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TO WHAT EXTENT CAN URBANISATION MITIGATE THE NEGATIVE IMPACT OF POPULATION AGEING IN CHINA?

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China is experiencing population ageing caused by a rapidly declining fertility rate and increased life expectancy. This demographic transition poses economic challenges, yet the intensity of these challenges depends on a number of factors, with the move of people from rural to urban areas being of central importance.

To gain a clearer understanding of how urbanisation interacts with population ageing, we investigate changes in the Chinese labour force in both rural and urban areas. Our findings suggest a modest shrinking of the overall labour force up until 2035. However, until 2035, the labour force is projected to contract only in rural areas, while the urban labour force will continue to grow. As urban employment is more productive than rural employment, the combined effect of demographic change and urbanisation on growth will remain moderately positive (0.4 percent per year).

Beyond 2035, fertility rate decline will begin to affect the working-age population in both rural and urban areas, especially since the urbanisation process is expected to level off by then. In such circumstances, China's shrinking population will shave off 1.4 percent from GDP growth annually. These results, however, do not take into account the impact of population aging on labour productivity. China's fast move towards robotisation and artificial intelligence might help mitigate any negative impacts by increasing productivity, but there is no sign yet that this is the case.

Key words: China, aging, labour force, working age population, productivity, economic growth

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1 Introduction

China's economic growth trajectory has shifted significantly, dropping from a peak growth rate of 10.6 percent in 2010 to 6.1 percent in 2019. The subsequent disruption brought about by the COVID-19 pandemic has further undermined economic growth, despite a favourable base effect. This clearly underscores the structural deceleration trend the Chinese economy is going through.

China's rapidly ageing population has been perceived as a one driver of this slowdown (Eggleston *et al*, 2013). Our analysis, however, suggests otherwise. Our findings show that demographic changes in China have not yet significantly impeded its economic growth, and we do not anticipate significant impacts to materialise until at least 2035. The main reason is that, in the next decade, slower growth in the labour force is expected to be accompanied by continued urbanisation, which raises aggregate labour productivity. Beyond 2035, under realistic assumptions about the peak of the urbanisation process in China, there could be a more significant shift.

We explore the effects of China's demographic evolution on both the labour force and overall economic growth, distinguishing between rural and urban dynamics. We first evaluate the impact of the slowdown in labour-force growth using Chinese population census data from 2000, 2010 and 2020. We then forecast changes in the urban and rural labour forces and their subsequent impacts on economic growth under various assumptions about China's urbanisation trajectory, assuming all other factors (long-term unemployment rates and the productivity growth of the rural and urban labour forces) remain constant. Our analysis reveals that ageing accounts for only about 1 percentage point of the GDP growth rate deceleration over the past decade. The ageing effect is expected to continue to have a limited impact until the mid-2030s. However, beyond that point, the economic effects of ageing are likely to accelerate, contingent on the pace of urbanisation and labour-productivity growth.

This suggests that a closer examination is warranted of other structural factors contributing to China's economic slowdown. Labour productivity, in particular, merits an in-depth investigation, especially the relationship between labour supply and productivity.

In this context, we scrutinise China's demographic outlook for the next two to three decades. We highlight the disparities between rural and urban areas, emphasising the role of urbanisation in offsetting the adverse effects of ageing thus far, as well as in the future.

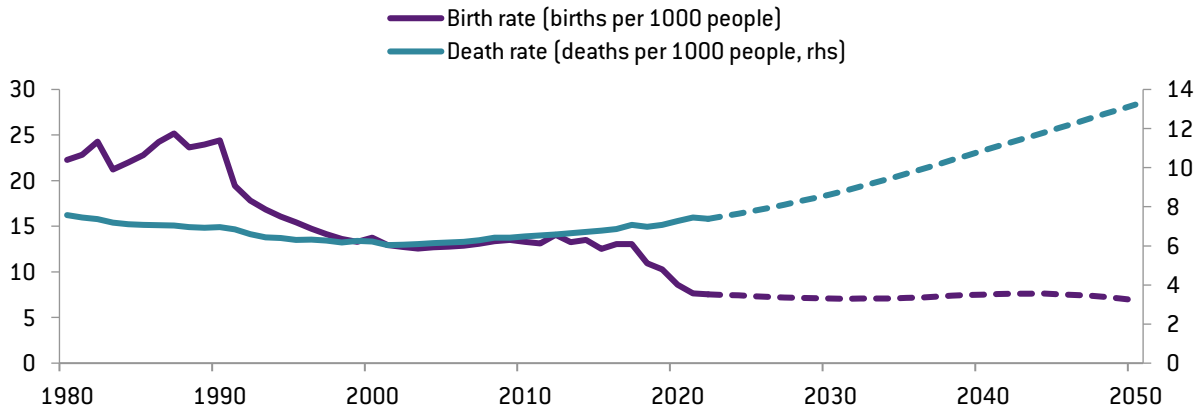
2 General trends in China's working-age population

In 2016, China embarked on a new demographic chapter with a significant decline in the birth rate (Figure 1). But even before that, China's working-age population as a proportion of total population had already been decreasing since 2011 (Figure 2).

However, the impact of this negative population trajectory on China's economic growth has been offset by rapid urbanisation over the past two decades. As a result, the adverse effects of an ageing population have been predominantly confined to rural areas, which typically exhibit lower productivity levels, while the urban labour supply has maintained its growth trajectory. In fact, Figure 3 highlights clearly a marked increase in the urban working-age population, in contrast to a decrease in the rural working-age population, from 2000 to 2020. The influx of workers migrating from rural to urban areas bolstered China's manufacturing and service labour force significantly, without causing an excessive surge in urban wages. This phenomenon is characteristic of the Lewis Model, which outlines how a dual urban-rural economy can bolster growth and development (Lewis, 1954).

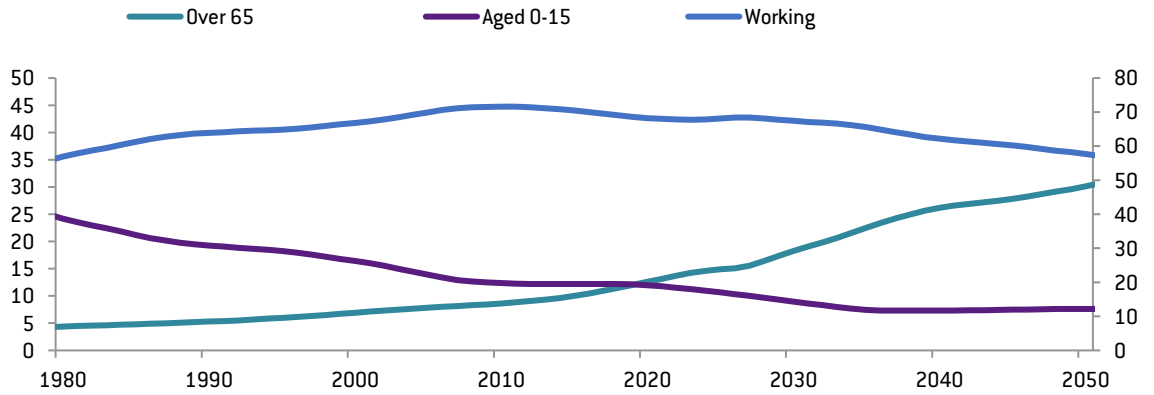
Looking forward, the pace of the ageing of China's population is projected to accelerate over the next thirty years, as per United Nations population forecasts (UN, 2022). The fertility rate is anticipated to stay low, and the percentage of elderly individuals (65 years and older) is projected to soar from 13 percent in 2021 to 30 percent in 2050, with a particular increase among females because of their longer lifespans. However, the impact on the working-age population over the next decade is unlikely to be severe, as the continuing decline in the share of children in the population will reduce the youth dependency ratio and, thus, will partially buffer the ageing effect. In fact, the proportion of working-age people in the population is expected to decrease only slightly, from 68 percent in 2020 to 66 percent in 2035, a contraction smaller than the drop of over 3 percentage points observed from 2010 to 2020. A more significant impact is expected after 2035, as the declining fertility rate feeds through and results in a shrinking working-age population, while the adult population continues to age. Our estimates suggest that the working-age population as a proportion of the total population will plunge from 68 percent in 2020 to 58 percent in 2050.

Figure 1: China's birth rate and mortality rate



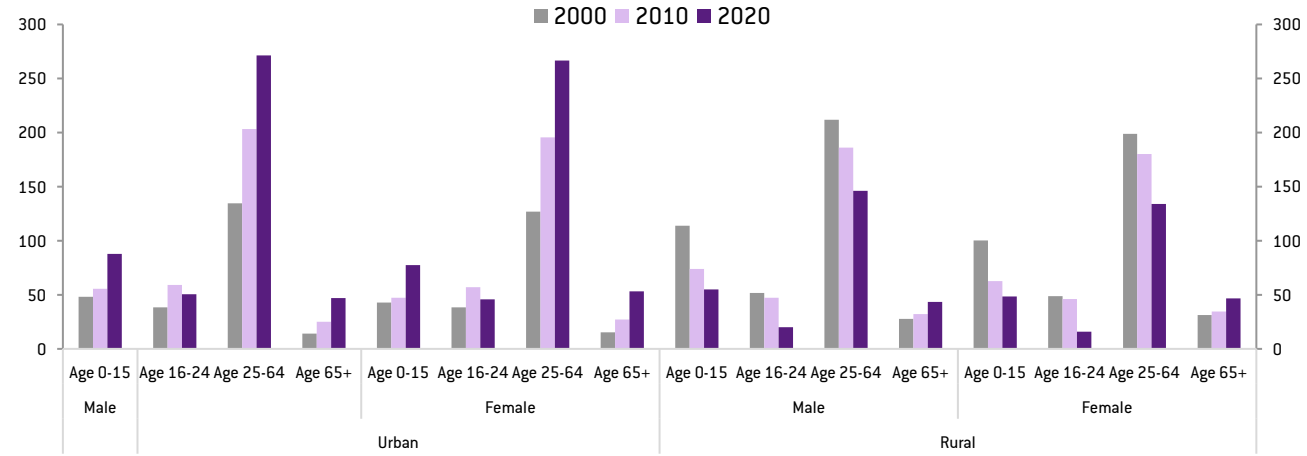
Source: Natixis, United Nations.

Figure 2: China, population shares of different age group (%)



Source: Natixis, United Nations.

Figure 3: China, population distribution (millions)



Source: Natixis.

3 The accounting effect of demographic change on labour supply in China

To analyse the impact of demographic change on China's labour supply, we decompose the labour supply into population and labour-force participation rate by age, region (urban or rural) and sex. Assuming that the age-specific labour-force participation rate is constant, the labour supply tends to decline and the share of elderly people in the population increases. The latter is labelled the *"accounting effect"* by Bloom *et al* (2010).

We compare the demographic shifts that took place across the years 2000, 2010 and 2020 in China, and investigate how large the labour force would have been in 2010 (2020) if the age distribution of population were the same as in 2000 (2010) and all other things remain equal. We define China's total labour force (L) as the multiplication of population (P) and the labour force participation ratio (LFPR) across the area ($i = \{U\ (Urban)\ or\ R\ (Rural)\}$, sex ($j = \{M(Male)\ or\ Female\ (F)\}$, and age groups ($k = \{Y(Youth), M(Middle\ aged), O(elderly)\}$) for the specific years 2000, 2010 and 2020, based on the frequency of the population census.

$L_{total,t} = \sum_{i=\{U_t,R_t\}} \sum_{j=\{M_t,F_t\}} \sum_{k=\{Y_t,M_t,O_t\}} LFPR_{ijk} \cdot P_{ijk}$, where $t = 2000, 2010, 2020$

The counterfactual labour supply under the no-population-ageing scenario is constructed as follows for 2010 and 2020.

$L_{total,t}{}' = \sum_{i=\{U_t,R_t\}} \sum_{j=\{M_t,F_t\}} \sum_{k=\{Y_t,M_t,O_t\}} LFPR_{ijk} \cdot P_{ijk}$, where $t = 2010, 2020$

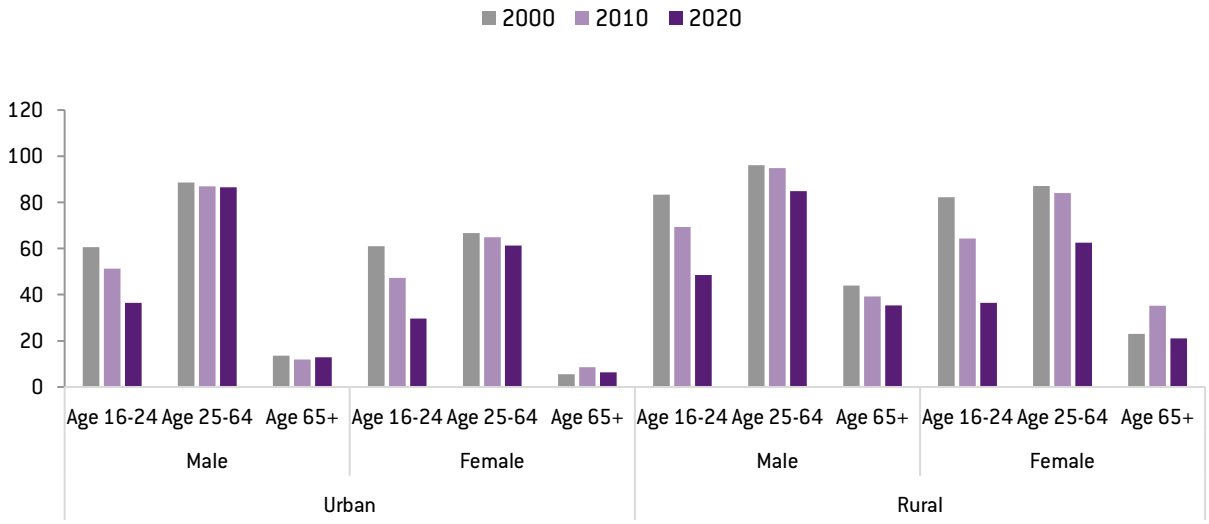
Finally, comparing the annualised log-difference between $L_{total,t}$ and $L_{total,t}{}'$ yields the effect of population ageing on the annual growth rate of China's labour supply in 2010 and 2020.

Using UN Population Prospects for China, we can further gauge the impact of population aging on China's labour supply from 2020 to 2035 and 2035 to 2050, respectively. We look into the different trends in the rural and urban populations, and make assumptions about the urbanisation rate in these two periods. To gauge the change in the population and employment pattern by area and sex, we use

China's Population Census data for 2000, 2010 and 2020[1], in line with its 10-year frequency. With this data, we calculate the distribution of population across ages, areas and sex.

Figure 4 depicts the change in China's labour-force participation rate, revealing a substantial decline in the 16-24 age group in both urban and rural regions. One possible reason for this trend is the increasing numbers of young people in this age bracket pursuing tertiary education, thereby postponing their entry into the labour force (note: the labour force typically comprises individuals who are either gainfully employed or actively seeking work). For other age groups, we observe a significant decline in labour-force participation in rural regions, while in urban areas the rate is more stable. This pattern can largely be attributed to the robust urbanisation in China over recent decades.

Figure 4: Labour-force participation rate by area, sex and age (%)



Source: Bruegel based on China Population Census.

Next, we utilised the labour-force participation rate in conjunction with China's actual population growth per age cohort to derive the net change in China's labour force. The results indicate that China experienced positive labour-force growth from 2000 to 2010 at a rate of 0.65 percent per annum. Even though the population was already ageing during this period (as shown by the elderly dependency ratio increasing from 10.4 percent to 12 percent), the youth-dependency ratio fell from 39.3 percent to 27.6 percent, leading to an overall increase in the population and, consequently, the labour force.

However, China's demographic dividend reversed course from 2010 to 2020, as the drop in fertility rates during the 1990s finally manifested as a decline in the working-age population after 2017 (Figure 1).

To gain deeper insight into the factors influencing shifts in China's labour supply, we made an assumption that the age distribution of the population remained static from 2000 to 2010. We then

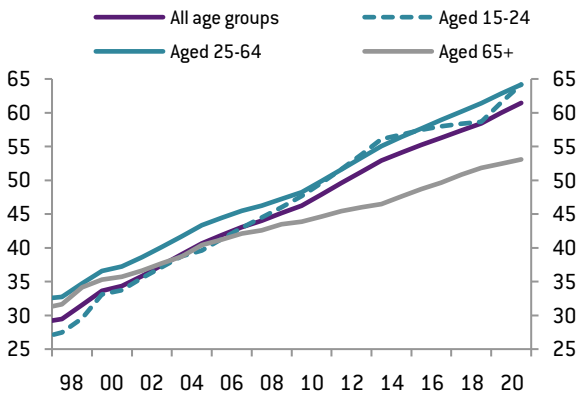
[1] The Population Census also provides information about China's labour market, ie labour force, employment, covering a 10 percent sample of the total population. We use the sample to calculate China's labour force participation rate by age group, area and sex. One caveat, though, is that the Population Census in 2020 only reported total employment but not labour supply, so we use China's official urban survey unemployment rate to derive the labour force in the urban area. For the rural labour supply, we assume a constant unemployment rate in the rural area for 2020 as it was in 2010. This is justified by the reality that the rural unemployment rate by age group was very stable from 2000 to 2010.

calculated the counterfactual growth of China's labour force and compared it to the actual labour-force growth rate. The results affirm that China reaped a positive population dividend from 2000 to 2010, with an annual growth rate of the labour force of 0.53 percentage points. Utilising the same methodology for 2010 to 2020 reveals a yearly decline of 2.71 percent in labour-supply growth in China, when comparing the actual and counterfactual labour-force growth rates.

The impact of aging is more pronounced in rural areas, attributed to the migration of working-age individuals from rural to urban regions (Figure 5). While the elderly population (65+ years) has also been migrating to urban areas, their proportionate increase in urban areas is comparatively moderate. In essence, the urbanisation process results in a surge in the urban labour supply, as children and the elderly are less likely to migrate. In fact, despite the decelerating pace of total labour-force growth, China's urban labour force continued to grow from 2010 to 2020.

To further quantify the role of urbanisation in augmenting the working-age population, we calculated the hypothetical change in the latter in the absence of urbanisation. We discovered that ageing would have precipitated a decline of 0.34 percentage points (per year) in the urban labour-force growth rate. In contrast, in rural areas, urbanisation exacerbated the decrease in the labour force experienced between 2010 and 2020 (Table 1).

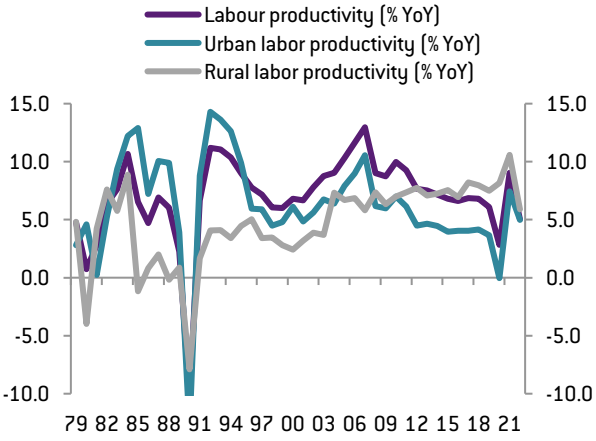
Figure 5: Urbanisation rate by age group (%)



N.B. data from China population sample survey, 5 year moving average used

Source: Natixis, CEIC

Figure 6: China's labour productivity



Source: Natixis.

Table 1: The impact of demographic change on the labour-force growth rate, 2000 to 2020 (%)

		Actual labour-force growth rate (annualised)	Counterfactual: labour-force growth rate if no population structure change (annualised)	Difference between outcome and counterfactual: impact of population aging (annual impact)
2000 - 2010	Total	0.65	0.12	0.53
	Urban	3.75	3.71	0.04
	Rural	-1.43	-2.03	0.60
2010 - 2020	Total	-1.26	1.45	-2.71
	Urban	1.85	2.19	-0.34
	Rural	-5.00	0.74	-5.74

Source: Bruegel based on China's Census.

We now move to estimating the influence of population ageing on China's labour supply over the next three decades, using United Nations (UN) population projections for China. We perform this analysis with some granularity thanks to the data availability, accounting for age and geographical (rural/urban) variances from 2020 to 2050. Owing to the absence of gender-specific population projection data in the UN database, our forecast calculations do not differentiate between male and female labour-force participation rates. Thus, we apply the following formula in our projection exercises:

$$L^{*}_{total,t} = \sum_{i=\{U_t,R_t\}} \sum_{k=\{Y_t,M_t,O_t\}} LPFR_{ijk} \cdot P_{ijk}, \text{where } t = 2035, 2020$$

To better understand the impact of urbanisation on China's labour force, we conducted two scenarios. The first assumes no further progress in urbanisation; the second assumes continued urbanisation. It is worth noting that China's level of urbanisation is already high, so it is likely that the pace of urbanisation will slow in the future.

Our findings, presented in Table 2, show that the effects of population ageing on the labour force will remain relatively subdued until 2035 in all scenarios, even under the assumption of no further urbanisation. In the unrealistic first scenario of halted urbanisation – unrealistic because China's current urbanisation rate still hasn't reached that of developed countries – the total labour supply is expected to contract only by 0.1 percent annually from 2020 to 2035. This rate is even slightly lower than the decrease observed over the last decade (2010-2020). This can be attributed to the fact that the reduction in China's fertility rate since 2017 will only impact the working-age population after 16 years, once newborns reach employable age (ie from 2033 onwards). This conclusion aligns with the expectation that the rate of decline of the working-age population will decelerate over the next 15 years compared to 2010-2020. Under the more plausible scenario of continued urbanisation, China's urban labour force is projected to grow steadily from 2020 to 2035. These findings underscore the vital role of urbanisation in counterbalancing the adverse effects of population ageing on China's labour force.

Moreover, when we separate the results into rural and urban areas, the labour force in urban regions will decrease at an annualised rate of -0.23 percent in the scenario of no further urbanisation, while it will increase at an annual rate of 0.48 percent in the continued urbanisation scenario. In summary, the overall decline in China's labour force is expected to be minimal before 2035, as changes in the working-age population from 2020 to 2035 are relatively modest.

However, from 2035 to 2050, population aging will significantly impact China's labour force because the working-age population as a proportion of the total population will decrease substantially. This conclusion remains valid even if we assume continued but slowed urbanisation, a likely scenario

given the already high urbanisation ratio. It is noteworthy that the rate of urbanisation might also decelerate because of population ageing, as the working-age population, more incentivised to migrate to urban areas for better economic prospects, will decrease. An older rural population will be less motivated to relocate to urban areas, contributing to the slowdown in urbanisation.

Table 2: Predicted labour-force growth (annualised, %)

<table>
<tr><th colspan="3"></th><th>Total</th><th>Urban</th><th>Rural</th></tr>
<tr><td colspan="6">Baseline scenario (no further urbanisation)</td></tr>
<tr><td colspan="3">2020-2035 (with the urbanisation rate remaining the same as in 2020 – the share shown in brackets in %)</td><td rowspan="2">-0.10</td><td rowspan="2">-0.23</td><td rowspan="2">0.13</td></tr>
<tr><td>Age 16 – 24
(72)</td><td>Age 25 – 64
(65)</td><td>Age 65+
(52)</td></tr>
<tr><td colspan="3">2035-2050 (with the urbanisation rate remaining the same as in 2020 – the share shown in brackets in %)</td><td rowspan="2">-0.80</td><td rowspan="2">-0.95</td><td rowspan="2">-0.56</td></tr>
<tr><td>Age 16 – 24
(72)</td><td>Age 25 – 64
(65)</td><td>Age 65+
(52)</td></tr>
<tr><td colspan="6">Urbanisation scenario</td></tr>
<tr><td colspan="3">2020-2035 (with the urbanisation rate increased to the level indicated in brackets for 2035)</td><td rowspan="2">-0.18</td><td rowspan="2">0.48</td><td rowspan="2">-1.53</td></tr>
<tr><td>Age 16 – 24
(78)</td><td>Age 25 – 64
(70)</td><td>Age 65+
(68)</td></tr>
<tr><td colspan="3">2035-2050 (with the urbanisation rate increased to the level indicated in brackets for 2050)</td><td></td><td></td><td></td></tr>
<tr><td>Age 16 – 24
(85)</td><td>Age 25 – 64
(75)</td><td>Age 65+
(75)</td><td>-0.91</td><td>-0.69</td><td>-1.46</td></tr>
</table>

Source: Bruegel based on China's census. Note: The percentage numbers in brackets indicate the share of urban population in the total population for each age group at the end of the period. For example, 72 percent in the first bracket indicates that of the 16-24 age group, 72 percent will live in urban areas in 2035.

All in all, our estimates show that demographic change will be less severe for China from 2020 to 2035, and could be even positive in economic terms if urbanisation continues. However, from 2035, the impact will be much larger, reflecting the fall in the birth rate since 2017.

4 Impact of population ageing on Chinese GDP growth

To further gauge the impact of population ageing on economic growth, we decompose China's GDP from 2000 to 2010 and from 2010 to 2020 into GDP per worker (called labour productivity, y), the unemployment rate (u), and the labour force (N).

$$GDP_t = \frac{GDP_t}{L_t} \cdot \frac{L_t}{N_t} \cdot N_t = \frac{GDP_t}{L_t} \cdot \frac{L_t - U_t}{N_t} \cdot N_t = y_t \cdot (1 - u_t) \cdot N_t$$

Breaking down China's GDP into urban and rural areas, the equation can be further extended to:

$$GDP_t = \sum_{i=\{U_t, R_t\}} GDP_{it} = \sum_{i=\{U_t, R_t\}} y_{it} \cdot (1 - u_{it}) \cdot N_{it}$$

Using the formula above, we break down China's GDP for the years 2000, 2010 and 2020 into three components: labour productivity, the unemployment rate and the labour force. Our computations suggest that China's labour productivity nearly doubled between 2000 to 2010, while the urban

unemployment rate decreased from 8.3 percent to 5.2 percent over the same period. These factors collectively indicate a significant demographic dividend that fuelled China's growth during that decade.

In the following analysis, we assess the economic effect of population ageing on GDP through the three aforementioned mentioned transmission channels. Based on the discussion in section 3, we have already evaluated the impact of population ageing on the growth of the labour force (N_{it}), so the focus now turns to the remaining two pivotal variables: the unemployment rate and labour productivity. To streamline our analysis, we postulate that both variables are unaffected by population aging:

In the long term, the unemployment rate should tend to converge towards its natural rate. While population ageing might have the potential to influence the long-term unemployment rate, due to overarching structural shifts in the economy affecting labour market matching efficiency, the direction of such an effect is unclear in the economic literature. For instance, a decline in the younger population could pose hiring challenges for employers, potentially leading to a higher unemployment rate. However, an increase in the elderly cohorts could spur service activities catering to their needs, generating new labour demand from these emerging opportunities. The relationship between labour productivity and population aging could go either way. On the one hand, ageing might have an adverse effect on labour productivity because the stock of skills is likely to become outdated as workers age. For example, Aksoy *et al* (2015) found that older workers (in particular the 50-59 age group) make significantly fewer patent applications. On the other hand, accumulated work experience during the process of ageing also bring benefits to labour productivity (Disney, 1996). Aiyar *et al* (2016) used European data to show that the share of the workforce aged between 55 and 64 has a negative relationship with labour productivity, but their empirical study also found that the effect of the old-age dependency ratio on labour productivity is positive and statistically non-significant. Acemoglu and Restrepo (2022) suggested that labour productivity could be bolstered by the greater use of automation, including robots, when fewer labour resources are available in an economy, resulting in a more ambiguous relationship between population ageing and economic performance. Acemoglu and Restrepo (2017) also showed that countries experiencing more rapid population ageing have grown more in recent decades.

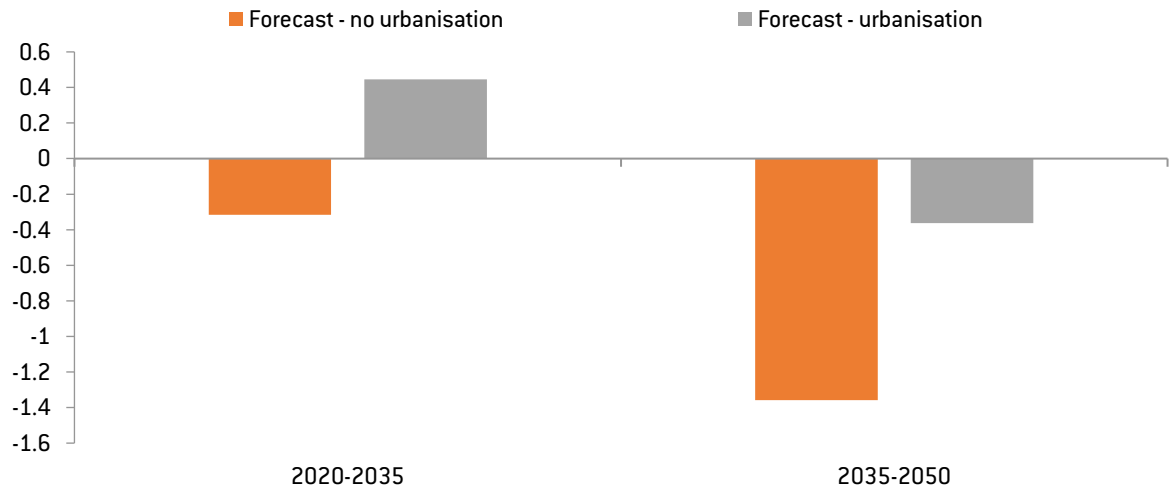
In the context of China, we also regress China's urban labour productivity growth rate on the old-age dependency ratio for the period from 1979 to 2022, and find no convincing correlation over the sampling period[2]. Because of the ambiguity of the correlation between population ageing and productivity, especially after inclusion of the elderly dependent cohort, we assume that labour productivity is neutral to population ageing in the empirical exercise.

If we analyse the impact of population aging by comparing the actual GDP growth rate with the counterfactual of no demographic change, we find that demographic change promoted China's GDP growth by an annual average growth rate of 0.49 percentage points during the first decade of the 2000s. However, between 2010 and 2020, this demographic dividend became a demographic burden, with population ageing effects reducing China's GDP growth rate by an estimated one percentage point each year.

[2] We make three types of regressions using China's historical data to investigate the effect of population ageing on labour productivity: (1) OLS regression with robust standard error; (2) ARMA(1,1) specification which considers an autoregressive order of 1 and moving average order of 1; (3) VAR specification with the lagged 2 or 3 period. If 1979 to 2022 is chosen as the sampling period, all the regression results are not statistically significant. If 2000 to 2022 is chosen as the sampling period, OLS shows negative and significant impact of the old dependency ratio but VAR shows positive and significant impact, whereas the ARMA shows negative but insignificant impact.

Next, we project the future impacts of population ageing on economic growth, based on the above decomposition equation through the labour-force channel. That is, we assume the other main drivers of economic growth, including labour productivity and the unemployment rate, remain constant for the prediction period. Our results show that in a scenario of halted urbanisation, the slightly slower growth of the working-age population from 2020 to 2035 will decrease the growth rate slightly, by -0.32 percent. This, however, is an unlikely scenario as urbanisation in China has been further fostered in the current Five Year Plan (2020-2025), raising labour-productivity growth over the 2020-2035 period. Conversely, from 2035 to 2050, the negative effects of population ageing on growth will increase significantly, both because the population will age faster and, most importantly, because China will have completed its urbanisation process, having reached an urbanisation rate similar to that of advanced economies (between 70 percent and 80 percent of the population). Under this more likely scenario, population ageing – and the related depopulation – will slice approximately 1.36 percent off GDP growth each year in the most probable scenario in which further urbanisation is no longer feasible (Figure 7).

Figure 7: Forecast impact of population ageing on China's GDP growth rate (%, only the labour supply channel is considered and no change in labour productivity)



Source: Bruegel.

Finally, we must question whether it is logical to assume constant labour productivity in an ageing society based only on the historical correlation between the two variables. Various theoretical factors could affect labour productivity as China's population ages, especially in a rapid technology-enhancing society.

First, a dwindling labour supply might trigger wage increases, leading firms to replace labour with capital (eg robots). Increased investment could theoretically stimulate economic growth, as proposed by Solow (1956). However, while it is theoretically plausible for the growth rate of investment to speed up as labour costs rise, other factors, including China's already high debt levels, could restrict funds for further investment. Moreover, additional capital could complicate the shift from labour-intensive to capital-intensive industries by making efficient sector allocation more challenging. Resource misallocation (Hsieh and Klenow, 2009) might limit the potential of capital-intensive investment to counterbalance the impact of population ageing.

Second, the integration of robots or artificial intelligence might augment labour productivity. Acemoglu and Restrepo (2022), for instance, proposed that demographic transformations lead to increased utilisation of automation technologies, thereby enhancing productivity.

Third, a decrease in fertility rates could potentially enhance human capital, resulting in higher labour productivity arising from the trade-off between child quality and quantity in family fertility decisions, as proposed by Becker (1960).

Lastly, population ageing will also impact an economy's saving and consumption patterns (Deaton, 2005), affecting the Chinese economy from a demand perspective. China has already signalled its intention to expand domestic consumption as a reliable source of economic growth. Changes in the expenditure structure could also impact China's labour productivity. However, drawing on Japan's experience, this may not necessarily be beneficial, as labour productivity in the services sector may be lower on average than in the manufacturing sector.

In conclusion, population ageing will have a direct but limited negative impact on Chinese growth until 2035, which could be mitigated by China's ongoing process of urbanisation. However, this impact will become substantially more significant post-2035. Besides population ageing, changes in labour productivity, some of which are related to ageing, will play a pivotal role in determining the long-term impact of population ageing on China's growth rate.

5 Conclusion

In this paper, we have analysed the impact of population ageing on China's labour supply and on the Chinese economy as a whole.

Based on current population forecasts, the impact of population aging on China's economy will be likely negative overall, as one would expect, but with a very different pattern in the next 10-15 years compared to the longer-term. More specifically, the impact of population ageing on China's GDP growth during our first forecast window, 2020-2035, will be offset – and not negative – as long as China continues to shift population from rural areas to the cities. In other words, the positive productivity differential in the urban areas versus rural areas, and the fact that depopulation will only continue to happen in the rural areas as long as the urbanisation rate continues to increase in China, will lead to economic growth in China. By 2035, though, China's urbanisation rate should have reached that of developed economies (between 70 percent and 80 percent of the total population), which means that the full impact of depopulation, through the reduction in the labour force, will affect GDP growth negatively. Our estimate is that the impact will be as much as a 1.5 percent reduction in the growth rate, which will by 2035 be further shaved off China's already meagre growth rate. In fact according to Garcia Herrero (2023), by 2035, China will grow at around 2.3 percent, from which the full impact of depopulation will need to be subtracted thereafter, bringing China to a growth rate similar to Japan. It should also be noted, though, that the UN population forecast for China's fertility rate may not accurately capture the future trajectory of China's working-age population after 2035.

Having said that, the impact of population ageing on the Chinese economy also hinges on the growth of labour productivity. The relationship between population ageing and labour productivity is not well established in the economic literature, especially given rapid technological change. In fact, the transition towards more capital-intensive sectors, increased use of robots and artificial intelligence, and improvements in human capital, may help offset the overall negative impact of population ageing on the Chinese economy by increasing labour productivity. Overall, it is too early to determine how Chinese productivity will react to population aging, while the impact on the labour force – coupled with urbanisation – is much easier to predict. This also means that the deceleration of the Chinese

economy during the last few years cannot be perceived as only a result of population aging or, at least, not solely the reduction in the labour force.

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