CHINA'S DEMOGRAPHIC DECLINE RECONSIDERED: FEWER BUT BIGGER HEADS?

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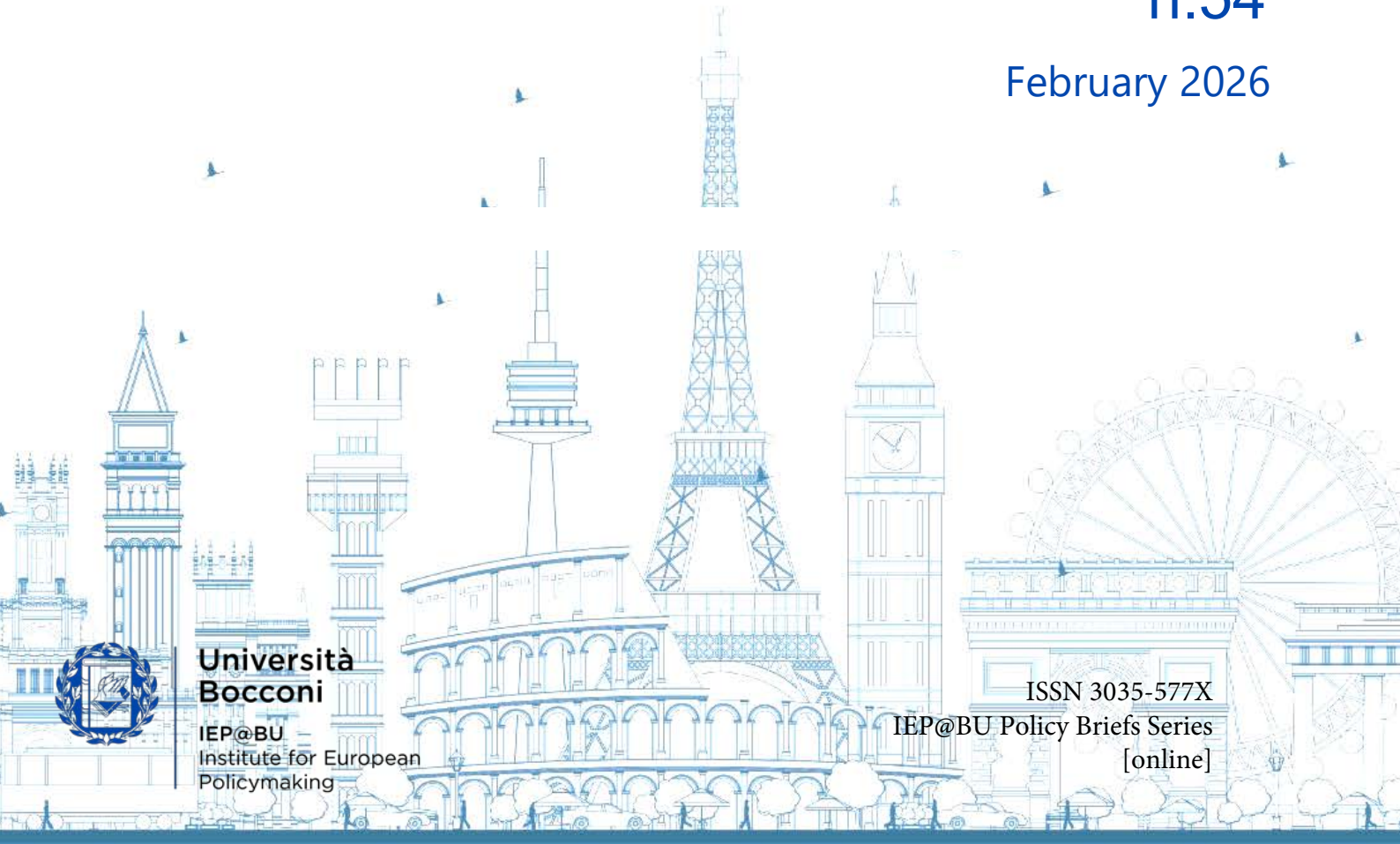

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Executive Summary

China's population has entered a phase of structural decline. According to the latest official figures released in January 2026, the national population stood at 1.4049 billion by the end of 2025, marking a further population contraction for the fourth year in a row, with a net decrease of 3.39 million compared to 2024.

At the same time, the fertility rate in China has been falling already since the 1980s, with a sharper deterioration in the past 10 years. The number of births reached an all-time low of 7.92 million births in 2025 (only about double the US number although the Chinese population is 4 times larger).

It thus seems that "China will grow old before it gets rich". However, this narrative neglects one key fact: as the population shrinks, its skill level is increasing. The reason is that the young generation, while smaller, is more educated – much more than the parent generation.

This implies that while the number of working-age individuals is shrinking, on average they are much better educated.

Our calculations suggest that at present the increasing qualification of the new entrants to the workforce more than compensates for the decline in raw numbers.

We also document a striking fact about Chinese demographics, namely the weakness of the 'educational middle class'. At present, those without completed secondary education still make up two thirds of the working age population (against less than a quarter in Europe and less than one tenth in the US). Whereas the educational middle class – i.e. those with secondary education completed– make up less than a quarter. This is very different from the US and Europe, where the middle level is usually the largest element in the working age population.

The very high university enrollment ratios among the young today imply that the share of graduates will increase over the next generation, keeping the middle class a small minority.

Introduction[1]

China's population has entered a phase of structural decline. According to the latest official figures released in January 2026, the national population stood at 1.4049 billion by the end of 2025, marking a further population contraction for the fourth year in a row, with a net decrease of 3.39 million compared to 2024[2].

At the same time, the fertility rate in China has been steadily declining already since the 1980s. In 2025, the birth rate hit its lowest level on record reaching 5.63 per 1,000 people, reinforcing concerns of a rapid population decline as such a low fertility rate means that each generation is only one half of the preceding one.

Figure 1 shows the yearly number of births over the past 70 years, which reached an all-time low of 7.92 million births in 2025.

Figure 1: China's yearly births, 1950–2025 (in millions).

Source: Chinese Statistical Yearbooks.

This dire demographic outlook is encapsulated in the asserting that "China will grow old before it gets rich".[3] For US-based geostrategists this is a cause for optimism as it implies that in the long run the US is likely to stay ahead economically, but for investors this is a reason to be concerned about

[1] The authors would like to thank Federica Maria Raiti for her helpful contribution with data processing and visualization.
[2] https://www.stats.gov.cn/english/PressRelease/202601/t20260119_1962328.html
[3] For a recent example see https://www.newsweek.com/china-aging-population-economic-growth-1880274

China's economic outlook[4]. Yet anxieties of this kind are not new. Similar concerns about the excessive expansion of tertiary education emerged in advanced economies in the past. By the late 1980s, engineering graduates in the United States accounted for only one-third to one-sixth of the share observed in Europe or Japan, fuelling fears of technological decline and loss of competitiveness (Inkster, 1991).[5]

However, this narrative neglects one key fact: as the population shrinks, its skill level is increasing. The reason is that the young generation, while smaller, is more educated – much more than the parent generation (see Figure 3 for reference). This implies that while the number of working-age individuals is shrinking, they are much better educated. Our calculations suggest that the increasing qualification of the new entrants to the workforce more than compensates for the decline in raw numbers.

We also extend this analysis by capturing another striking fact about Chinese demographics, namely the weakness of the 'educational middle class'. At present, those without completed secondary education still make up two thirds of the working age population (against less than a quarter in Europe and less than one tenth in the US). But the very high university enrollment ratios among the young imply that the share of graduates will increase over the next generation, keeping the middle class – i.e. those with secondary education completed– a smaller minority. This is very different from the US and Europe, where the middle level is usually the largest element in the working age population.

Additionally, as García-Herrero and Xu (2023)[6] emphasise, the negative growth impact of population ageing has so far been largely offset by productivity gains arising from labour reallocation from lower-productivity rural activities to higher-productivity urban employment. This urbanisation process has contributed around 0.4 percentage points per year to economic growth, mitigating demographic pressures until urbanisation is expected to plateau around 2035.

The skill composition of the Chinese working-age population

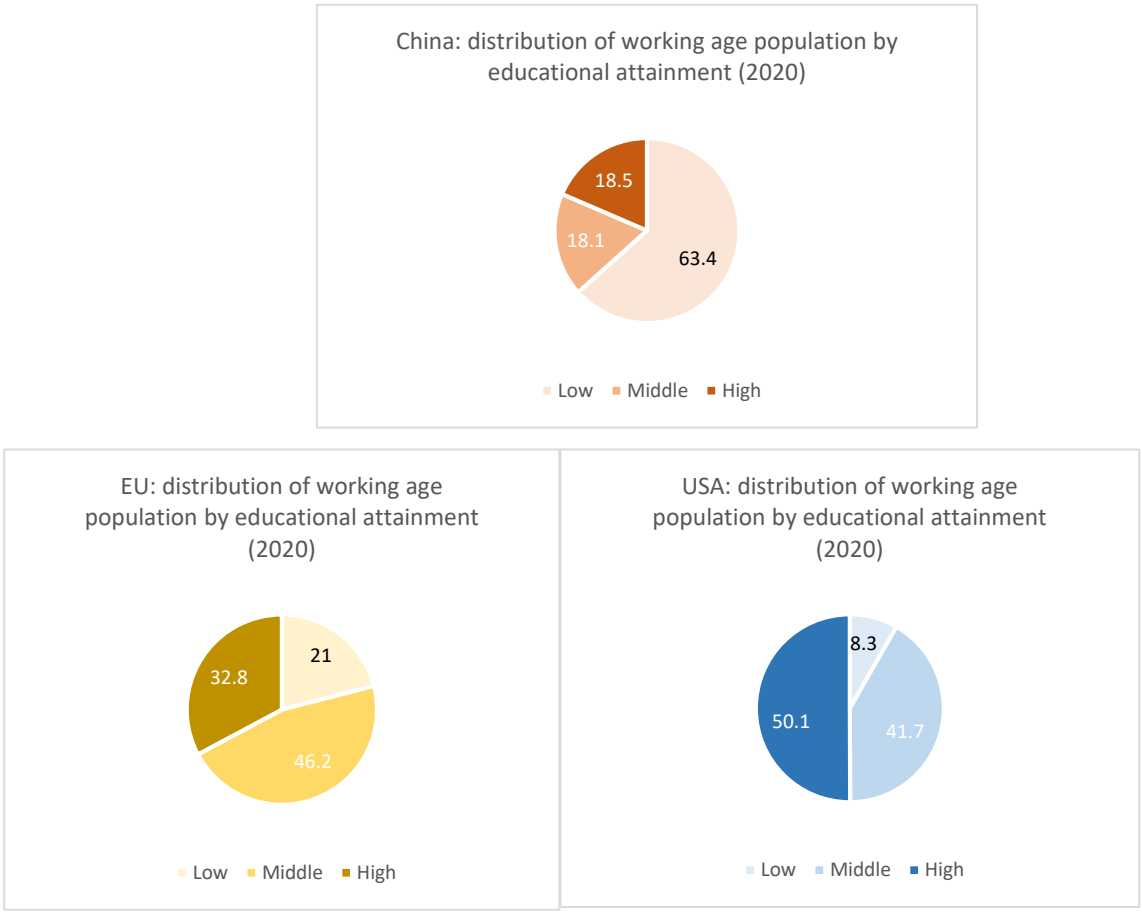
From 2010 to 2020, the share of working-age population (25-64 years) with a tertiary degree has almost doubled, rising from 9.7% to 18.5%. Almost the entirety of this growth is matched by a decrease in individuals with less than a secondary-level qualification, thus leaving the share of individuals with secondary degree almost unchanged. Figure 1 shows the population shares by education level in 2020, contrasting with those of the US and the EU.

[4] https://www.cnbc.com/2024/07/04/chinas-working-population-is-shrinking-facing-low-birth-rate.html

5 Inkster, I. (1991). Made in America but lost to Japan: science, technology and economic performance in the two capitalist superpowers. Social Studies of Science, 21(1), 157-178.

[6] García Herrero, A. and J. Xu (2023) 'To what extent can urbanisation mitigate the negative impact of population ageing in China?' Working Paper 17/2023, Bruegel

Figure 2: Share of working-age population by highest educational degree obtained.



Source: OECD data for China and US, Eurostat for EU.

In this Figure and in the rest of the document, we call:

- *Low*, the group of working-age individuals with an education level lower than secondary;
- *Middle*, the group of working-age individuals with at most a secondary degree;
- *High*, the group of working-age individuals with at least tertiary education degree.

However, as Figure 2 shows, the 18.5% of graduates in the workforce achieved by China now is still a very low rate of highly educated, especially if compared to more advanced economies as in the United States where 50.7% of adults aged 25–64 hold a tertiary degree. This large gap leads us to believe that there is quite a substantial room for sustained growth in the average education level in China in the coming years.

Demographic projections from the Wittgenstein Centre for Demography[7] and Global Human Capital

[7] Wittgenstein Centre for Demography and Global Human Capital, Data Explorer v3.0 (SSP2, medium scenario); population aged 20–64 by level of educational attainment. Available at:

indicate that the share of the working-age population (aged 20–64) holding a master's degree or higher is projected to continue rising over the coming decade, increasing from around 0.67% in 2020 to 0.85% by 2030 under the medium (SSP2) scenario.

Absence of a middle class

Another striking feature of the workforce in China, highlighted by Figure 1, is the absence of a "middle-educated" group. In most advanced countries, including the US, a large part of the workforce (close to one half) has finished upper secondary education. In the EU, they represent the largest education-attainment group.

This is different in China. The middle level of education account the smallest share of the labour force. Almost two thirds of the Chinese workforce do not even possess even a secondary education (against less than 10% in the US). This composition, in which the extremes dominate, might explain some characteristics of the Chinese service economy: there exists a large pool of unskilled workers that can provide at a lower cost the personal services that the growing number of (mostly urban) graduates demand. In most advanced countries, the pool of lower-educated workers is much smaller, rendering personal services more costly as unskilled wages are higher.

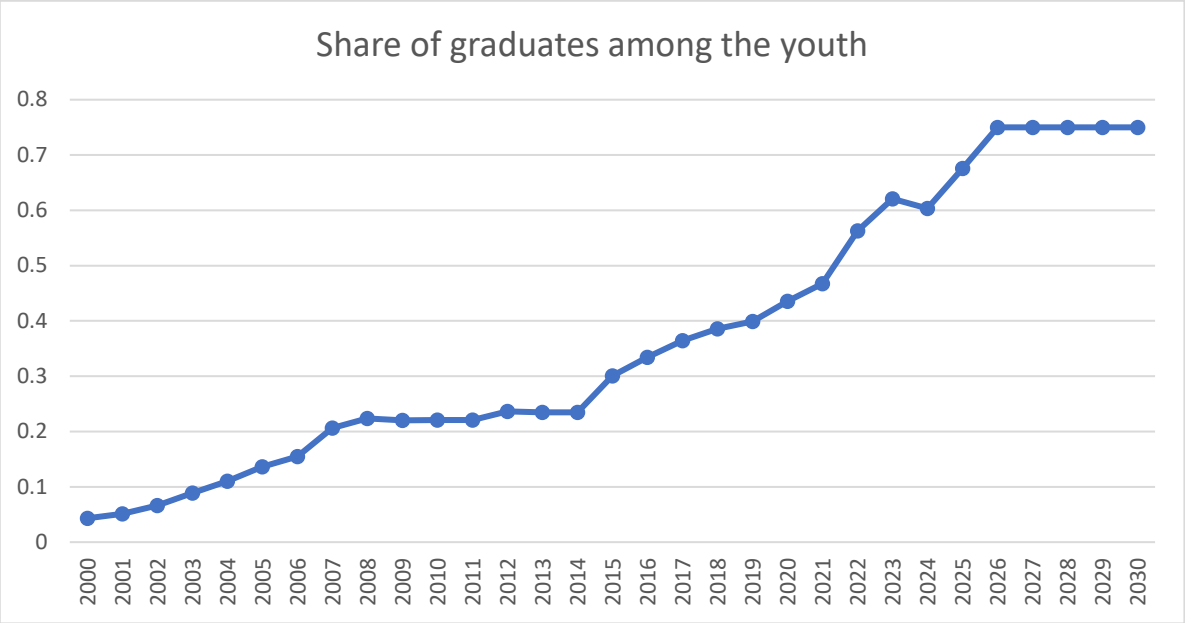
Projecting 2030 educational attainment

So what can we say about the evolution of the Chinese population given these educational shares? In order to make a projection for coming years, we focus on the structure of the population and on the current number of graduates.

From the Chinese Statistical Yearbook of 2020, we take the population pyramids, i.e. the population size by 5-year age group. From the 2024 Statistical Yearbook, we obtain annual data on the number of tertiary-education graduates in China yearly from 2000 to 2024. Combining those data allows us to project the share of graduates among cohorts entering the labor market from 2025 until 2030. In particular, we use this information to calculate the number of 15-25 year-olds who will enter the working age population (25-64 years old) between 2020 and 2030.

https://dataexplorer.wittgensteincentre.org/wcde-v3/

Figure 3: Yearly graduate share, calculated as the number of tertiary-education graduates divided by the 24-year-old population. For years past 2025, a trend is calculated with a cap at 75%.



Source: own calculations based on Chinese Statistical Yearbook.

As Figure 3 shows, looking at the number of tertiary education graduates among the young population, since 2014 there has been a considerable increase. This upwards trend cannot be sustained indefinitely: we therefore impose an upper bound at 75 per cent of tertiary graduates among the youth. Under this assumption, we then construct an upper-bound scenario of the size of the cohort entering the labor market between 2020 and 2030: by summing the number of graduates (actual and projected) every year between 2020 and 2030, we can estimate that the group of working-age-population entrants will be composed of about 100 million graduates over the decade.

At the same time, drawing on the Chinese Census data on education shares and the Statistical Yearbook for population pyramids, we subtract from the working-age population of 2020 the number of 55-64 year-olds who will leave the reference age, with their respective Census-based educational attainment level. We then calculate the aggregate shares of educational attainment in the working-age population to obtain two projections: one using the extrapolated number of graduates in the entrant youth; one using a constant 2024-level number of graduates among entrants.

The Table below shows in the first column the actual shares of the entire working age population in 2020 and in the second column the shares among the old (those who will leave the working age population between 2020 and 2030). There is clearly a very large difference between the ‘old’ (the leavers in column 2) and the ‘young’ (the projected entrants, in the third column). These two groups appear to be the mirror image of each other in terms of skill composition. Among the young in 2020 the percentage of graduates is at 70 % at the same level as the those with only primary education in today’s above 55 years old that will leave the workforce by 2030.

Table 1: Educational composition of the working-age population (2020–2030)

	2020 all	2020-2030 leavers	2020-2030 projected Entrants	2030 projected population composition
Primary	0.63	0.67	0.14	0.53
Secondary	0.18	0.20	0.14	0.17
Tertiary	0.19	0.13	0.71	0.30

Source: shares of the entire working age, own calculations based on UN Population data, OECD data and Chinese Statistical Yearbook.

This exercise shows that it will take a long time for the composition of the workforce to change. The unskilled will still constitute the majority of the workforce well into the 2030s although the share with tertiary education will increase by more than one half. The share of the educational middle class, which typically make account for a large share in manufacturing employment is falling and as the total population falls this means that in absolute numbers the supply of factory workers will fall.

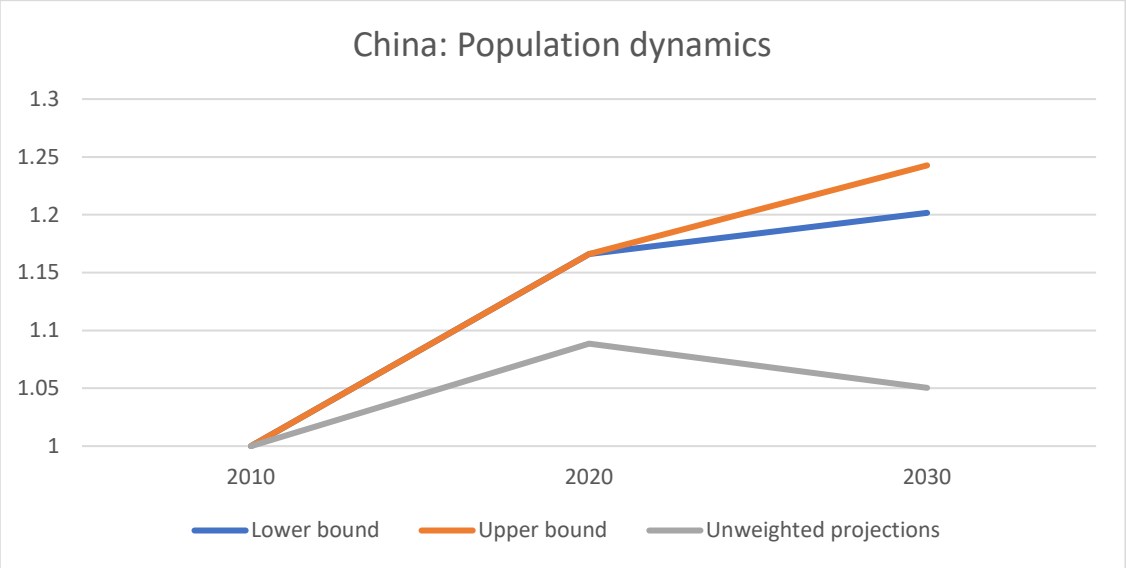
How to weight heads: education and human capital growth

With these projections, considering the importance of the educational breakdown of the working-age population and the changes that there are in the structure of the population, we propose to compute demographic change in a novel way: rather than by looking at headcounts alone, we weigh individuals by their educational attainment. This way, we can produce a proxy of aggregate human capital of the nation that is available for the economy. We assume an average of:

- 9 years of schooling for the lower-skilled workers (less than secondary education),
- 12 years for individuals with at most a secondary degree, and,
- 16 years for university graduates.

Given this assumption about years of schooling by educational level, we can calculate the total amount of years of schooling of the entire working age population (between 25 and 64 years). We take this as a proxy for aggregate human capital.

5: Actual data and projections for education-weighted Chinese population change from 2010 to 2030.



Source: own calculations based on UN Population data, OECD data and Chinese Statistical Yearbook.

The resulting human-capital adjusted population path – for 2010 and 2020 based on actual data and for 2030 based on our projections – can be seen in Figure 3, shown as changes normalized at the 2010 working-age population level, alongside the actual UN (unweighted) headcount, in green. As Figure 4 shows, in quality-adjusted terms, the Chinese workforce will continue to increase over the next decades. Given that higher skilled are usually more productive this implies that growth should continue.

However, as already mentioned in the discussion of Figure 2, despite this dramatic rise in entrant qualification levels, the low level of qualification of the older Chinese workforce means that the aggregate average skill level will, for quite some time, remain lower than that of advanced countries, especially that of the US. The starting point is much lower and low birth rates slow down the upgrading since it takes 10 years to renew less than one fifth of the entire workforce.

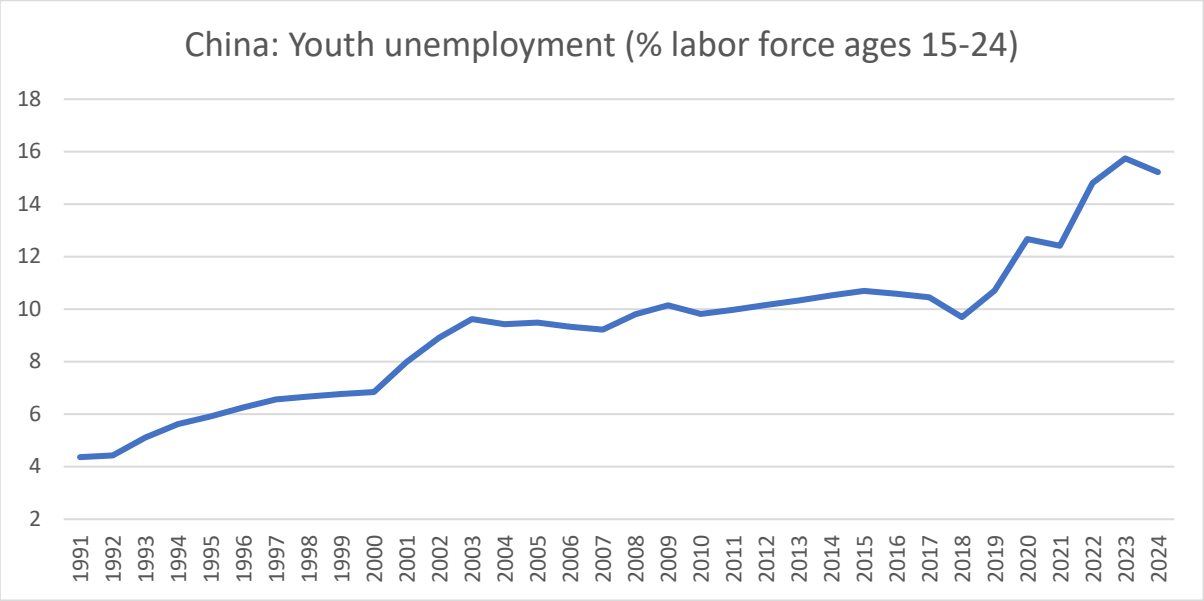
We also note that in the decade up to 2020 China was still reaping a demographic dividend as its working age population increased substantially (by almost 10% over the decade). The educational upgrading came on top of a growing population and almost doubled its magnitude. Now the educational upgrade is offsetting a declining population. The decline in the population is at present slower than one could expect given today's extremely low birth rates because the current evolution of the workforce depends on birth rates more than 20 years ago, which were somewhat higher.

Overeducation and youth unemployment

Youth unemployment has become one of China's most acute socioeconomic challenges. After the jobless rate for 16-to-24-year-olds (excluding students) hit a record 21.3% in June 2023, before releasing a revised indicator in December 2023 by the National Bureau of Statistics.

Under this new measure, youth unemployment stood at 14.5% in December 2023 but has since risen sharply [8]. In July 2024, the rate reached 17.1%[9], the highest since the methodological change.

Figure 5: Unemployment, youth total (% of total labor force ages 15-24) (modeled ILO estimate).



Source: own calculations based on ILO modelled estimate, retrieved on World Bank open data.

Using ILO estimates, the graph shows that China's youth unemployment rate (ages 15–24) has risen sharply since 2018, increasing from under 10% to peaks above 15% in 2022–2023, highlighting a significant and persistent deterioration in young people's labor-market conditions. Although this age group does not include tertiary-education graduates, it points to a paradoxical trend of more scarce yet at the same time more unemployed youth.

The pressure intensified during the summer graduation season: 12.2 million university students graduated in June–July 2024, a record cohort competing for a shrinking pool of high-quality jobs. In August 2024, youth unemployment rose to 17.8%, and in September reached 18.2%, reflecting demand constraints in services, technology, and real estate[10].

Meanwhile, unemployment among 25–29-year-olds remained at 7.2%, and among 30–59-year-olds fell slightly to 3.8%, highlighting how severely labour-market pressures fall on younger cohorts.

[8] https://www.theguardian.com/world/2023/aug/15/china-unemployment-rate-youth-economy
[9] https://en.ilsole24ore.com/art/china-youth-unemployment-jumps-171-per-cent-july-AFHunrPD?refresh_ce=1
[10] https://www.globaltimes.cn/page/202410/1321637.shtml

A central dimension of youth unemployment is the rise of overqualification. With more than 12 million tertiary graduates annually[11], the supply of educated labour has far outpaced the creation of high-skill, high-productivity jobs. Slowdowns in manufacturing, real estate, and digital industries — traditionally large absorbers of graduate labour — have reduced opportunities precisely as graduate numbers peak. As a result, increasing numbers of young workers, including over 20% of delivery-platform drivers, occupy low-skill or precarious jobs despite holding university degrees. Many actively avoid low-paid manufacturing and service jobs, preferring prolonged job search, gig work, or unpaid trainee positions. Overqualification indicates a deeper misalignment between China's education system and its evolving economic structure, with long-term implications for productivity and human-capital utilisation in an ageing society.[12]

Possible Drivers of Youth Unemployment

High and growing youth unemployment might reflect profound structural shifts: slowing economic growth and weak domestic consumption; trade tensions with the United States, rising tariffs, and global concern over China's industrial overcapacity; regulatory pressure on tech firms, dampening private-sector hiring; prolonged real estate slump affecting construction and related services; automation and AI adoption, reducing entry-level and middle-skill jobs; and finally geographic inequalities, with inland provinces offering fewer quality jobs.

These pressures coincide with demographic decline. The Chinese leadership faces structural barriers to reversing falling fertility: high childcare and housing costs, gender discrimination in hiring, and rising scepticism among women toward state-driven pronatalist campaigns. For many young women especially, the mismatch between personal preferences (delayed marriage, smaller families, or remaining single) [13]and state pronatalist expectations fuels broader discontent.

The Fourth Plenum underscores the stakes: youth unemployment, demographic decline, and weak private-sector dynamism are now viewed as national security concerns requiring adjustment of China's growth model.[14]

[11] https://english.www.gov.cn/archive/statistics/202411/14/content_WS67358fe7c6d0868f4e8ecee6.html
[12] Zheng, Y. (2025). Addressing Graduate Employment Challenges in China: Structural Factors, Skill Mismatches, and Policy Solutions. *Highlights in Business, Economics and Management*, *59*, 82-87. https://doi.org/10.54097/4py2qe33
[13] https://merics.org/en/report/when-giving-birth-national-duty-beijings-struggle-reverse-demographic-decline
[14] https://merics.org/en/merics-briefs/rare-earths-export-controls-nexperia-fourth-plenum

Conclusions

We show that Chinese population dynamics look very different once one factors in the high level of education of the younger generation. Chinese human capital will continue to grow, thus supporting growth despite a declining population.

The 'high quality' growth that is now the aim of the CPC should be facilitated by the huge expansion of the Chinese university system over the last two decades. While population decline has already begun, its full economic effects will materialise only gradually, as the working age population still largely reflects fertility rates from two decades ago.

The Chinese workforce will thus evolve from largely consisting of low-skilled with a small elite on top to one dominated by very high-skilled without passing through the intermediate stage at which the 'middle educated group represents the majority. However, given the small size of the new cohorts it will take two generations before this transition will be complete.

Moreover, as tertiary enrolment rates approach saturation, further gains in average educational attainment will inevitably slow, limiting the capacity of education alone to offset demographic decline. The most important consequence of China's very low fertility is thus not so much a rapid decline in workforce size, but rather the slow pace of skill upgrading.

This finding has clear policy implications. These dynamics are reflected in China's updated higher-education strategy[15]. The 15th Five-Year Plan (2026–2030) places education, science, and talent development at the center of modernization and links demographic change to improved planning of educational resources and closer alignment with strategic sectors such as artificial intelligence and semiconductors.

As workforce growth slows, the emphasis shifts from expanding labour supply to upgrading its quality, including efforts to attract global talent. The key challenge will be ensuring that high-productivity sectors grow quickly enough to absorb the expanding pool of graduates.

A key risk associated with this shift in the skill composition towards the top is the top-heavy composition of the population leads to overqualification and skill mismatch, especially for the young. This might constitute a more serious political problem than the ageing itself.

[15] http://en.moe.gov.cn/news/press_releases/202511/t20251124_1421414.html