employment in the informal sector. Thus, there is no open unemployment, only underemployment.

When economic growth takes place, the marginal product of labour curve shifts rightward and demand for workers increases in the formal sector. Workers are drawn out of the informal sector into the formal sector and those who remain in the informal sector each receive a higher income than before. The rising wage in the informal sector is a cause of the unlimited supply of labour to the formal sector eventually running out due to improved wage opportunities in the informal sector. Thus, as long as a labour surplus existed, economic growth would generate intersectoral shifts of employment but little or no increase in real wages in the formal sector. Once the unlimited supply of labour is exhausted and the turning point is reached, subsequent economic growth is marked by rising real wages economy-wide. We have already discussed the emergence of this trend in China[7].

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[6] See David Bloom, David Canning and Jaypee Sevilla, *Economic Growth and the Demographic Transition*, NBER Working Paper (December 2001)

[7] See Gary Fields, *Dualism in the Labour Market: A perspective on the Lewis model after half a century*, (2004) for more detailed discussion

Projections on demand and supply of labour

In an attempt to better understand the economic and social trends discussed above, as well as trace their future evolution and dynamics better, we conducted an analysis based on projecting labor demand and supply in rural and urban China over the period 2009-2025.

The labour supply picture

Labour supply is linked to economic activity rates and the 15+ population by the following equation:

Labour supply = Economic activity rates[8] × Population aged 15 years and above............(1)

Hence, in order to project urban and rural labour supply, we need to first understand the future evolution of activity rates and 15+ population in the respective areas.

The current economic activity rates across different age groups are presented in Exhibit 21 below.

Exhibit 21: Age specific economic activity rates

(Age groups in years on X axis, Rates on Y axis) - 2009
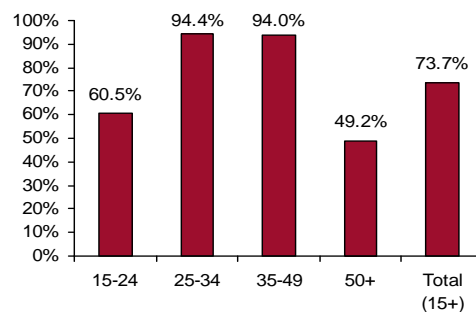
Source: Credit Suisse, International Labour Organization

Exhibit 22: Economic activity rates

(Rates) - Credit Suisse Projections after 2009
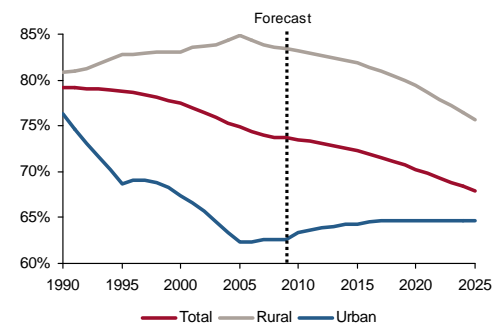
Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistics Yearbook (2010), Credit Suisse Projections

We used International Labour Organization projections for age specific [9] and overall economic activity rates from 2009 to 2020 and further extended this projection to 2025. Our projection assumes a declining economic activity rate for the 15-24 age group (due to more education of the youth) and the 50+ age group (due to ageing), a slightly increasing economic activity rate for the 25-34 age group and a stable economic activity rate for the 35-49 age group. The overall economic activity rate is projected to fall from 73.7% (2009) to 68% (2025).

In rural areas, the overall economic activity rate has recently started to decline. In our projection, we have assumed that it will decline further at an accelerating pace from 83.4% (2009) to 75.7% (2025). In urban areas, the overall economic activity rate is projected to increase slightly from 62.6% (2009) to 64.7% (2025). This is shown in Exhibit 22.

We used UN projections for the overall 15+ population in China. We project that the urban population in China will increase to one billion by 2025. The share of the 15+ population in rural areas tends to be lower due to relatively less strict birth control policies and higher birth rates. We assume the difference between the percentages of the 15+ population in rural and urban areas to be 5.3% (using the 2005 1% Population Survey result). Due to urbanization and worker migration, the rural 15+ population is projected to fall from 561.8 million (2009) to 354.6 million (2025) while the urban 15+ population is projected to increase from 512.2 million (2009) to 836.1 million (2025).

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[8] Economic activity rates measure the ratio of the economically active population/labour supply to the total population aged 15 years and above

[9] Age specific economic activity rates measure the ratio of the economically active population/labour supply to the total population in the respective age group

Using the assumptions and projections above, we calculated the labour supply using equation (1). The overall labour supply in China is projected to peak in 2017 and reach 809.2 million in 2025 from a current figure of 789.2 million as shown in Exhibit 17.

The rural labour supply is projected to decline at an accelerating pace from 468.8 million in 2009 to 268.4 million in 2025. This is mainly due to outward migration into cities, urbanization of rural areas, ageing and increased education of the rural youth.

The urban labour supply is projected to increase from 320.4 million (2009) to 540.7 million (2025). We expect inward migration from rural areas and conversion of villages into towns to drive the increase. Hence, we forecast that the urban-rural labour supply ratio will increase from a current level of 0.68 to 2.01 in 2025.

The labour demand picture

We projected overall labour demand using the relationship between GDP growth and employment growth through employment elasticity, as defined below[10]:

Employment elasticity = Percent change in employment/Percent change in GDP............(2)

Employment elasticity in China was high in the 1990's as China was engaged in labour-intensive export-driven manufacturing. Heavy capital investment and the property boom have lowered employment elasticity in the last few years. The average levels were 0.13 (1996-2004) and 0.07 (2005-2009).

In our view, the expansion of the services sector and infrastructure investment in the next few years will lead to high labour demand. The share of employment in the services sector will grow and the services sector will be labour intensive as many jobs will be created initially at the lower end. This will pull up employment elasticity. However, as the services sector moves to a higher end, with higher productivity, and the overall labour market becomes constrained, employment elasticity should decline. Hence, we assume that employment elasticity will rise from the current level of 0.07 to 0.110 (2014) and fall thereafter.

GDP growth assumptions used in our calculations are: 9.3% (2010-2014), 8.5% (2015-2020) and 7.5% (2021- 2025).

We estimate labour demand using equation (2). Overall labour demand is projected to increase from 780 million (2009) to 857.1 million (2025). The rural sector will continue to absorb all remaining rural labour and thus we assume rural demand will equate to rural supply. Urban demand is the difference between total labour demand and rural demand. Urban labour demand is projected to rise from 311.2 million (2009) to 588.7 million (2025). This is mainly due to increased labour demand in urban services and conversion of villages into towns. According to our projections, the urban/rural labour demand ratio will increase from a current level of 0.66 to 2.19 in 2025. This is a significant and material increase.

Labour supply gap

Our projections suggest that China will remain a labour surplus country until about 2014, after which labour demand will surpass labour supply. In 2025, the projected labour demand-supply gap is 47.9 million as shown in Exhibit 23.

Effects of the labour shortage are already being felt in China with the rise in wages of migrant workers. The current labour shortage is accelerating at a pace that points to a net shortage in the immediate future.

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[10] Mingzhu Qi, *Labor Supply and Labor Demand Forecasting in China 2010-2050*, Population Research (2010)

Exhibit 23: Labour supply and demand projections

(In millions) -Credit Suisse Projections after 2009

	Total		Urban		Rural	Labour Gap
	Labour Demand	Labour Supply	Labour Demand	Labour Supply	Labour Supply (Demand)	(Demand-Supply)
1990	647	651	170	174	477	-3.8
1995	681	686	190	196	490	-5.2
2000	721	727	232	237	489	-6.0
2005	758	767	273	282	485	-8.4
2009	780	789	311	320	469	-9.2
2010	787	798	323	334	464	-10.8
2011	793	803	337	347	456	-9.4
2012	801	808	353	359	448	-6.7
2013	809	811	369	372	440	-2.9
2014	817	815	387	384	430	2.2
2015	824	817	404	397	420	7.1
2016	831	819	423	410	408	12.6
2017	837	819	441	424	396	17.6
2018	841	819	459	437	382	21.9
2019	845	818	476	450	369	26.1
2020	847	817	493	463	354	30.0
2021	849	816	511	478	338	33.6
2022	851	814	530	492	321	37.5
2023	853	812	549	508	304	41.2
2024	855	810	569	524	287	44.8
2025	857	809	589	541	268	47.9

Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistics Yearbook (2010), Credit Suisse Projections

In 2017, the labour demand-supply gap is projected to be 17.6 million, equivalent to 11% of the size of the current labour force of the US, 27% of Japan's labour force and 41% of Germany's labour force. The gap could be as wide as 47.9 million by 2025, based on our projections, but we suspect there could be some structural adjustment introduced at that time to address it.

Adjusted demand-supply gap

The labour demand supply gap is based on assumptions about various economic and social variables and changing any of the underlying factors will change the gap. In this section we consider some of these factors in a qualitative fashion to assess how changes in each of them will affect the gap:

• Increasing retirement age and incentives to work: Labour supply will increase as economic activity rates for old people rise. This can reduce the demand supply gap. **(─)**

• Rising income and wealth and higher preference for leisure time: Labour supply will fall as people prefer to work less. Labour demand will increase as people work fewer hours. This can increase the demand supply gap. **(+)**

• Rising wages: Supply can rise as rising wage provide an incentive to work more, but beyond a point it can fall as people have more income. Demand will fall as labour becomes more expensive. Effect on the gap is unclear. **(+/─)**

• Changing Labour laws: Supply will fall as regulations such as minimum legal working age become stricter. Demand will fall as labour becomes more expensive and inflexible. Effect on the gap is unclear. **(+/─)**

• Improved productivity by copying urban living and production model: Demand will fall as labour productivity rises. This can decrease the demand supply gap. **(─)**

- Increased capital intensity, improved infrastructure and automation: Demand will fall as labour productivity rises. This can decrease the demand supply gap. **(─)**

- Conversion of rural villages to townships: Urban labour supply will increase. Demand will increase as the services sector grows. Effect on the gap is unclear. **(+/─)**

- Growth of the services sector: The switch from manufacturing to services will increase demand as services are more labour intensive than manufacturing and can increase the gap **(+)**. Expansion of the services sector in rural areas will reduce demand as services are less labour intensive than agriculture and reduce the gap **(─)**. The reduced impact of the housing boom will increase demand as services are more labour intensive than construction **(+)**. In Exhibit 24 we show the different employment split across sectors in four major Asian economies. We see that the share of employment in services is still relatively low in China compared to Japan and Korea.

Exhibit 24: Share of employment in different sectors

2008
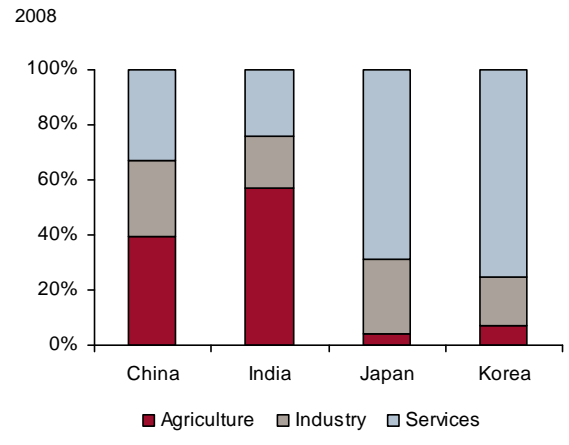
Source: Credit Suisse, NBS, Planning Commission, Korean Statistical Information Website, MIAC

Conclusion

The success of China's economic development over the past thirty years can be attributed to Deng Xiaoping's open door policy, a wide range of reforms (including SOE reform, banking reform, housing reform, and joining the WTO) and the global manufacturing outsourcing trend, but demographics factor has also played a critical role. The path of production boom, housing boom and consumption boom coincides with the life cycle of China's baby-boomer generation. However, China is increasingly feeling the stress from the baby-bust generation, created by the 'one-child policy'.

Evidently, migrant workers' salaries started to rise in the mid-2000s, after a period of 'no pay hikes' for more than a decade. Over the past year, salaries have surged and spread from the manufacturing sector to the service sector. This has lots to do with the softening in new labour supply in rural areas and is aggravated by production relocation and infrastructure investment near rural areas. The surging demand from the service sector further bids workers away. We estimate salary increases of 30%-40% for migrant workers in 2010, and project 20%-30% per year wage hikes at least over the next three to five years.

We believe that the majority of FDI will remain in China despite rising labour costs. The supply chain effect, infrastructure and administrative efficiency, and most importantly domestic market, will keep FDI within China, but production lines moving to inland provinces seems inevitable.

China has not entered the stage of labour net shortage yet, but the low end of the labour supply curve has shown an upward shape, meaning that higher salary would be necessary to draw additional labour. We expect that overall labour supply in China will peak in 2017 and reach 809.2 million in 2025 from a current figure of 789.2 million. The rural labour supply is projected to decline at an accelerating pace from 468.8 million in 2009 to 268.4 million in 2025. This is mainly due to the urbanization of rural areas, ageing and increased education of the rural youth. The urban labour supply is projected to increase and reach 540.7 million in 2025 (urban supply in 2009 is 320.4 million). We expect inward migration from rural areas and conversion of villages into towns to drive the increase.

We project that overall labour demand will increase from 780 million (2009) to 857.1 million (2025). Labour demand growth in the next few years will likely be driven by a large expansion in the services sector and infrastructure investment, which will accelerate the move to a labour shortage in the future. We estimate that urban labour demand will rise from 311.2 million (2009) to 588.7 million (2025). This will mainly be due to increased labour demand by urban services and conversion of villages into towns.

Overall, China appears likely to remain a labour surplus country until about 2014, after which the labour demand will surpass labour supply. We expect the labour demand-supply gap will be 17.6 million in 2017, equivalent to 11% of the current labour force of the US, 27% of Japan's labour force and 41% of Germany's labour force. Effects of the labour shortage are already being felt in China with the rise in wages of migrant workers. The labour shortage is accelerating at a pace that points to a net shortage in the immediate future. In our view, the turning of the labour market in China is secular and perhaps irreversible over the coming decades.

In our view, the sharp turning of China's labour market will not only redefine China's own growth model, production model, consumption pattern and income distribution, but also have a major impact on inflation and financial prices, as well as the manufacturing outsourcing model for the rest of the world.

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Appendix

Exhibit 25: Change in minimum wages

Monthly, Yuan

Selected Provinces

Province	Effective Date	Tier-1 Areas	Tier-2 Areas	Tier-3 Areas		Province	Effective Date	Tier-1 Areas	Tier-2 Areas	Tier-3 Areas
Anhui	Jul 2010	720	680	630		Jiangsu	Feb 2010	960	790	670
	Oct 2007	560	540	500			Oct 2007	850	700	590
	Oct 2006	520	500	460			Oct 2006	750	620	520
	Oct 2004	410	390	370			Nov 2005	690	550	480
	Jan 2001	340	320	310			Jun 2004	620	500	440
Fujian	Mar 2010	900	800	700		Liaoning	Jul 2010	900	750	650
	Aug 2007	750	700	650			Nov 2007	700	580	500
	Aug 2006	650	600	570			Jun 2006	590	480	420
Gansu	Apr 2008	620	580	540			Dec 2004	450	400	350
	Aug 2006	430	400	360		Shandong	May 2010	920	750	600
	Mar 2000	280	260	240			Jan 2008	760	620	500
Guangdong	May 2010	1,030	920	810			Oct 2006	610	540	480
	Apr 2008	860	770	670			Jan 2005	530	470	420
	Sep 2006	780	690	600			Oct 2002	410	380	340
	Dec 2004	684	574	494			Jul 2001	370	340	310
	Sep 2001	480	430	380		Shanxi	Apr 2010	850	780	710
Hebei	Jul 2010	900	840	760			Oct 2009	720	670	620
	Jul 2008	750	680	600			Oct 2008	610	570	530
	Feb 2008	680	620	560			Oct 2007	550	510	470
	Oct 2006	580	540	480			Jul 2004	520	480	440
	Jun 2004	520	470	420			Oct 2003	340	300	260
	Jan 2002	350	300	250		Sichuan	Aug 2010	850	780	710
Henan	Jul 2010	800	700	600			Sep 2006	580	510	450
	Oct 2007	650	550	450			Aug 2004	450	400	340
Hubei	May 2010	900	750	670			Jul 2002	340	310	270
	Aug 2008	700	600	520			Jun 2000	270	240	215
	Mar 2007	580	500	460		Zhejiang	Apr 2010	1,100	980	900
	Mar 2005	460	400	360			Sep 2008	960	850	780
Inner Mongolia	Jul 2010	900	820	750			Sep 2007	850	750	700
	Oct 2006	560	520	460			Dec 2005	670	610	560
	Jul 2004	420	400	380			Oct 2004	620	560	510
	Oct 2002	330	310	290			Sep 2003	520	480	430

Selected Municipalities

Municipality	Effective Date	Wage		Municipality	Effective Date	Wage		Municipality	Effective Date	Wage
Shanghai	Apr 2010	1,120		Beijing	Jul 2010	960		Tianjin	Apr 2010	920
	Apr 2008	960			Jul 2008	800			Apr 2008	820
	Sep 2007	840			Jul 2007	730			Apr 2007	740
	Sep 2006	750			Jul 2006	640			Apr 2006	670
	Jul 2005	690			Jul 2005	580			Jul 2005	590
	Jul 2004	635			Jul 2004	545			Jul 2004	530
	Jun 2003	570			Jan 2004	495			Sep 2003	480
	Jul 2002	535			Jul 2002	465			Jul 2002	450
	Jul 2001	490			Jul 2001	435			Mar 2001	412
	Dec 2000	445			Jul 2000	412			Jul 1999	350

Source: LawInfoChina, Credit Suisse

Exhibit 26: Total, urban and rural populations

(In millions) - Estimation and projection after 2008

	Total		Urban		Rural		% of Urban Population
	Total Population	15+ Population	Total Population	15+ Population	Total Population	15+ Population	
1990	1,142	818	302	228	840	590	26%
1991	1,158	831	315	239	843	593	27%
1992	1,172	844	329	249	843	594	28%
1993	1,186	855	343	261	842	594	29%
1994	1,199	866	359	272	840	593	30%
1995	1,211	877	374	285	837	592	31%
1996	1,223	889	389	297	834	592	32%
1997	1,235	901	404	309	831	591	33%
1998	1,246	913	420	322	826	591	34%
1999	1,257	927	436	337	821	590	35%
2000	1,267	941	453	352	814	589	36%
2001	1,277	957	472	370	804	587	37%
2002	1,286	974	492	389	794	585	38%
2003	1,295	991	513	409	782	582	40%
2004	1,304	1,008	535	431	769	577	41%
2005	1,312	1,024	558	452	754	571	43%
2006	1,321	1,038	573	467	748	570	43%
2007	1,329	1,051	588	482	741	569	44%
2008	1,337	1,063	603	497	734	566	45%
2009	1,346	1,074	619	512	726	562	46%
2010	1,354	1,085	636	527	718	557	47%
2011	1,363	1,095	655	545	707	550	48%
2012	1,371	1,105	675	562	696	542	49%
2013	1,380	1,114	696	580	683	533	50%
2014	1,388	1,122	717	599	670	524	52%
2015	1,396	1,130	739	617	657	513	53%
2016	1,404	1,137	762	636	642	501	54%
2017	1,411	1,144	785	655	626	489	56%
2018	1,418	1,151	810	675	609	475	57%
2019	1,425	1,157	834	696	591	461	59%
2020	1,431	1,163	860	717	571	446	60%
2021	1,437	1,169	886	739	550	430	62%
2022	1,442	1,174	913	762	528	412	63%
2023	1,446	1,180	941	786	505	394	65%
2024	1,450	1,185	970	810	480	375	67%
2025	1,453	1,191	1,000	836	453	355	69%

Source: UN, China Population Yearbook, Credit Suisse

Exhibit 27: Economic activity rates

Projection after 2008

	Overall	By Age Group			
	Total (15+)	15-24	25-34	35-49	50+
1990	79.2%	78.3%	94.7%	93.3%	49.3%
1991	79.2%	78.0%	94.6%	93.4%	49.0%
1992	79.1%	77.4%	94.4%	93.5%	48.8%
1993	79.0%	76.8%	94.3%	93.5%	48.6%
1994	78.9%	76.1%	94.2%	93.6%	48.3%
1995	78.8%	75.3%	94.2%	93.6%	48.2%
1996	78.6%	74.4%	94.1%	93.6%	48.1%
1997	78.4%	73.2%	94.1%	93.6%	48.0%
1998	78.1%	71.9%	94.1%	93.6%	48.0%
1999	77.8%	70.5%	94.2%	93.6%	48.1%
2000	77.4%	69.0%	94.2%	93.6%	48.3%
2001	77.0%	67.5%	94.2%	93.7%	48.7%
2002	76.5%	65.9%	94.2%	93.8%	49.1%
2003	75.9%	64.3%	94.3%	93.9%	49.4%
2004	75.3%	62.9%	94.3%	93.9%	49.7%
2005	74.8%	61.8%	94.3%	94.0%	49.8%
2006	74.4%	60.8%	94.4%	94.0%	49.8%
2007	74.0%	60.1%	94.4%	94.1%	49.6%
2008	73.8%	59.8%	94.4%	94.1%	49.4%
2009	73.7%	60.5%	94.4%	94.0%	49.2%
2010	73.5%	60.4%	94.4%	94.0%	49.0%
2011	73.3%	60.2%	94.4%	93.9%	48.8%
2012	73.1%	59.7%	94.3%	93.9%	48.7%
2013	72.9%	59.2%	94.3%	93.9%	48.6%
2014	72.6%	58.6%	94.4%	93.8%	48.5%
2015	72.3%	58.2%	94.4%	93.8%	48.4%
2016	72.0%	57.8%	94.4%	93.8%	48.2%
2017	71.6%	57.6%	94.5%	93.8%	48.1%
2018	71.2%	57.4%	94.5%	93.8%	47.9%
2019	70.7%	57.2%	94.6%	93.9%	47.8%
2020	70.3%	57.0%	94.6%	94.0%	47.5%
2021	69.8%	56.8%	94.6%	94.0%	47.2%
2022	69.3%	56.6%	94.6%	94.0%	46.9%
2023	68.8%	56.4%	94.7%	94.0%	46.6%
2024	68.4%	56.2%	94.7%	94.0%	46.3%
2025	68.0%	56.0%	94.7%	94.0%	46.0%

Source: ILO, Credit Suisse

Exhibit 28: Labour supply: urban and rural sectors

Projection after 2009

	Total				Urban				Rural				Urban/Rural Labour Supply Ratio	Urban Rural Difference in Economic Activity Rate
	15+ Population (Million)	Economic Activity Rate	Labour Supply (Million)	Growth Rate of Labour Supply	15+ Population (Million)	Economic Activity Rate	Labour Supply (Million)	Growth Rate of Labour Supply	15+ Population (Million)	Economic Activity Rate	Labour Supply (Million)	Growth Rate of Labour Supply			
1990	818	79.2%	648		228	76.4%	174		590	80.9%	477		0.37	4.5%
1991	831	79.2%	658	1.6%	239	74.7%	178	2.3%	593	81.0%	480	0.7%	0.37	6.4%
1992	844	79.1%	667	1.3%	249	73.1%	182	2.3%	594	81.3%	483	0.6%	0.38	8.2%
1993	855	79.0%	675	1.2%	261	71.7%	187	2.5%	594	81.7%	485	0.5%	0.38	10.0%
1994	866	78.9%	683	1.1%	272	70.2%	191	2.4%	593	82.3%	488	0.5%	0.39	12.0%
1995	877	78.8%	691	1.1%	285	68.7%	196	2.2%	592	82.8%	490	0.5%	0.40	14.1%
1996	889	78.6%	698	1.1%	297	69.0%	205	4.7%	592	82.8%	490	0.0%	0.42	13.8%
1997	901	78.4%	706	1.1%	309	69.1%	214	4.3%	591	82.9%	490	0.0%	0.44	13.8%
1998	913	78.1%	713	1.1%	322	68.8%	222	3.9%	591	83.0%	490	0.0%	0.45	14.2%
1999	927	77.8%	721	1.1%	337	68.3%	230	3.6%	590	83.0%	490	-0.1%	0.47	14.8%
2000	941	77.4%	729	1.1%	352	67.4%	237	3.3%	589	83.1%	489	-0.1%	0.49	15.6%
2001	957	77.0%	737	1.1%	370	66.6%	246	3.7%	587	83.6%	491	0.3%	0.50	17.1%
2002	974	76.5%	745	1.1%	389	65.7%	256	3.8%	585	83.7%	490	-0.3%	0.52	18.1%
2003	991	75.9%	752	1.0%	409	64.6%	264	3.5%	582	83.9%	488	-0.3%	0.54	19.3%
2004	1,008	75.3%	759	1.0%	431	63.4%	273	3.3%	577	84.4%	487	-0.1%	0.56	21.0%
2005	1,024	74.8%	766	0.9%	452	62.3%	282	3.2%	571	84.9%	485	-0.5%	0.58	22.6%
2006	1,038	74.4%	772	0.8%	467	62.4%	292	3.5%	570	84.3%	481	-0.8%	0.61	21.9%
2007	1,051	74.0%	778	0.7%	482	62.6%	302	3.5%	569	83.8%	476	-0.9%	0.63	21.2%
2008	1,063	73.8%	784	0.8%	497	62.5%	311	3.0%	566	83.6%	473	-0.8%	0.66	21.0%
2009	1,074	73.7%	792	1.0%	512	62.6%	320	3.0%	562	83.4%	469	-0.8%	0.68	20.9%
2010	1,085	73.5%	798	0.7%	527	63.3%	334	4.2%	557	83.2%	464	-1.1%	0.72	19.9%
2011	1,095	73.3%	803	0.7%	545	63.6%	347	3.8%	550	82.9%	456	-1.6%	0.76	19.3%
2012	1,105	73.1%	808	0.6%	562	63.9%	359	3.7%	542	82.7%	448	-1.8%	0.80	18.8%
2013	1,114	72.9%	811	0.5%	580	64.1%	372	3.5%	533	82.4%	440	-1.9%	0.85	18.4%
2014	1,122	72.6%	815	0.4%	599	64.2%	384	3.4%	524	82.2%	430	-2.1%	0.89	18.0%
2015	1,130	72.3%	817	0.3%	617	64.3%	397	3.2%	513	81.9%	420	-2.3%	0.94	17.6%
2016	1,137	72.0%	819	0.2%	636	64.5%	410	3.4%	501	81.4%	408	-2.9%	1.01	16.9%
2017	1,144	71.6%	819	0.1%	655	64.6%	424	3.2%	489	80.9%	396	-3.1%	1.07	16.3%
2018	1,151	71.2%	819	0.0%	675	64.7%	437	3.1%	475	80.4%	382	-3.3%	1.14	15.8%
2019	1,157	70.7%	818	-0.1%	696	64.7%	450	3.0%	461	79.9%	369	-3.6%	1.22	15.3%
2020	1,163	70.3%	817	-0.1%	717	64.6%	463	3.0%	446	79.4%	354	-3.9%	1.31	14.8%
2021	1,169	69.8%	816	-0.2%	739	64.6%	478	3.1%	430	78.7%	338	-4.5%	1.41	14.1%
2022	1,174	69.3%	814	-0.2%	762	64.6%	492	3.1%	412	77.9%	321	-4.9%	1.53	13.3%
2023	1,180	68.8%	812	-0.2%	786	64.6%	508	3.1%	394	77.2%	304	-5.3%	1.67	12.6%
2024	1,185	68.4%	810	-0.2%	810	64.6%	524	3.2%	375	76.4%	287	-5.8%	1.83	11.8%
2025	1,191	68.0%	809	-0.2%	836	64.7%	541	3.2%	355	75.7%	268	-6.3%	2.01	11.0%

Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistical Yearbook (2010), Credit Suisse

### Exhibit 29: Labour demand growth: urban and rural sectors

Projection after 2009

	Total	Urban	Rural
1991	1.1%	2.5%	0.7%
1992	1.0%	2.3%	0.6%
1993	1.0%	2.2%	0.5%
1994	1.0%	2.1%	0.5%
1995	0.9%	2.1%	0.5%
1996	1.3%	4.6%	0.0%
1997	1.3%	4.3%	0.0%
1998	1.2%	4.0%	0.0%
1999	1.1%	3.7%	-0.1%
2000	1.0%	3.3%	-0.1%
2001	1.3%	3.4%	0.3%
2002	1.0%	3.5%	-0.3%
2003	0.9%	3.5%	-0.3%
2004	1.0%	3.3%	-0.1%
2005	0.8%	3.2%	-0.5%
2006	0.8%	3.6%	-0.8%
2007	0.8%	3.7%	-0.9%
2008	0.6%	2.9%	-0.8%
2009	0.7%	3.0%	-0.8%
2010	0.9%	3.8%	-1.1%
2011	0.8%	4.3%	-1.6%
2012	0.9%	4.5%	-1.8%
2013	1.0%	4.7%	-1.9%
2014	1.0%	4.8%	-2.1%
2015	0.9%	4.5%	-2.3%
2016	0.9%	4.7%	-2.9%
2017	0.7%	4.3%	-3.1%
2018	0.5%	4.0%	-3.3%
2019	0.4%	3.8%	-3.6%
2020	0.3%	3.6%	-3.9%
2021	0.2%	3.7%	-4.5%
2022	0.2%	3.6%	-4.9%
2023	0.2%	3.6%	-5.3%
2024	0.2%	3.6%	-5.8%
2025	0.2%	3.5%	-6.3%

Source: UN, ILO, China Labour Statistical Yearbook (2009), China Statistical Yearbook (2010), Credit Suisse
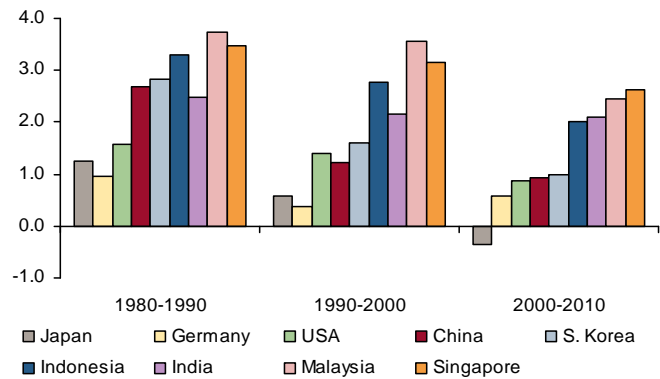
Exhibit 30: Population growth

Rates per annum (%) – Selected Advanced and Asian countries

Legend: Germany, Japan, S. Korea, China, USA, Indonesia, India, Malaysia, Singapore
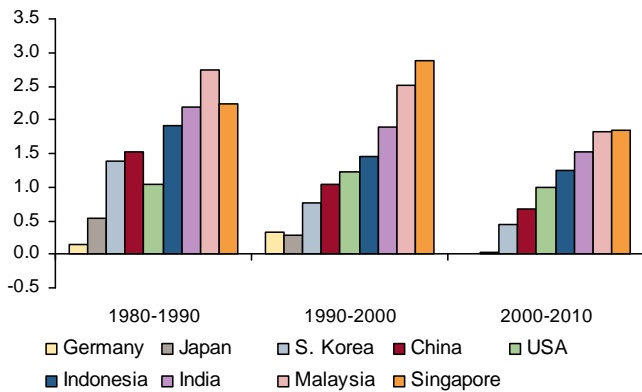
Source: Credit Suisse, UN

Exhibit 31: Labour force growth

Rates per annum (%) – Selected Advanced and Asian countries

Legend: Japan, Germany, USA, China, S. Korea, Indonesia, India, Malaysia, Singapore

Source: Credit Suisse, ILO

Exhibit 32: Total fertility rate

Children per woman – Selected Advanced and Asian countries

Legend: S. Korea, Japan, Singapore, Germany, China, USA, Indonesia, Malaysia, India
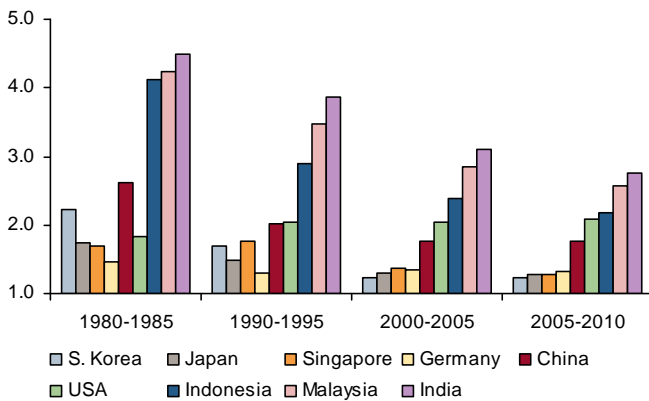
Source: Credit Suisse, UN

Exhibit 33: Life expectancy at birth

Years – Selected Advanced and Asian countries

Legend: India, Indonesia, China, Malaysia, USA, S. Korea, Germany, Singapore, Japan
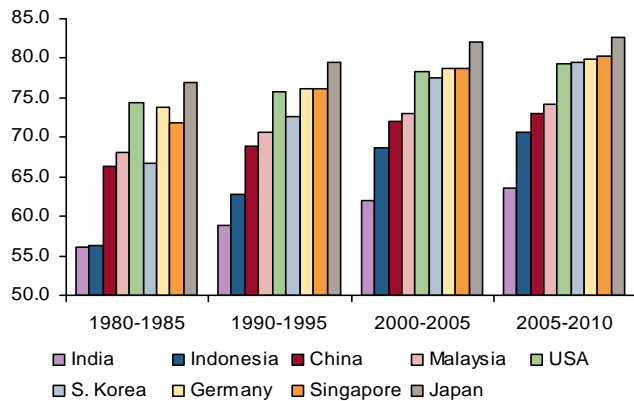
Source: Credit Suisse, UN
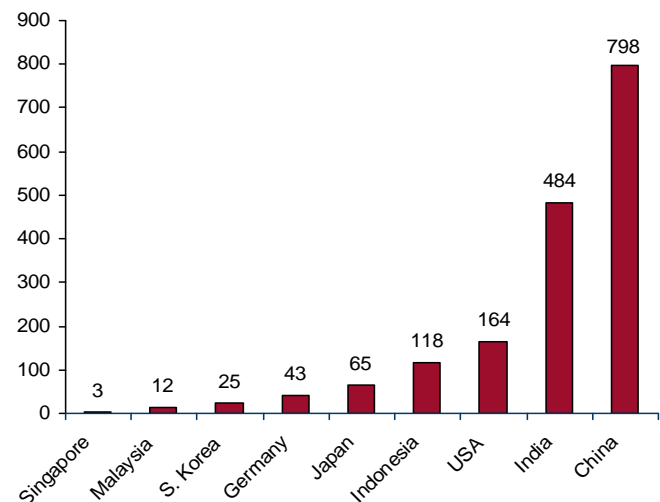
Exhibit 34: Economic activity rate

2010 – Selected Advanced and Asian countries (%)

Legend: Men, Women
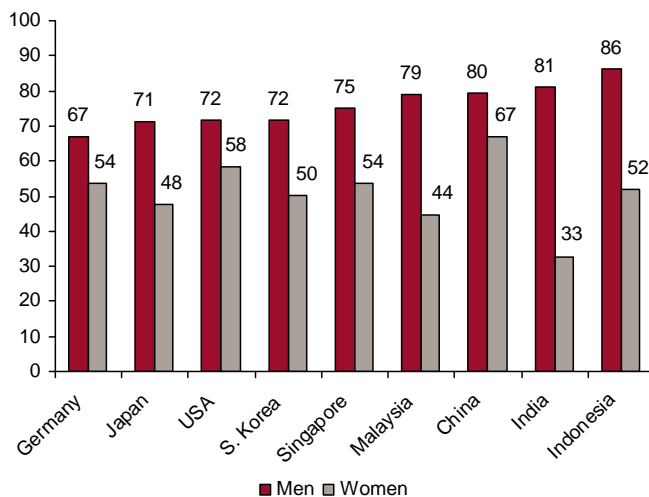
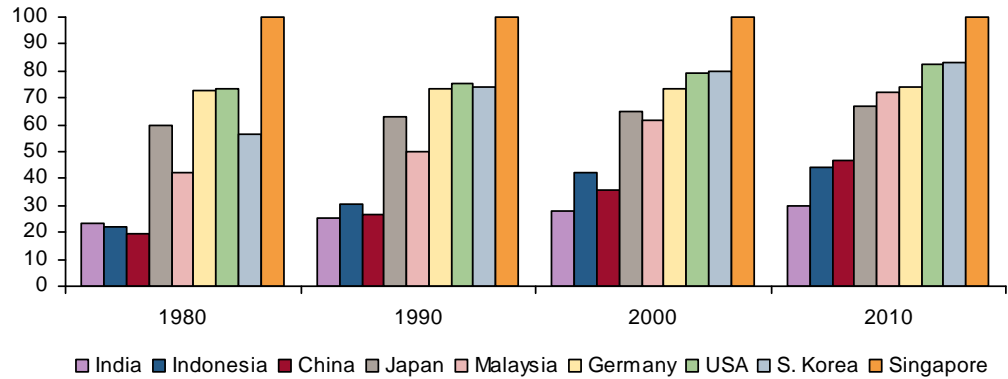Source: Credit Suisse, ILO

Exhibit 35: Labour force

2010 – Selected Advanced and Asian Countries (In millions)

Singapore 3, Malaysia 12, S. Korea 25, Germany 43, Japan 65, Indonesia 118, USA 164, India 484, China 798

Source: Credit Suisse, ILO

China: The turning point of the labour market

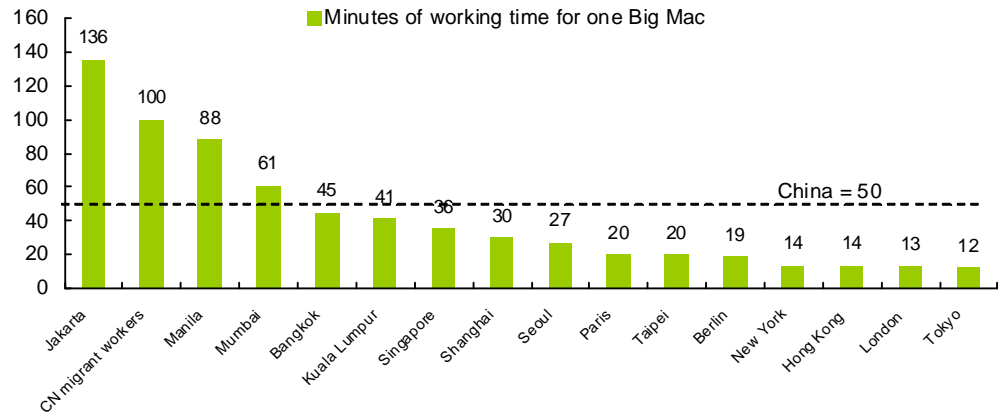## Exhibit 36: Urban population

Percent of total population – Selected Advanced and Asian countries

Source: Credit Suisse, UN

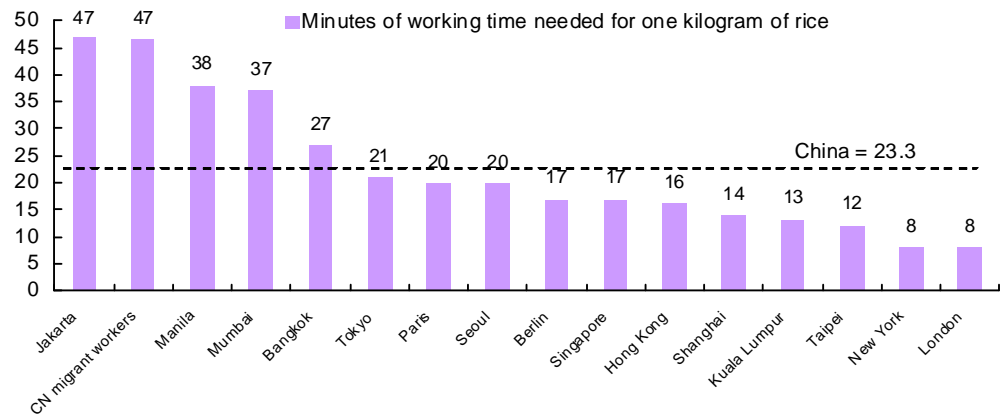## Exhibit 37: Working minutes needed to buy one Big Mac

Amount of time that an average worker must work to earn enough to buy a Big Mac

Source: Credit Suisse, The Economist Magazine

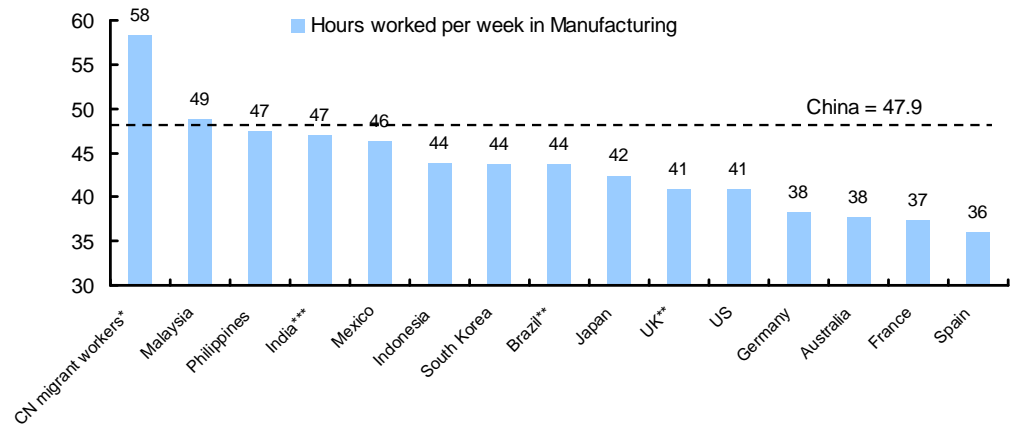## Exhibit 38: Working minutes needed to buy one kilogram of rice

Amount of time that an average worker must work to earn enough to buy one kilogram of rice

Source: Credit Suisse, The Economist Magazine

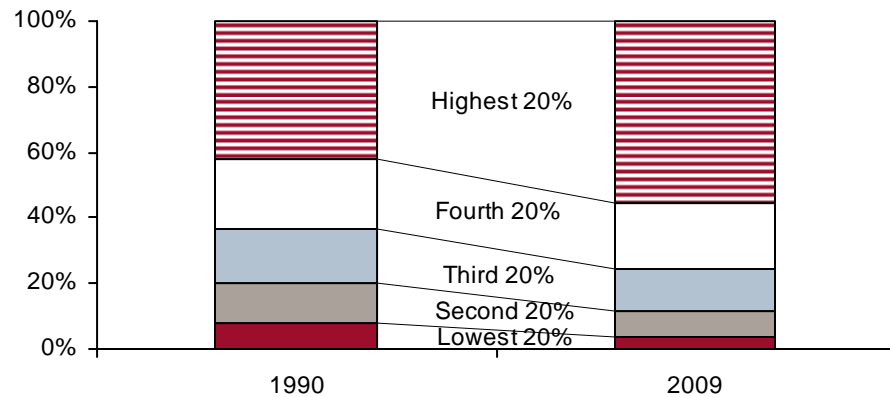### Exhibit 39: Hours per week in manufacturing

2008 (*2009 for China migrant workers, **2007 for UK & Brazil, ***2006 for India)

Source: Credit Suisse, ILO, NBS Migrant Workers Survey

Exhibit 40: Income distribution

Share of household disposable income held by different groups ordered by income levels

Source: Credit Suisse, Euromonitor

CREDIT SUISSE

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Disclosure Appendix

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