



China Economic Quarterly Q1 2023

Mega trends of China's population
and labour force





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■ Highlights

- In 2022, China's population saw a negative growth for the first time, occurring earlier than the forecasted year of 2025.
- The labour force, the number of 16 to 59 year olds, peaked in 2010, followed by a total decline of 45 million between 2010-2020 (from 939.68mn to 894.36mn). In the same period, however, the total number of migrant workers increased by over 43 million.
- The number of people that have completed higher education and secondary vocational education have increased substantially. At the end of 2022, the number of graduate students (including doctors), undergraduate and junior college students and students with secondary vocational education totalled 58.09mn.
- In recent years, there has been a sharp rise in China's overall labour productivity. While there is still a large gap between that of China and some developed economies, there is huge scope for improvement.
- China has a long way to go to reach the urbanisation level of developed countries, and its population of 133mn migrant workers will be the country's key driver in achieving that. However, the number of migrant workers may have reached its peak and labour shortages may become the norm.

■ China's total population is declining and the size of the country's labour force has also decreased

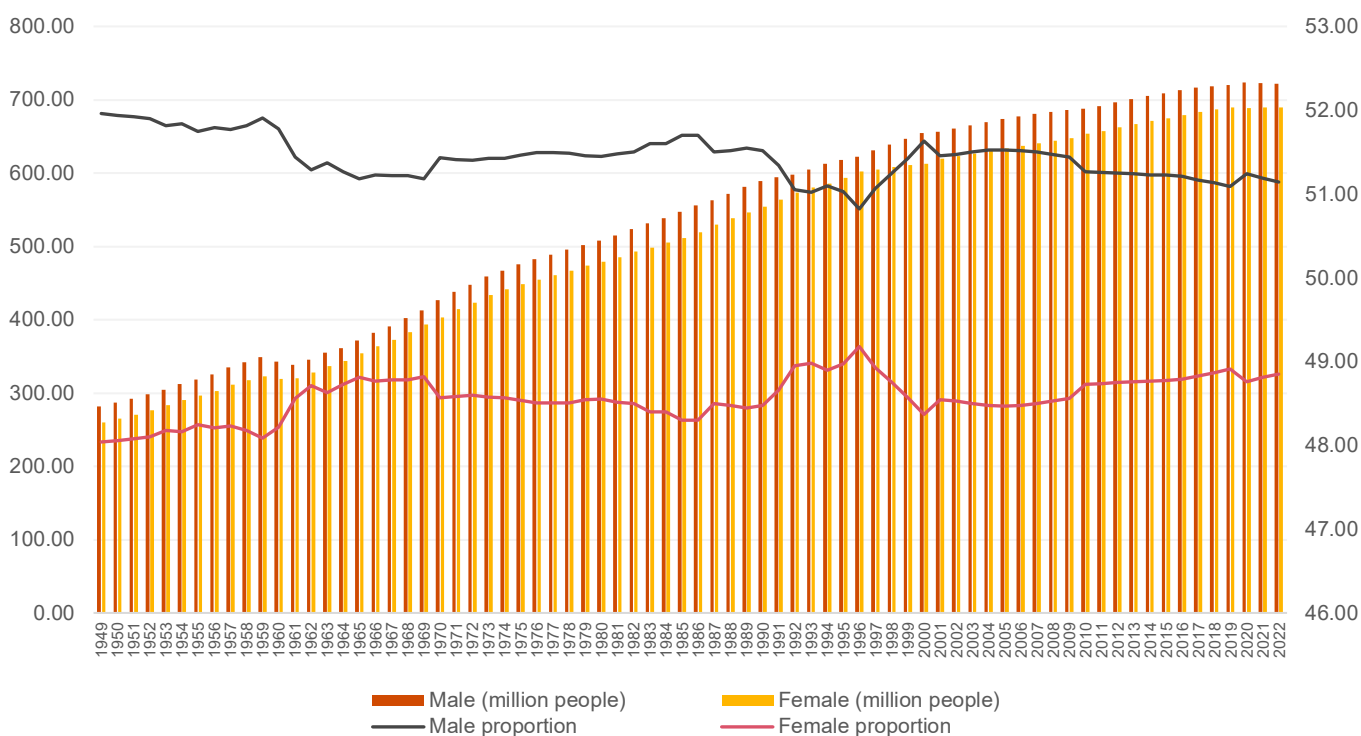
In 2022, China's national population decreased by 850,000 from 2021, marking the first negative annual growth in 61 years.

According to official data, as of the end of 2022, China's total population

reached 1,412mn, with 9.56mn births and a birth rate of 6.77‰. With 10.41mn deaths and a death rate of 7.37‰, the natural growth rate was -0.60‰. There were 32.37mn more men than women. In terms of gender composition, the

male population reached 722.06 million while the female population reached 689.69 million. With this, the sex ratio of the total population was 104.69 males to 100 females.

Gender population structure and its proportion

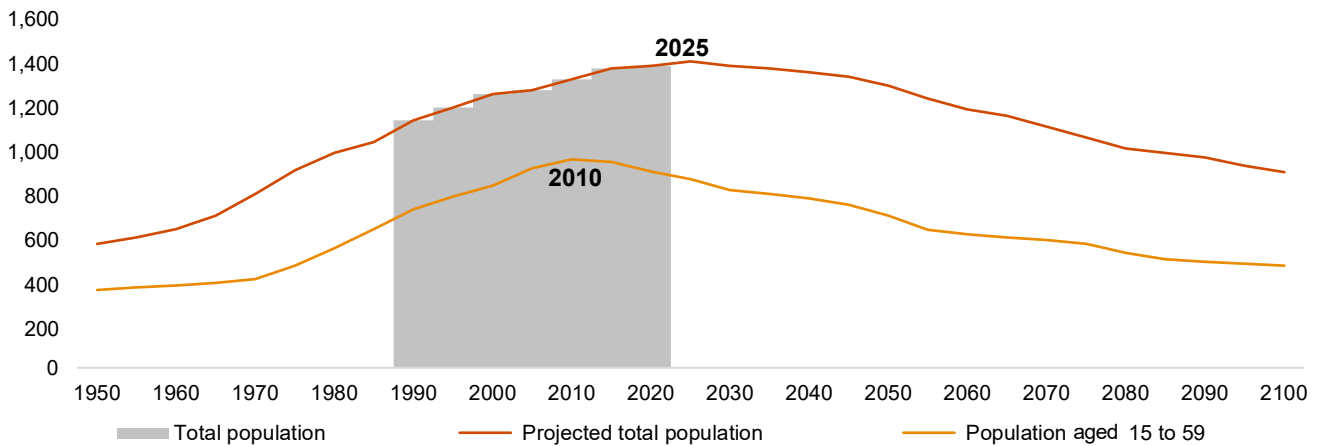


Source: Wind (National Bureau of Statistics)

The occurrence of a negative population growth in China was earlier than previously predicted for 2025. The main reason for the sharp decline is

likely the impact the COVID-19 pandemic and uncertain economic prospect that weighed on birth rate.

Projected total population (Unit: million people)



Source: CAI Fang, Chinese Academy of Social Sciences 2021; National Bureau of Statistics; China Economic Quarterly Q2 2021; Business implications of the seventh national population census

According to a report by the United Nations Population Fund, it is predicted that by mid-2023, India will surpass China to become the most populous country. However, due to the uncertainty of India's population data, the United Nations cannot determine a more precise timing when India's population will surpass China's.

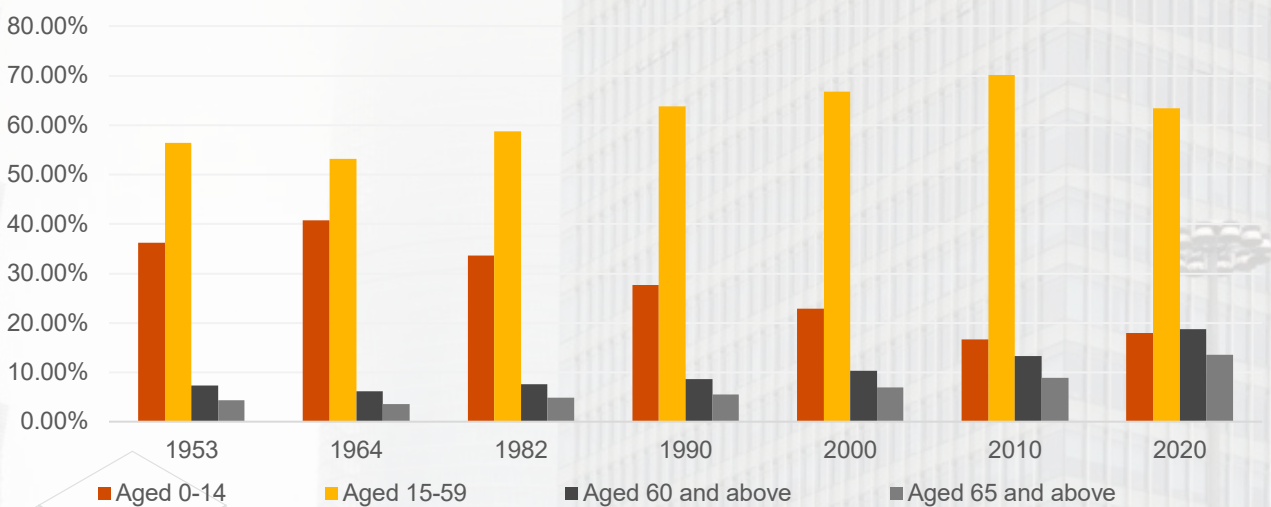
The size of China's labour force, those aged 16 to 59, has been decreasing annually after peaking in 2010.

As of the end of 2022, the population aged 16 to 59 in China reached 875.56mn, accounting for 62% of the total population. At the end of 2020, these figures were 894.36mn and 63.35%, respectively. In 2019, before the outbreak of the pandemic, the same

figures were 896.40mn and 64%. The size and proportion of the labour force to the total population have been declining continuously.

According to data from the 10-year census, China's labour force reached its peak at the end of 2010 with 939.68mn people aged 16 to 59, accounting for 70.14% of the total population.

The proportion of population by different age groups in the process of population census over the years



Source: National Bureau of Statistics

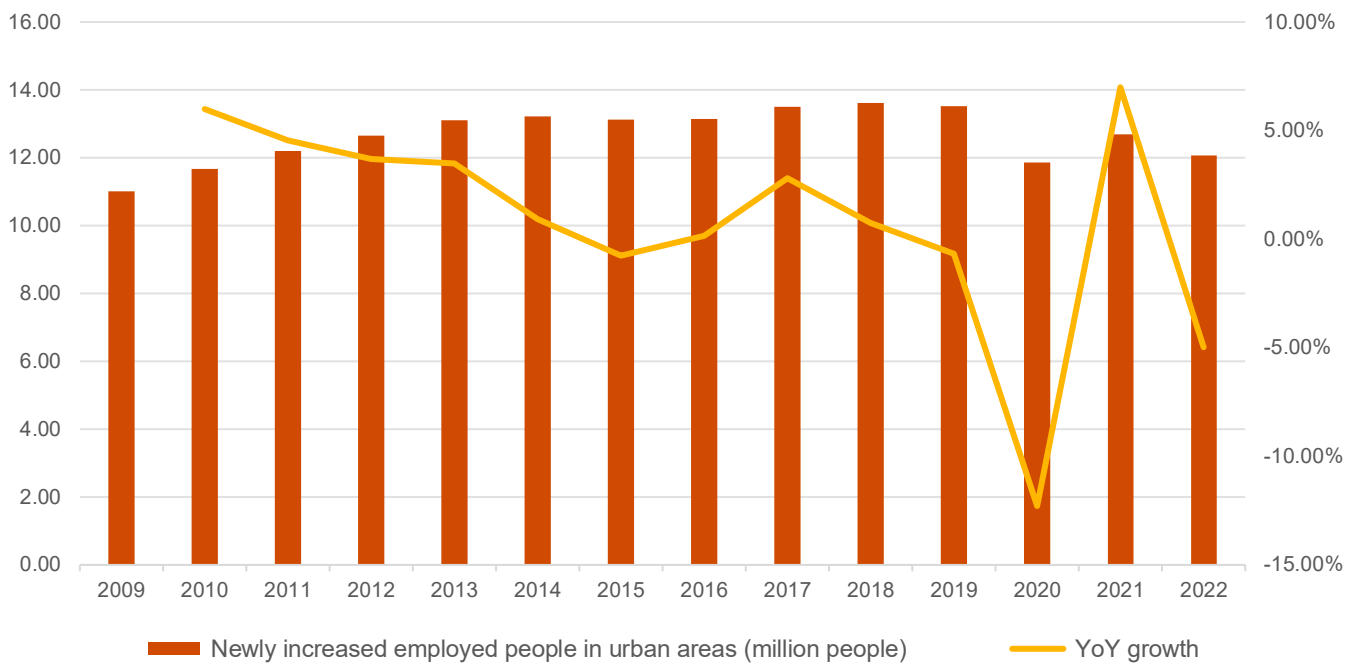
In terms of employment, although the size of China's labour force peaked in 2010, the number of people newly employed in urban areas reached a new high of 13.61mn in 2018, implying that new urban employment has also reached its peak.

Taking 2010 as an example, China's total population was approximately 1.34bn, with a labour force of around

939.68mn. The total number of employed individuals in urban and rural areas, including migrant workers, was approximately 790mn. Among them, the total number of migrant workers reached 242.23mn; at the time, this was calculated based on the sum of two components – migrant workers who worked outside their hometown for over six months in a year and local migrant workers who worked in non-agricultural

industries within their own town or village for more over six months. A large number of migrant workers have lived and worked in cities for a long time, especially those born in the 1980s and 1990s. As they do not have a household registration (hukou) that's local to the city they work in, they are still counted as migrant workers.

Newly increased employed people in urban areas by the year end



Source: Wind (Ministry of Human Resources and Social Security of the People's Republic of China)

While the peak occurred in 2010, China's demographic dividend, though diminishing, is still evident; there is still a large surplus in the labour force, i.e. those unemployed, and the employment of rural labour force is still insufficient (with relative low employment participation).

Furthermore, in 2010, the difference between China's 9.4bn labour force and the employed population of 7.9bn was 150mn. Approximately two-thirds, about 94.65mn of those unemployed were students, including high school, vocational education, undergraduate and college students

between the ages of 16 and 22, as well as graduate and doctoral students over the age of 22. The number of students aged 16 to 22 was approximately 92.57mn, and includes 6.62mn enrolled in undergraduate and college programmes and 22.32mn in vocational education. There were 24.27mn enrolled in regular high schools. The number of graduate students aged over 22 was 2.08mn.

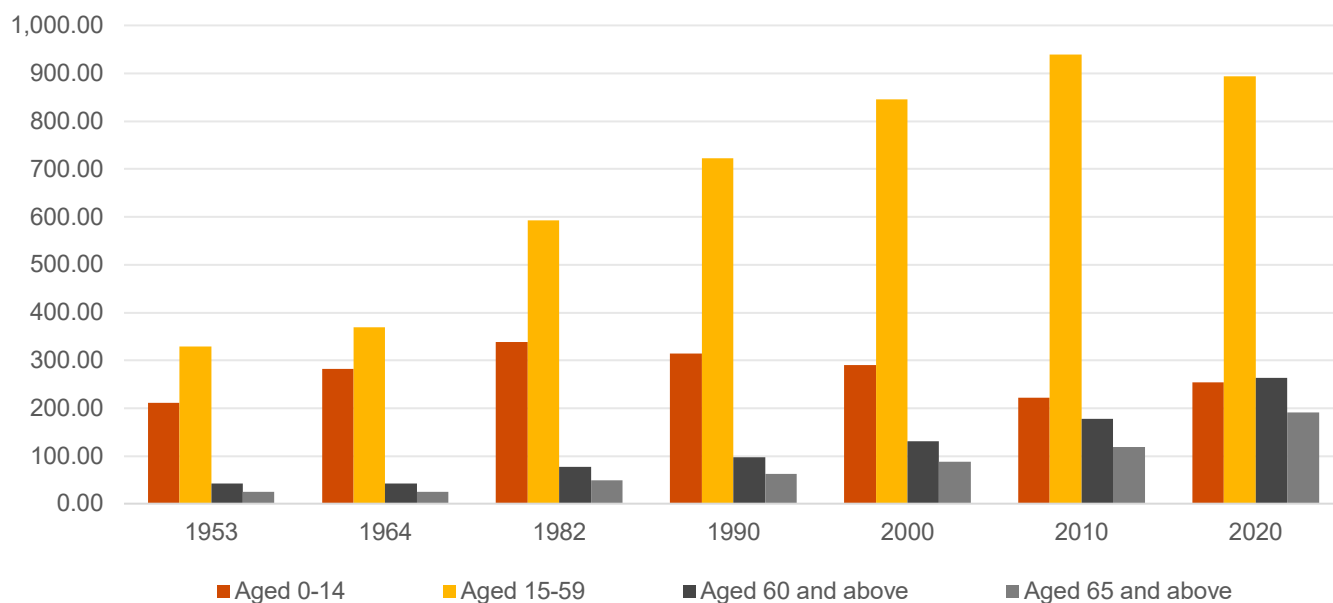
Based on the aforementioned approximates, the unemployed labour force in China in 2010 reached around 55mn, accounting for 5.32% of the total labour force after excluding students. At

the same time, many of the 242mn migrant workers did not work full-time unlike their urban counterparts.

By the end of 2020, China's total population grew to 1.41bn, but the size of the labour force decreased to 894.36mn, 45.30mn lower than that in 2010, accounting for 63.35% of the total population, down about 7% from 2010.



Number of people by different age groups in the process of population census over the years (Unit: million people)



Source: National Bureau of Statistics

*The population of each age group is calculated as a percentage of the total population

Meanwhile, according to a report (the Statistical Communiqué of Human Resources and Social Security Development of China 2020) released by the Ministry of Human Resources and Social Security, the total number of employed persons in China reached 750.64mn by the end of 2020. Based on this, approximately 143.72mn people in the country were unemployed. Among them, 103.57mn were students. Overall, nearly 40mn people were unemployed, accounting for 4.49% of the total labour force, excluding students. In addition, the total number of rural migrant workers in China increased to 285.6mn in 2020, an increase of over 43mn from 2010. This may be the main reason for the relatively stable labour force.

The proportion of rural migrant workers in the total rural population is 60.2%, much higher than the proportion of employed workers in the total urban population at 49.89%.

By the end of 2022, the total labour force in China had dropped to 875.56mn, with 733.51mn employed workers, which includes 295.62mn rural migrant workers.

It is worth noting that although the total labour force in China decreased by about 45mn from 2010 to 2020, the total number of rural migrant workers increased by over 43mn in 2020 and

has since continued to expand moderately. In 2010, the total rural population was about 671.13mn, and rural migrant workers made up 242.23mn, accounting for approximately 36.09% of the total population. In 2022, the total rural population decreased to 491.04mn while the total number of rural migrant workers reached 295.62mn, accounting for 60.20% of the total population.

This means that more surplus labour from rural areas has been released, and more peasants are not only engaged in agricultural production, but also working locally or in other regions. There are multiple reasons behind this trend including poverty alleviation policies and economic development. More flexible employment opportunities, higher wages and improved material living standards have prompted rural migrant workers to seek more income.

In contrast, China's total urban population in 2022 was 920.71mn with 459.31mn employed workers, accounting for 49.89% of the total urban population. In contrast, rural migrant workers make up a much higher proportion of the total rural population at 60.2%.

Despite the difference in definitions of employed rural and urban works, the participation rate of the rural labour

force in work is relatively high. With the continuous promotion of urbanisation and the decrease in China's total population, the rural population may also decrease, potentially leading to reduced number of rural migrant workers in the future.

On the economic impact of a negative population growth and labour force decline, Cai Fang, a population expert at the Chinese Academy of Social Sciences, has pointed out that the impact is mainly on the demand side, including exports, investment and consumption. In terms of exports, the decline in population leads to a labour shortage, which in turn reduces the competitiveness of labour-intensive products in export markets. In terms of investment, the decline in population leads to a slowdown in economic growth, weakened comparative advantages and reduced corporate investment. When the development of the real economy slows down, the demand for infrastructure investment will also weaken. With respect to consumption, the population is in effect the sum of consumers, and when the population itself grows rapidly, so will consumption, and vice versa. Changes to the age demographics of the population will also affect consumption, and as the population ages, the demand, ability, and inclination to spend will all decline.

■ Population education level and labour productivity have significantly improved

While Professor Cai Fang's views are supported by academic theory, the negative population and labour force growth will not reverse China's trend of sustained economic growth, nor will it affect the country's continued transformation and upgrade of its economy. It will also not hinder China from eventually becoming a developed economy that's led by technological innovation.

Another renowned Chinese economist and the President of the China (Shenzhen) Development Institute, Fan Gang, pointed out that the success of China's economic development over the past 40 years was not only due to its initial comparative advantages (the **theory of comparative advantage**), such as cheap labour and resources, but more importantly, was due to its late-development advantages. By participating in international exchanges and introducing international knowledge, China has rapidly caught up

with its international counterparts and made progress in various fields and industries. The **theory of late-development advantage** refers to the ability of less developed countries to achieve rapid, yet sustainable growth by learning, introducing, absorbing, and utilising existing knowledge and technology at a lower cost and with faster implementation speed.

Therefore, China's future development will continue to rely on its late mover advantages and ultimately achieve a stage where high-tech industries intensive in human or knowledge capital will dominate. This is because the gap between less developed countries and developed countries ultimately lies in the level of science and technology, the gap in human capital, rather than population size, and the gap in knowledge structure and innovation capabilities. While population size is one of the many conditions for attracting foreign technology, China, despite its

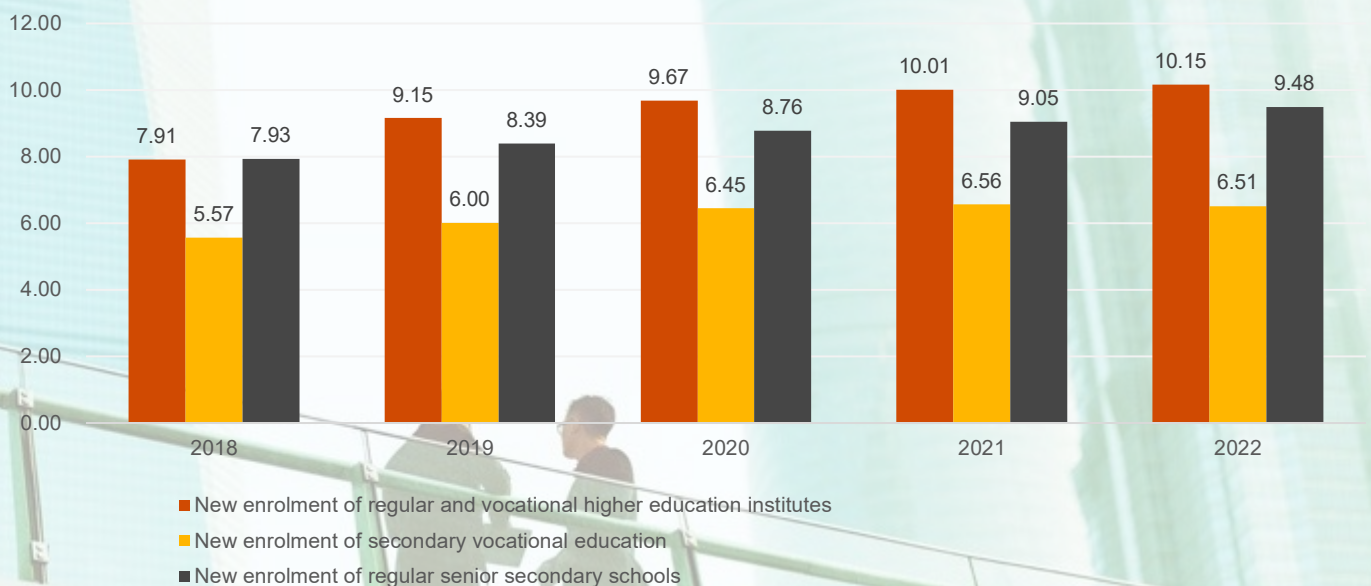
negative population growth, still has a sizable population.

The number of people with higher and secondary vocational education has significantly increased.

China deeply understands that nurturing talents through education is a key way to improve science and technology levels. As such, education is highly valued by everyone, from the Central Government to local governments and families.

In 1978, as China began to reform and open up, the total number of students in higher education institutions (including graduate, undergraduate, and junior college students) was around 850,000 and the number of students in secondary vocational education schools was around 880,000, bringing the total to 1.73mn, accounting for 0.2232% of China's population at that time.

Enrolment in education (2018-2022; unit: million people)



Source: Wind (Ministry of Education); National Bureau of Statistics

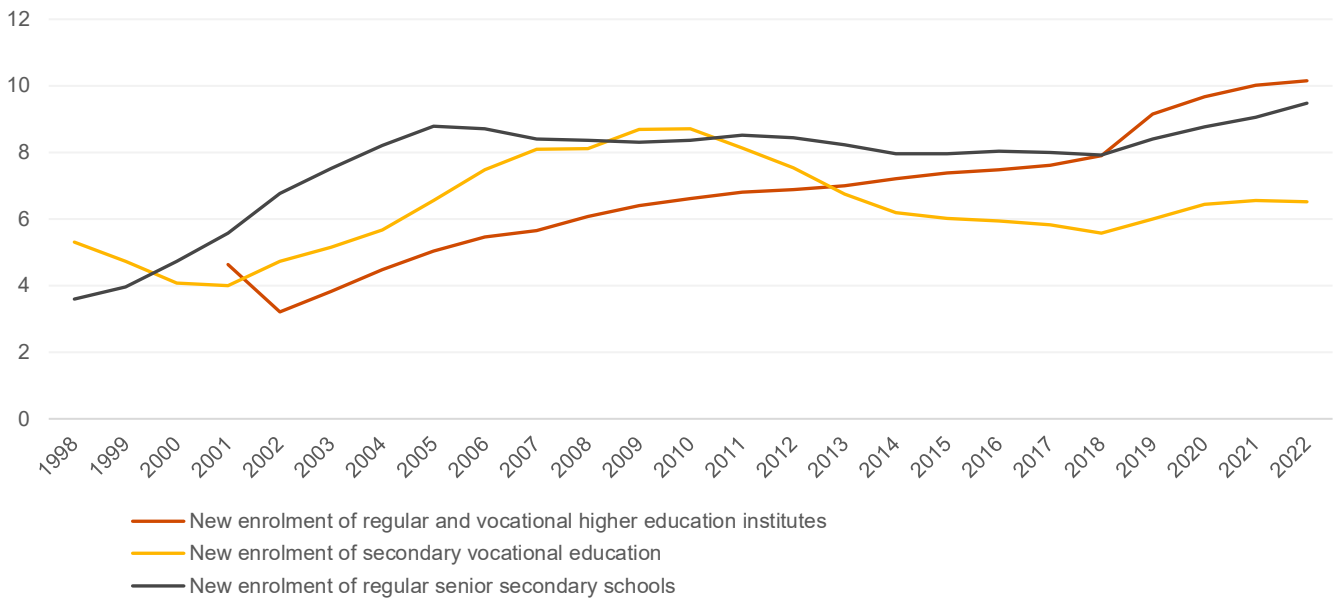
By the end of 2022, the number of graduate students (including doctoral students) in Chinese universities reached 3.65mn. 36.59mn students were completing their undergraduate and junior college qualifications and 17.85mn students undergoing secondary vocational education. The total number of students receiving higher and secondary vocational

education in school reached 58.09mn, accounting for 4.11% of the total population.

In addition, according to statistics from the Ministry of Education, as of the end of 2021, the population in China pursuing higher education at any of its four levels – college diploma, bachelor's degree, master's degree, and

doctoral degree – reached 240 million. The average length of education for those newly added to the labour force was 13.8 years. This has led to significant improvement in the quality structure of the labour force. China's gross enrolment ratio for higher education increased from 30% in 2012 to 57.8% in 2021.

Enrolment in education (1998-2022; unit: million people)



Source: Wind (Ministry of Education); National Bureau of Statistics

As of the end of 2021, universities in China have won over 60% of the three major national science and technology awards: the National Natural Science Award, the National Technology Invention Award, and the National Science and Technology Progress Award. Over 60% of the country's basic

research and over 80% of the national natural science fund projects are undertaken by local universities. Universities have provided key technologies for critical areas such as high-speed rail, nuclear power, biological breeding, vaccine research and development, and national defence

and military industry. They have also participated in the development of national projects such as supercomputers, Beidou satellite navigation system and Shenzhou series.



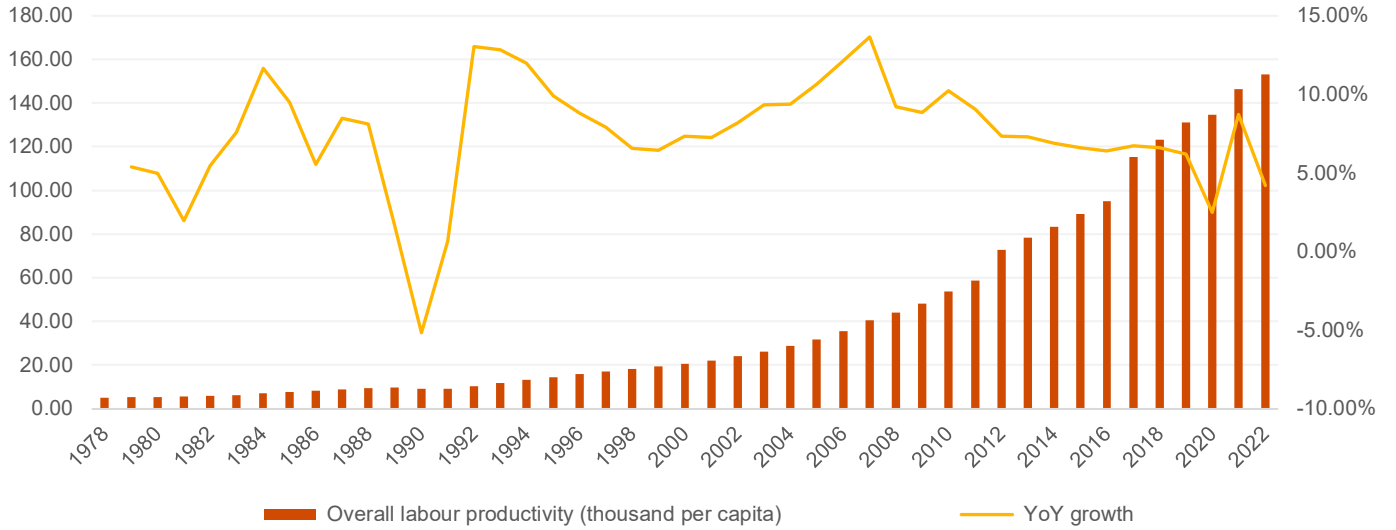
Overall labour productivity has increased significantly, with room remaining for further growth.

The overall labour productivity indicator reflects the improvement in labour

allocation efficiency and human capital level, as well as the average productivity of all workers and the improvement in technology equipment and management systems. In 2022, China's overall labour productivity was

152,977 yuan per person, an increase of 4.2% from the previous year, where the overall labour productivity is GDP divided by the average number of employees in a year, calculated at 2020 prices.

Overall labour productivity



Source : Wind (National Bureau of Statistics)





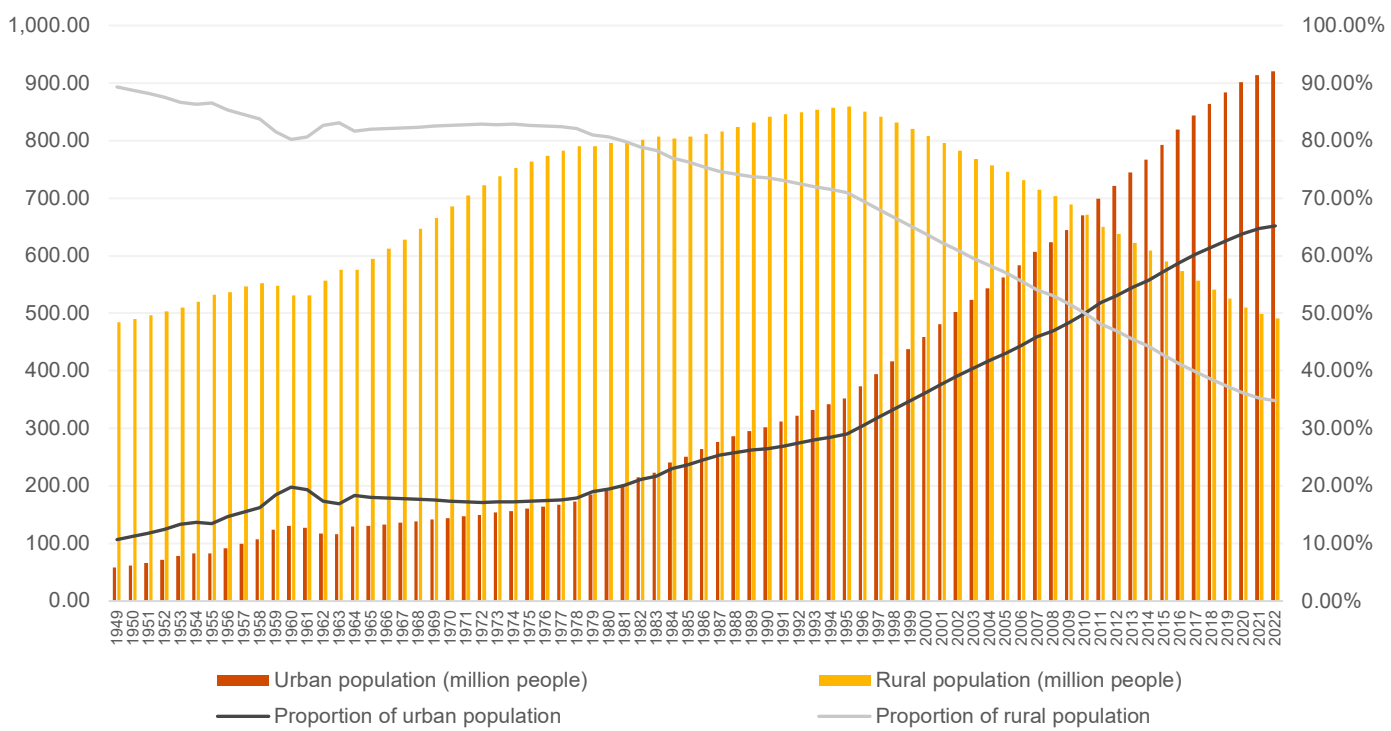
■ There is still an urbanisation gap between China and developed countries, and its 133mn migrant worker population will be the key driver

Compared with the urbanisation rate of over 80% in developed countries, where OECD members had a rate of 83% in 2021, China's urbanisation rate was 65% at the end of 2022. This indicates that there is still significant room for

development driven by the population segment of 172mn migrant workers who have moved out from rural areas. As mentioned, the rural population in China is still at 491mn, of which, the total number of migrant workers is

295.62mn, which includes 123.72mn local migrant workers and 171.9mn migrants working in areas outside their hometown.

Urban and rural populations and their proportions



Source : Wind (National Bureau of Statistics)

China's urbanisation has developed rapidly in recent years, especially with measures such as reforms to the hukou system, which has effectively promoted the mobility of the rural population to urban areas. According to data from the Ministry of Public Security, during the 'Thirteenth Five-Year Plan' period of 2016 to 2020, over 100mn agricultural migrant workers were granted urban citizenship (hukou), which increased China's urbanisation rate by approximately 10%. In the future, if the 133mn migrant workers who already reside in urban areas (not including

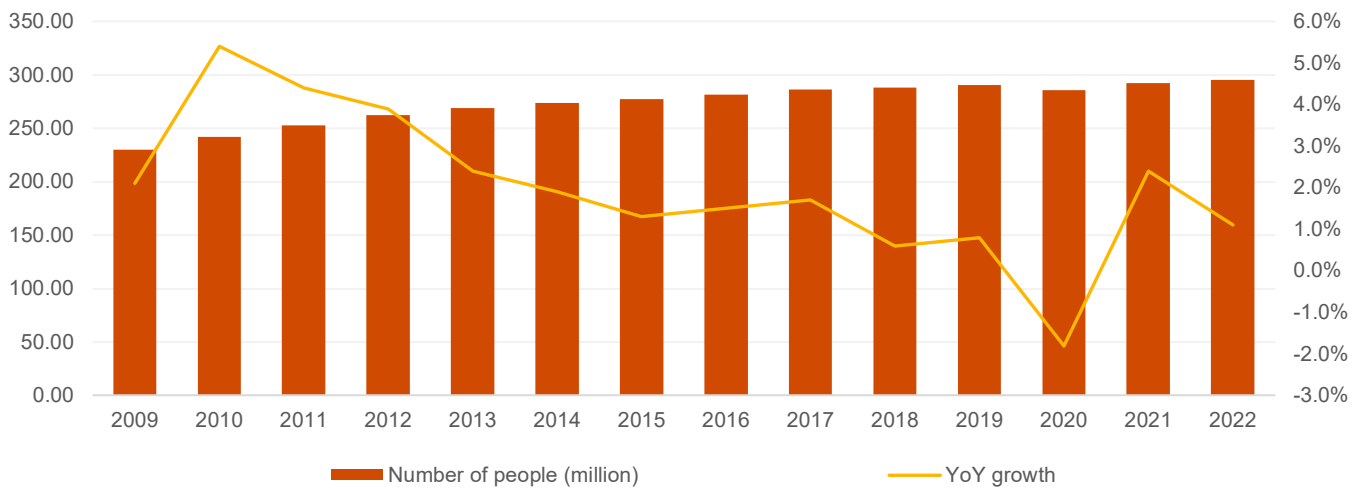
some immediate family members, i.e., children and spouses) are allowed to register as local residents, it will further increase the urbanisation rate by 10-15%. With that, China's urbanisation rate will be able to catch up with that of OECD countries.

Reforms in national policies have eliminated some, but not all, institutional barriers for migrant workers that have kept them from gaining hukou in the cities where they reside. The '14th Five-Year Plan' for new urbanisation implementation, issued by the National

Development and Reform Commission in 2022, stipulated relaxing residency restrictions except for a few super large cities, where the permanent population is greater than 10mn, and implementing a registration system based on the place of habitual residence. The plan also completely lifted the residency restrictions for cities with a permanent population under 3mn, ensuring that migrant workers, local or otherwise, are treated equally in terms of entering and residing in urban areas.



Scale and growth rate of rural migrant workers



Source: Wind (National Bureau of Statistics)

In addition, in 2022, the number of rural migrant workers in the country reached a high of 296mn with signs of peaking, indicating that labour shortages may become the norm.

As mentioned earlier, in 2022, employed migrant workers accounted for 60.2% of the total rural population. According to data from the 2020 population census, the labour force accounted for 63.35% of the total population. That is to say, only 3% of the rural labour force is unemployed, meaning that there is almost no surplus labour resource in rural areas. In the future, the trend of labour shortages in China may become increasingly apparent, especially in industries that

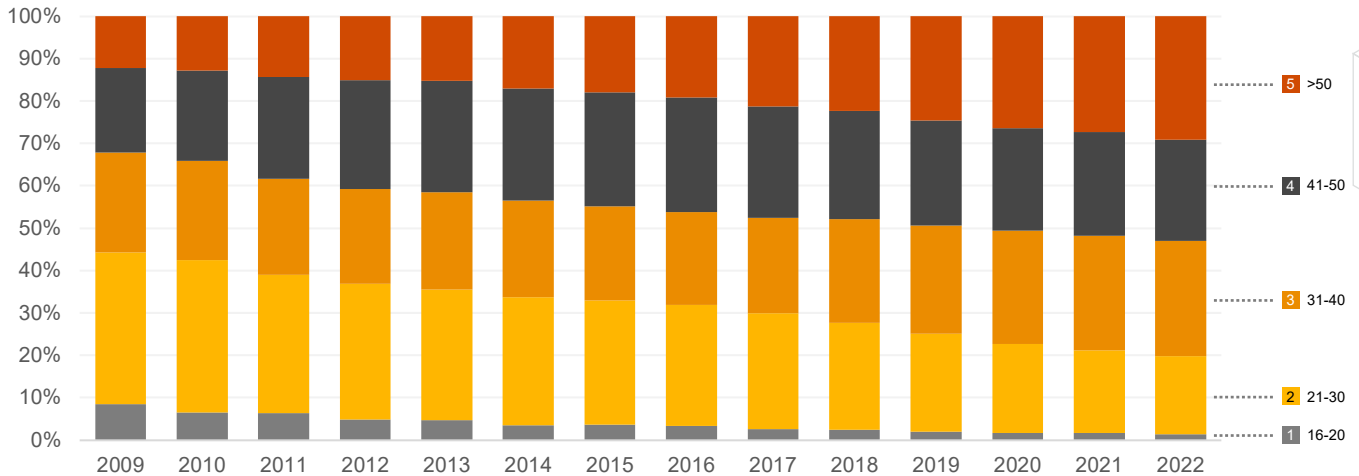
employ more migrant workers, where labour costs and shortages will become more pronounced.

According to the '2022 Survey Report on Migrant Workers', among all migrant workers, males accounted for 63.4%, and females accounted for 36.6%. Among them, women accounted for 31.1% of migrant workers who work outside their hometown and 41.7% of local migrant workers. Unmarried workers accounted for 17.4%, workers with spouses accounted for 79.6% and widowed or divorced workers accounted for 3%.

The average age of migrant workers is 42.3 years, but there is a significant age

difference between those who work locally and those who work outside their hometown. This indicates that more migrant workers choose to stay in their hometown as they grow older. In terms of age structure, those aged 40 and below accounted for 47% of migrant workers, those aged 41-50 accounted for 23.8%, and those aged above 50 accounted for 29.2%. In terms of the employment location for migrant workers, the average age of local migrant workers is 46.8 years, and those aged 50 and above accounted for 41%; the average age of migrant workers who work outside their hometown is 37.4 years, and those aged 50 and above accounted for 16.4%.

Age composition of migrant workers



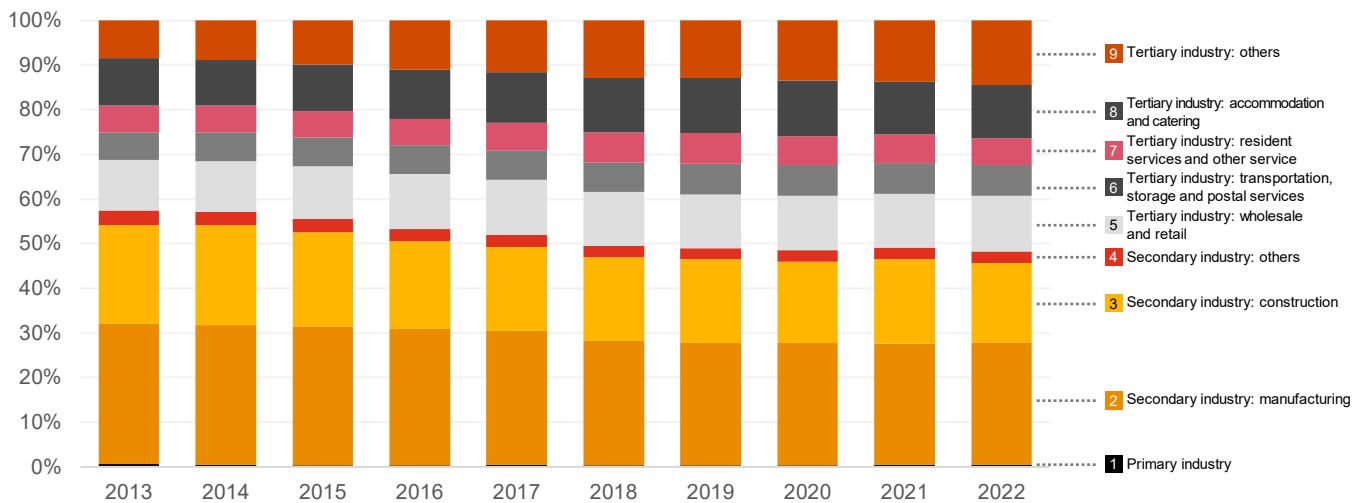
Source: Wind (National Bureau of Statistics)

The education level of migrant workers is generally lower, but the proportion of those with college degrees or higher qualifications is increasing. Among all migrant workers, 0.7% have never attended school,

13.4% have completed primary school, 55.2% have completed junior high school, 17% have completed senior high school, and 13.7% have a college degree or higher qualification. Migrant workers with higher education levels

tend to work outside their hometown, with 18.7% of non-local migrant workers having college degrees or higher qualifications, compared to 9.1% of local migrant workers.

Distribution of employment industries for rural migrant workers



Source: Wind (National Bureau of Statistics)

*The other industry for the secondary and tertiary industry is calculated by PwC

Over half the migrant workers are employed in the tertiary industry, with the six major employment sectors including manufacturing, construction, wholesale and retail, transportation and warehousing, postal services, and accommodation and catering. In terms of industries, 51.7% of migrant workers are engaged in the tertiary industry, while 47.8% are engaged in the secondary industry. The average

monthly income of migrant workers is 4,615 yuan. Among them, the average monthly income of non-local migrant workers is 5,240 yuan, while that of local migrant workers is 4,026 yuan. The six main industries employing the most migrant workers are manufacturing (27.4% with average monthly income of 4,694 yuan), construction (17.7% with average monthly income of 5,358 yuan),

wholesale and retail (12.5% with average monthly income of 3,979 yuan), transportation and warehousing (6.8% with average monthly income of 5,301 yuan), accommodation and catering (6.1% with average monthly income of 3,824 yuan), and residential services, repairs, and other services (11.9% with average monthly income of 3,874 yuan).

Average monthly income and growth rate of rural migrant workers by industry (Unit: RMB yuan)



Source: Wind (National Bureau of Statistics)

In summary, the negative population growth and the shrinking labour force, coupled with an aging population are unfavourable factors for China's long-term economic development. However, the large population base and continuous growth are not the only factors contributing to China's economic development. For example, many developing countries have a fast-growing population but are lagging in economic development, while developed countries have slow population growth but maintain long-term prosperity. Despite the negative growth, China's large population size

will remain an advantage for years to come.

The difference between China and developed countries lies in the gap in scientific and technological levels, human capital, knowledge structure, and innovation capability, rather than population size. Therefore, as Professor Fan Gang pointed out, China's future development will continue to rely on its late-development advantage which are vital to ultimately achieving a dominant position in knowledge-intensive high-tech industries. From this perspective, the education level and quality, global

competitiveness, and mastery of leading scientific and technological advancements of the population are far more important than its size. Looking at the global experience of various countries' development, the population and labour force sizes are not necessarily positively correlated with a country's economic development level. Therefore, negative population growth and a shrinking labour force alone will not become obstacles for China as it pursues becoming a leading technological innovation-driven developed economy in the future.



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Acknowledgements

Special thanks to the Thought Leadership and Research teams for their contributions to the report.



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