

October 2018

How Demographics Are Shaping China's Future

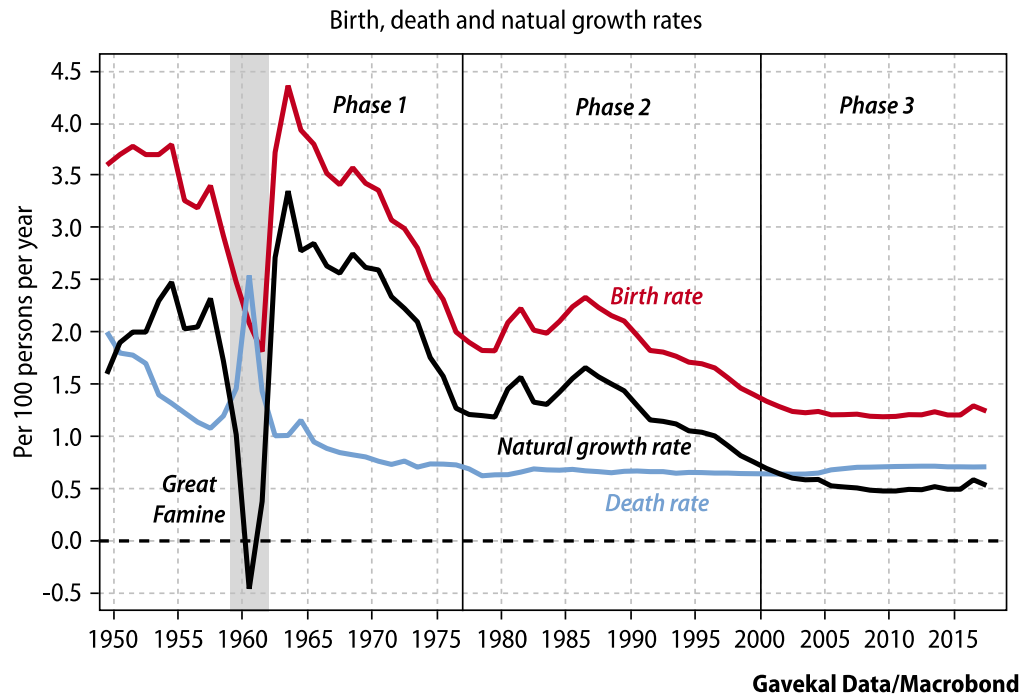
Ernan Cui

Part 1:

Population growth and fertility

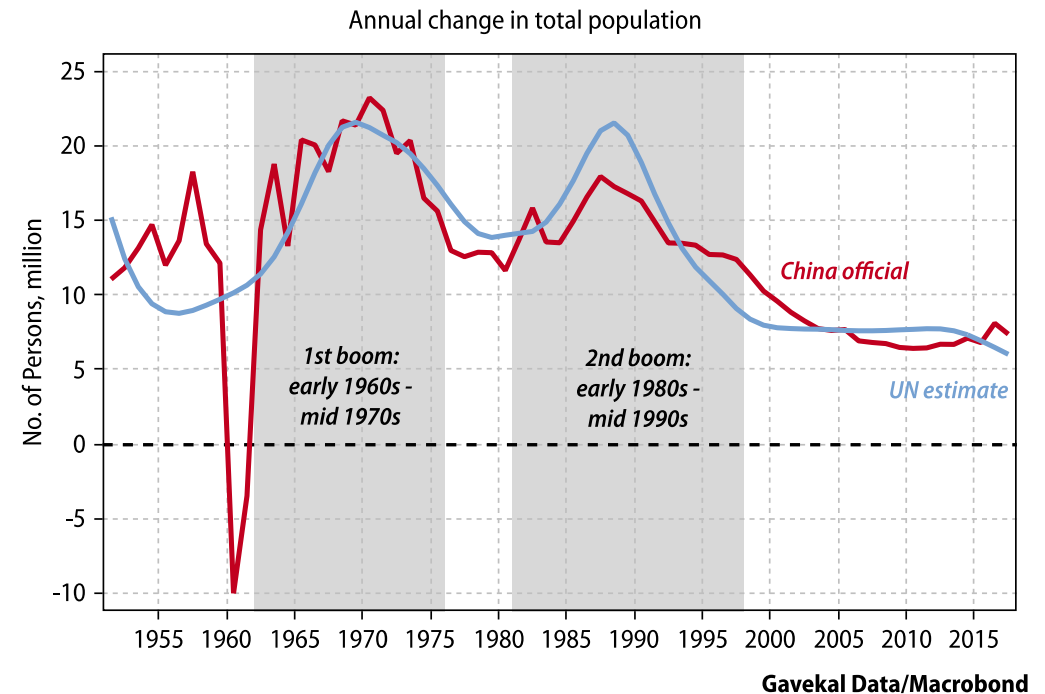
China's baby booms are all in the past

China's population growth has slowed as the birth rate declined



China's demographic transition has gone through three major periods. In Phase 1 (1950s-60s), death rates fell as healthcare improved, but birth rates stayed high. This caused the population to rapidly expand. In Phase 2 (1970s-90s), the birth rate started to decline as people adjusted to lower death rates and a more industrial and urban economy, but population growth was still high. In Phase 3, population growth slowed sharply and the birth rate stabilized at the low level characteristic of most modern societies.

Population growth was driven by two major "baby booms"

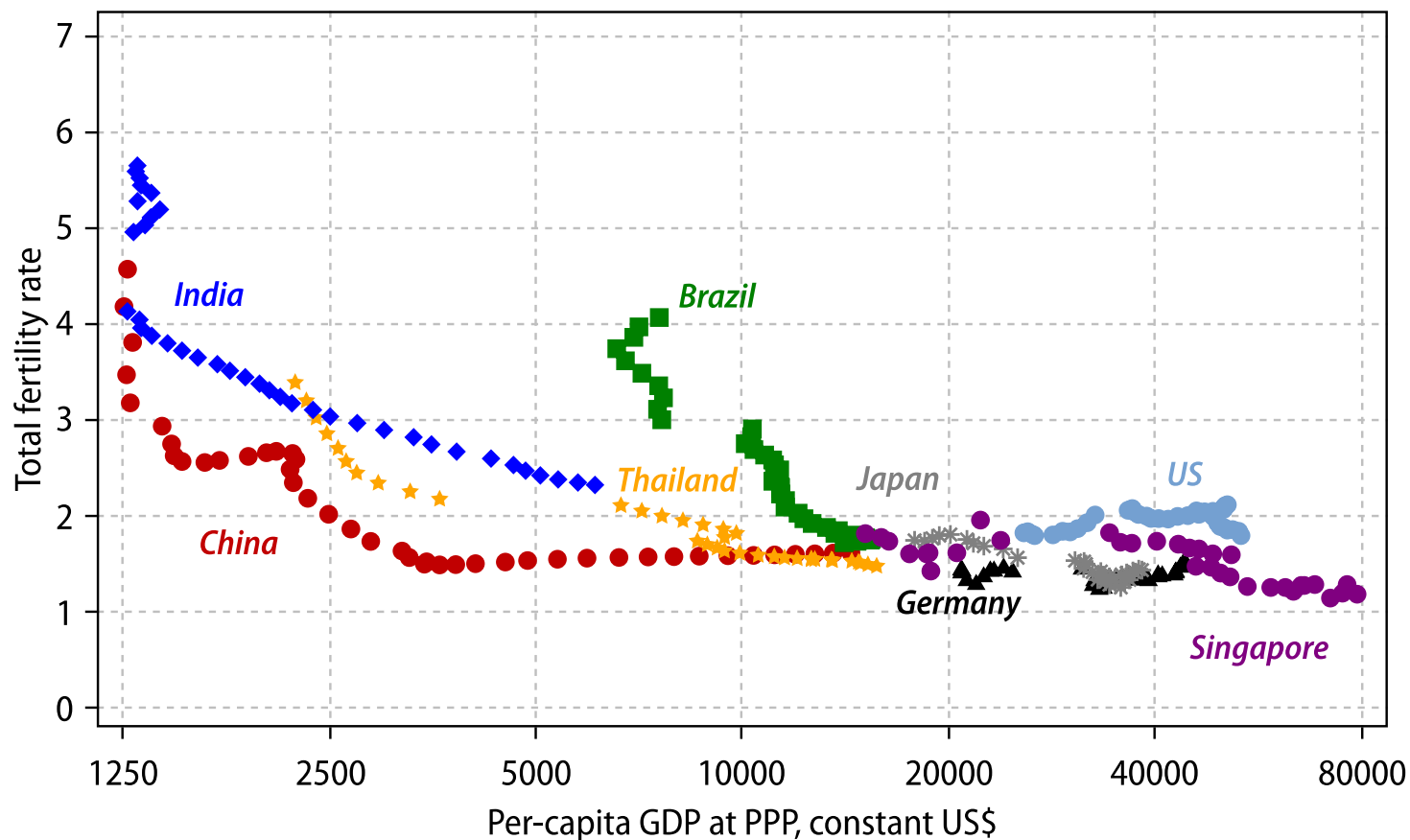


China has had two major "baby booms" that boosted population growth. The first came in the 1960s-70s, when birth rates rebounded after the catastrophic famine caused by the Great Leap Forward. The children born in that period then caused a second, shallower baby boom in the 1980s-90s, when they became parents themselves. Since the 1990s, the effect of the baby booms has retreated. The population as a whole is aging as fewer children are born and the existing population lives longer.

China's fertility rate is now normal for its income level

China's fertility rate has converged to the norm for urbanized societies

Total fertility rate vs. income level



Gavekal Data/Macrobond

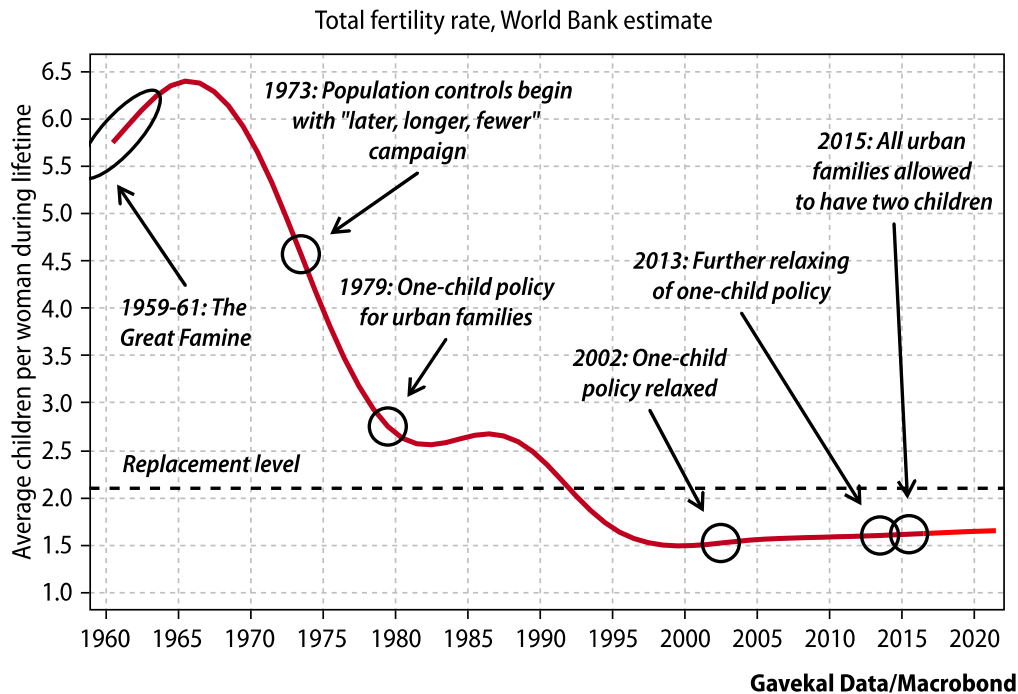
In the past, China's fertility rate was low compared to other developing countries at similar levels of income, reflecting the effect of its strict family planning policies. (Thailand also introduced family planning policies in the 1970s that pushed down fertility.)

But China's fertility rate is no longer unusually low: it has converged to the low-fertility norm for urbanized societies.

As most high-income economies have relatively low fertility rates in the absence of immigration, we should not expect fertility rates in China to increase much in the future, regardless of changes to family planning policies.

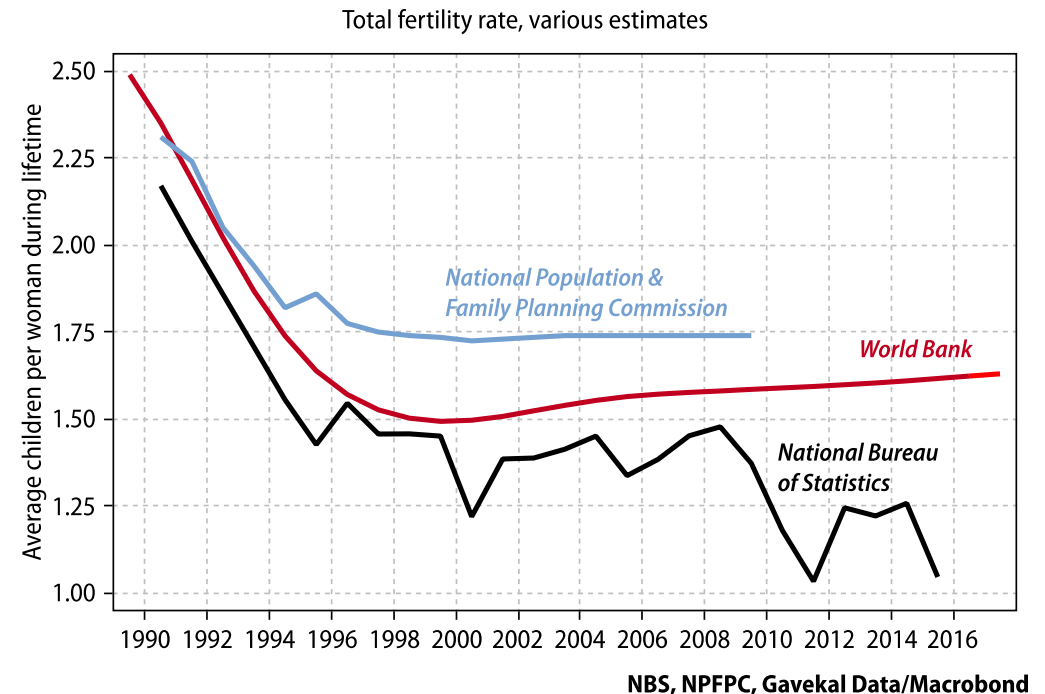
Policy interventions became less effective as fertility moved lower

Policy intervention had more effect when fertility rates were higher



China started nationwide population controls in 1970s, and its fertility rate declined by more than half in that decade. The decline of the fertility rate actually slowed after the introduction of the one-child policy in the 1980s, even though its restrictions were more stringent. That policy was first loosened in the early 2000s, when only children were themselves permitted to have two children. The limit was lifted to two children for all urban families in 2015, but this did not have a significant impact on the overall fertility rate.

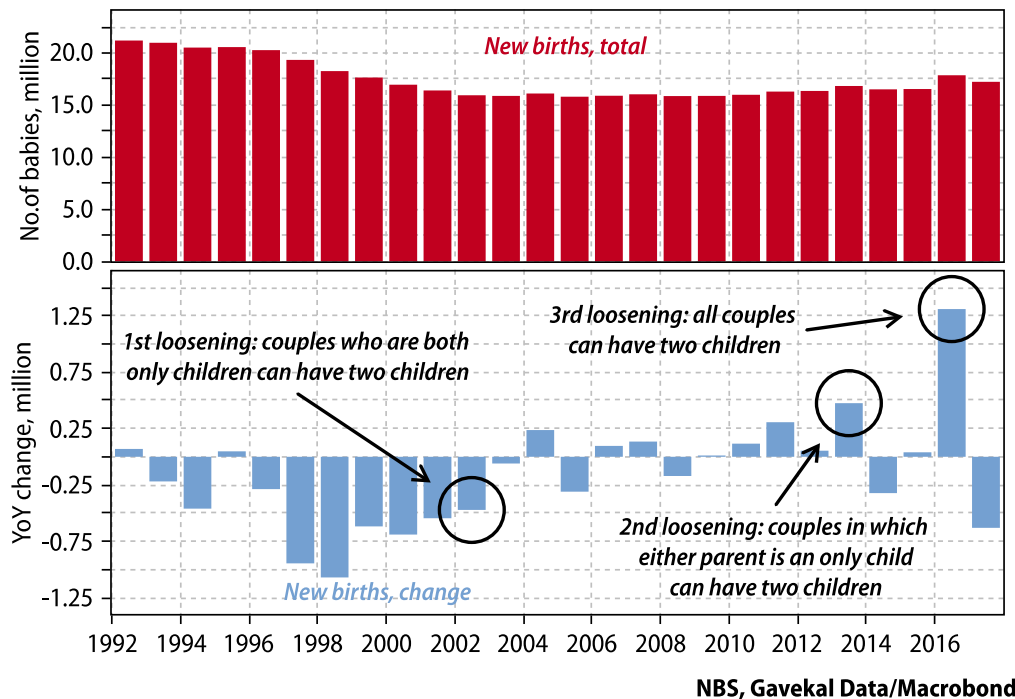
Official sources have both over- and under-estimated the fertility rate



Many scholars had argued for family planning policies to be loosened much earlier than they actually were. One reason for delay was the unrealistically high fertility rate published by family-planning authorities, which understated the pace of demographic change. More recently, there have been disputes over the much lower fertility rate derived from the census conducted by the National Bureau of Statistics of China, which is likely understated. The NBS stopped publishing this figure in 2017, apparently confirming that it was inaccurate.

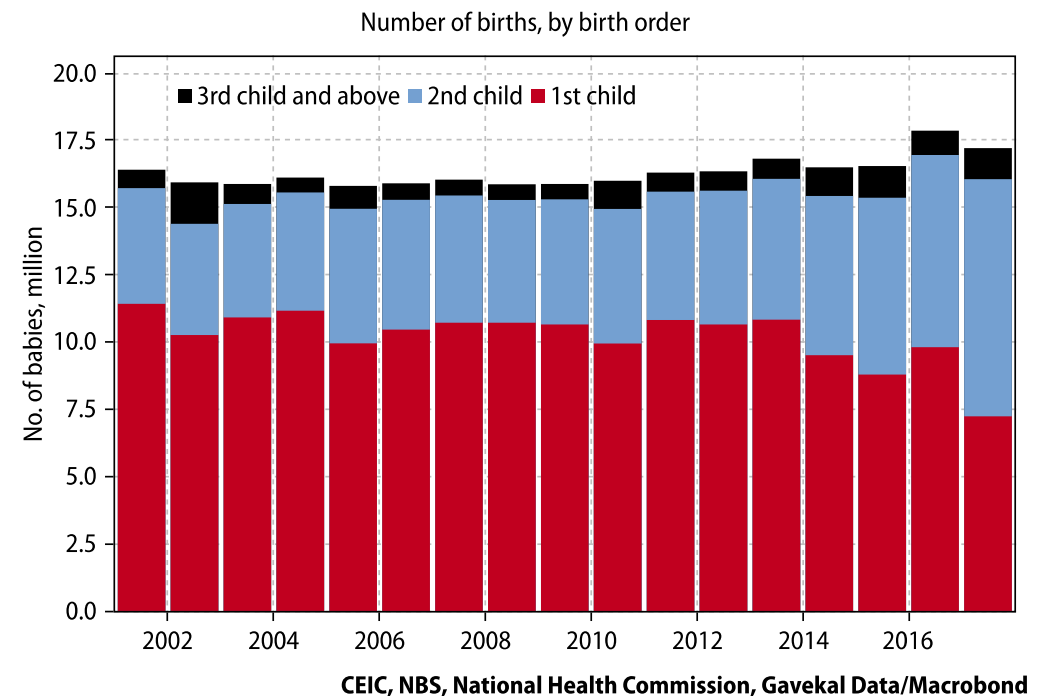
The loosening of family-planning policies has not had major effects

Policy changes boosted births only temporarily



After the first loosening of family-planning policies in 2002, the number of births stopped declining and stabilized. When the central government announced further relaxations of the rules in 2013 and 2015, the number of births rebounded in each of the following years. The 17.9mn new babies born in 2016 was the highest in almost two decades—but births fell back in 2017. The temporary effect of the policy change suggests that relatively few families were constrained by policy, and most are planning for a small number of children.

The increase in 2nd children has been offset by decline of 1st children

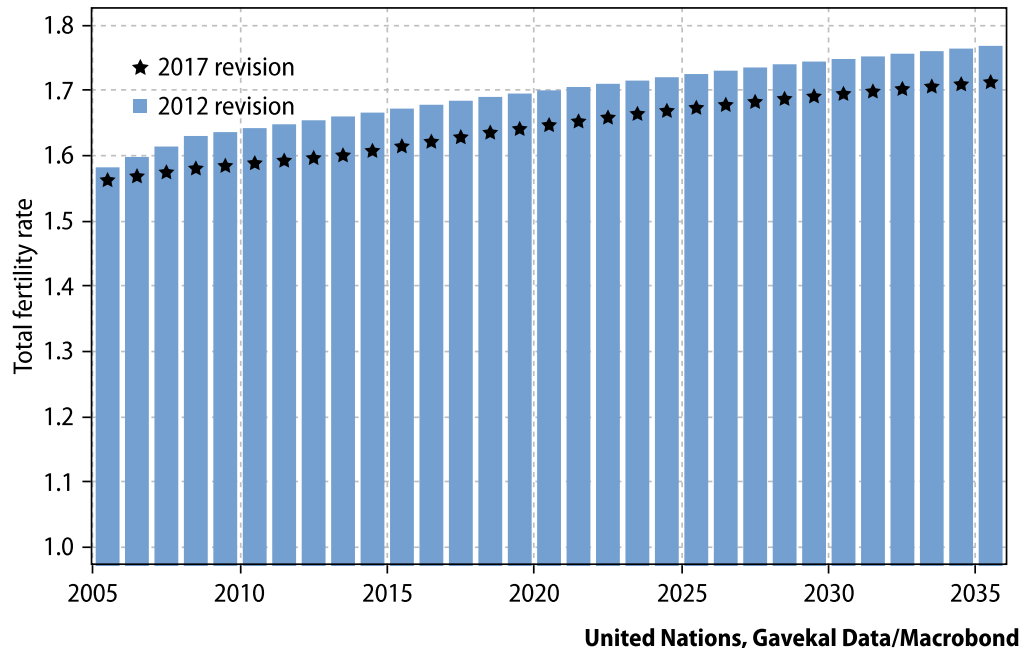


The changing policies did lead to more couples having a second child—but at the same time, fewer couples were having their first child. In 2017, the number of second children born hit a new high of 8.8mn, but the number of first children born hit a new low of 7.2mn. The high cost of child rearing and education are a bigger deterrent for most urban couples than policy restrictions. Some localities are now even encouraging second children with subsidies, but policies are unlikely to change the low-fertility trend.

Policy changes are not going to shift China's demographic trajectory

UN revised down fertility projections even after policy changes

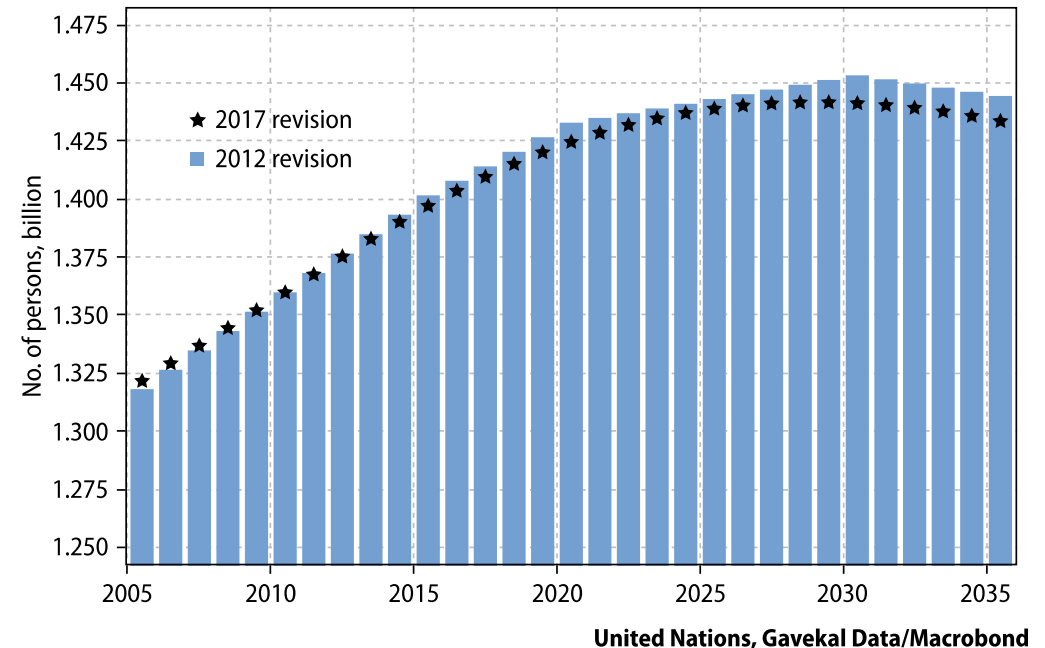
UN population projections, medium fertility variant



Even though China has stepped up the relaxation of family-planning policies since 2013, the impact is not expected to be very dramatic. The United Nations Population Division actually lowered rather than raised its projections for China's fertility rate and population growth in its 2017 update. The fertility rate is still projected to gradually rise over time, mainly as a result of declining infant mortality.

China's population is likely to peak around 2030 and then decline

UN population projections, medium fertility variant



According to the UN's most recent projections, China's total population will peak at 1.44bn people in 2029, compared to its previous projection of a peak of 1.45bn in 2030. The total fertility rate is projected to rise to 1.65 by 2020, compared to the previous projection of 1.7. Modest increases in fertility are not enough to alter the existing demographic trajectory of stalling population growth and an aging society.

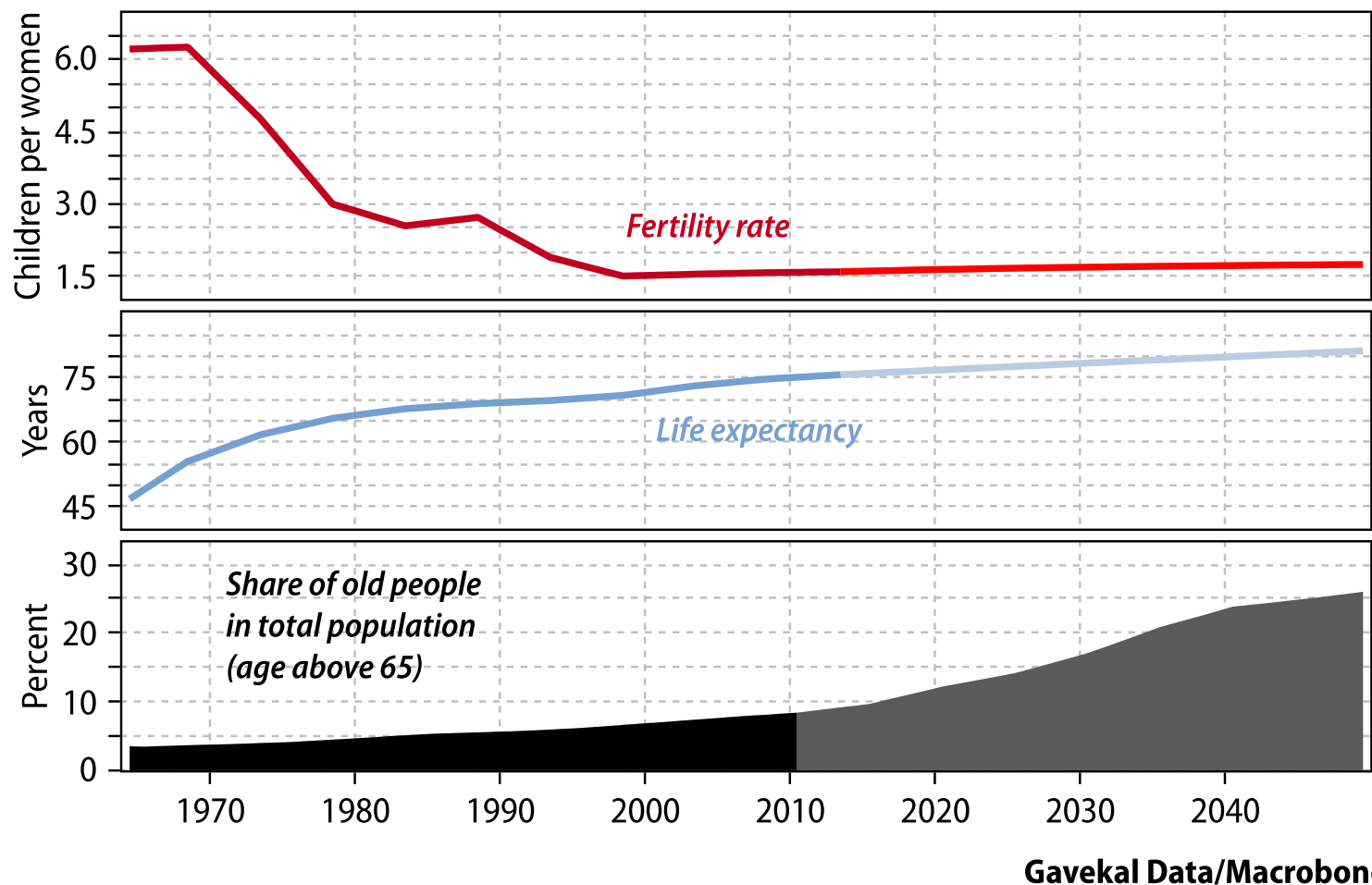
Part 2:

The implications of an aging population

China is locked into an aging trajectory

Low fertility and high life expectancy mean more older people

UN projections, medium fertility variant



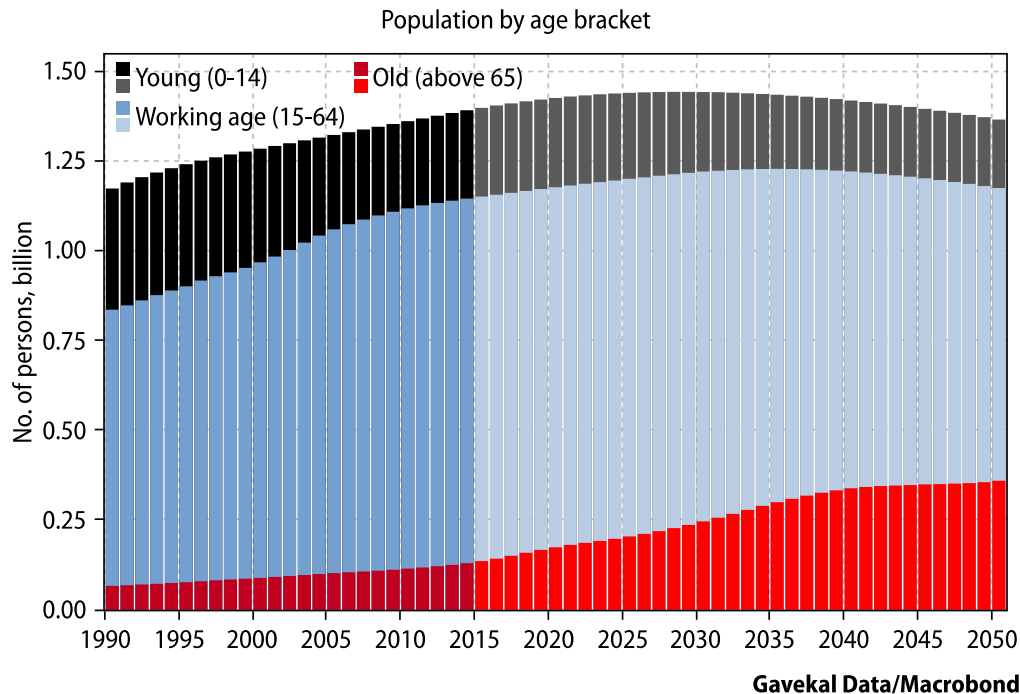
From the 1960s to the late 1990s, China's fertility rate declined by 75%: women now have an average of 1.5 children rather than six. Over the same period, China's life expectancy has increased by nearly 50%: from just 49 years to over 70, thanks to greatly improved healthcare.

These two factors have locked China into an aging trajectory, with the share of people older than 65 doubling from 3.5% in 1960s to 6.9% by 2000. Since then, fertility has stayed low but life expectancy has continued to rise, reinforcing the aging trend.

The elderly share of the population is now 10.7%, will hit 12% in 2020, and will double to 24% after 2040.

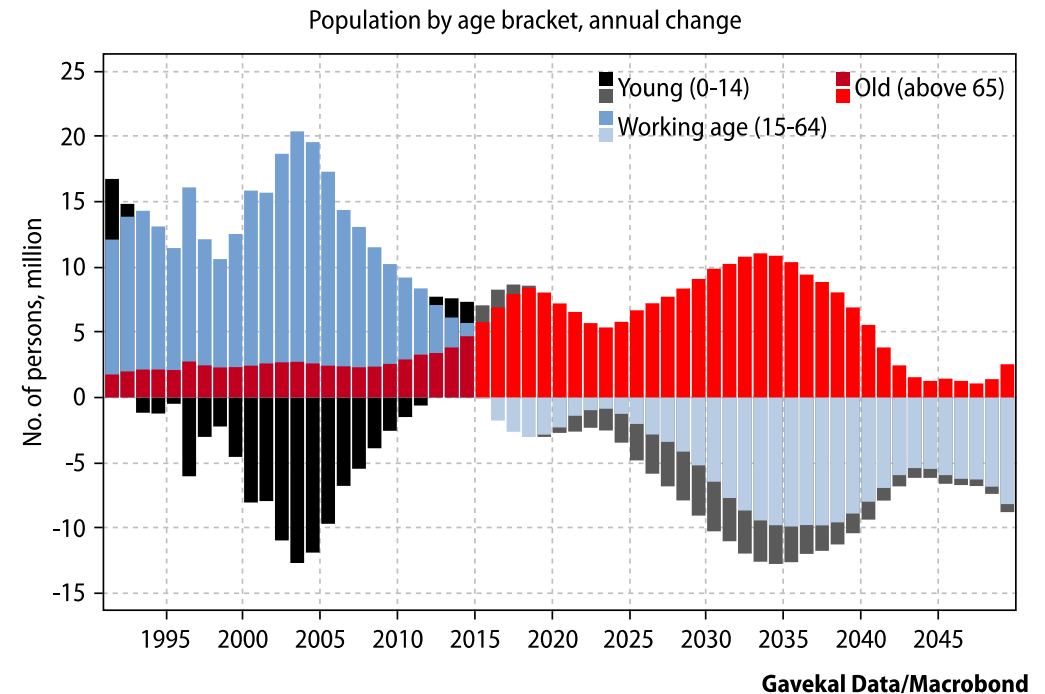
The elderly population is growing, others are shrinking

The elderly will account for all of future population growth



Even though China's total population will only increase by another 30mn or so in the coming decade, the elderly population (over 65) will increase by 70mn. The corollary is that China's young and working-age population will shrink: the young population (under 15) will decline by about 7% over the next decade, and the working-age population by about 2%. This means that a larger elderly population will be supported by a smaller working-age population: a rising dependency ratio.

The young and working-age population will shrink in coming decades

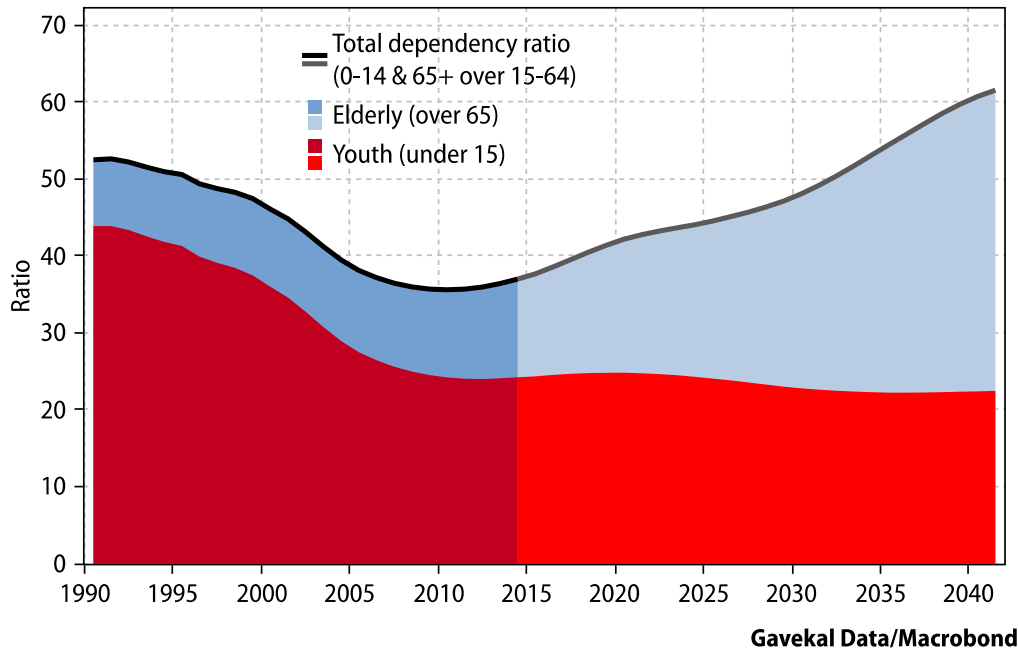


As the first wave of baby boomers began to reach retirement age in the mid-2010s, growth in China's elderly population started to accelerate. In 2018, there will be a net increase of 8.4mn elderly people, compared to the average annual increase of only 2mn before the 2010s. A second acceleration in the elderly population will hit in the mid-2030s, when the second wave of baby boomers reach retirement age. New entrants to the working-age population will not match these exits, further raising the dependency ratio.

The dependency ratio is rising as the elderly population expands

A future of fewer workers and more dependents

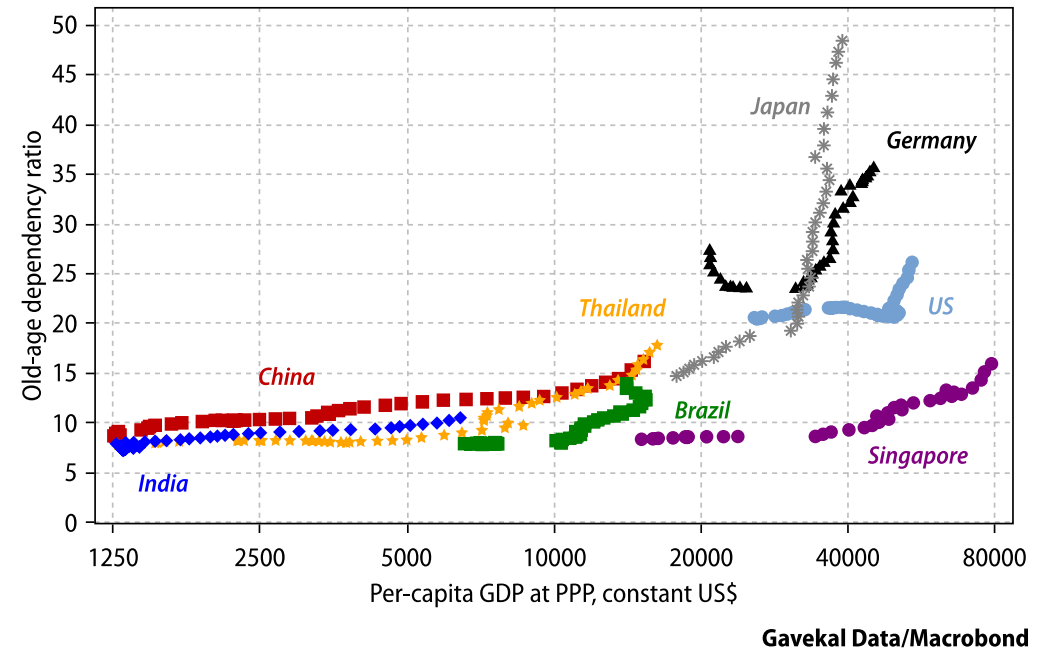
Ratio of over-65 and under-15 population to working-age population



One major consequence of an aging population is an increasing dependency ratio. This is the ratio of the population too old or young to work to the working-age population, a proxy for the burden of supporting those out of the labor force. China's total dependency ratio bottomed out in 2010, when 100 working age people supported 36 children and elderly. This ratio will increase to about 48 by 2030, entirely as a result of an increase in the elderly population. The youth dependency ratio will actually decrease slightly.

China is growing old before getting rich

Old-age dependency ratio (65+ over working-age population) vs. income level

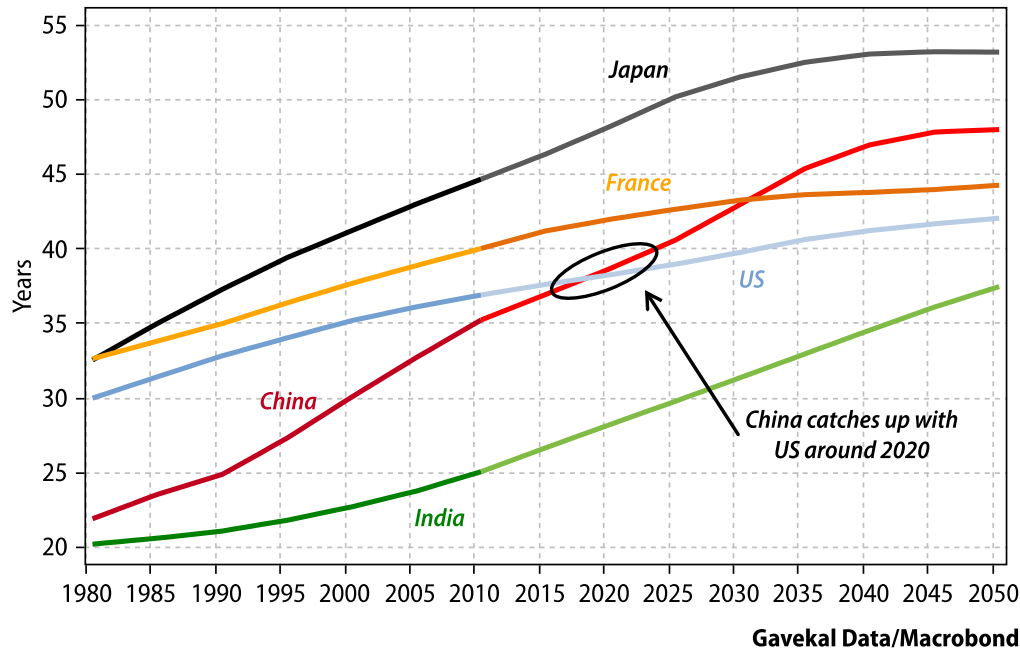


China has enjoyed a few decades of a low dependency ratio. But as the aging of its population accelerates, its old-age dependency ratio will soon match that of developed countries—well before China's per-capita income reaches comparable levels. Other developing economies like India and Brazil have a more moderate pace of population aging. Thailand, which also had family-planning controls in the 1970s, had an old-age dependency ratio similar to China's at comparable income levels.

How old is China? A global comparison

The age of China's population is converging with developed economies

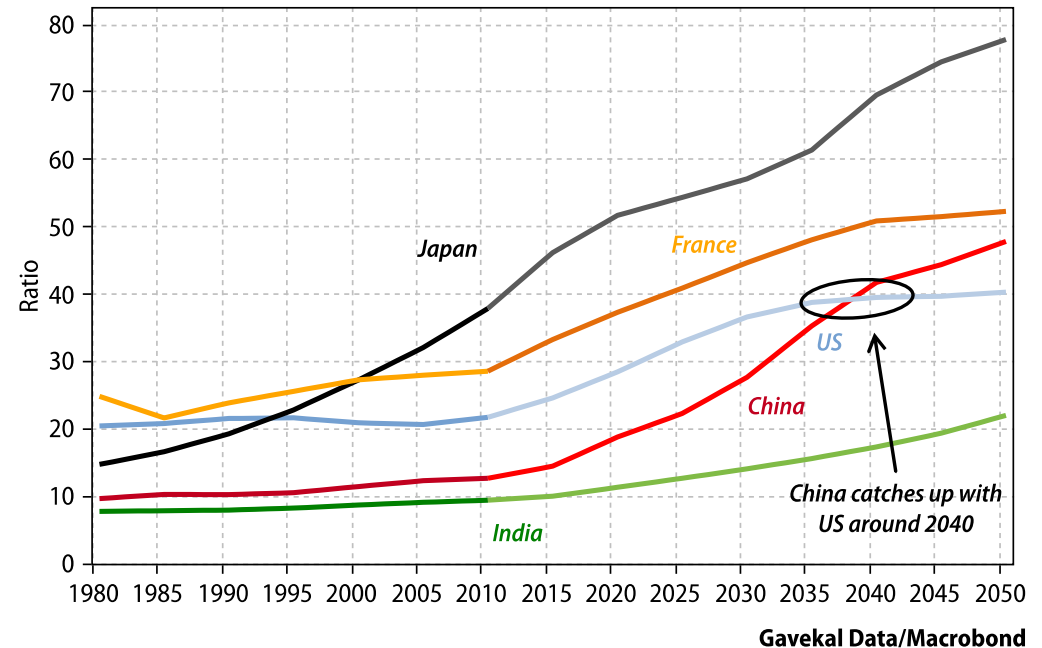
Median age of total population, UN projections, medium-fertility variant



China's population will age more rapidly than most other countries in coming decades. The median age of China's population will reach the US level of around 38 by 2020, and the French level of around 43 by the early 2030s. Japan is the country with the oldest population, with a current median age of around 47. It will take China until around 2040 to reach that level. But because China's fertility transition was quite rapid, the aging of its population will also be more rapid than in other countries.

China's dependency ratio will take another two decades to converge

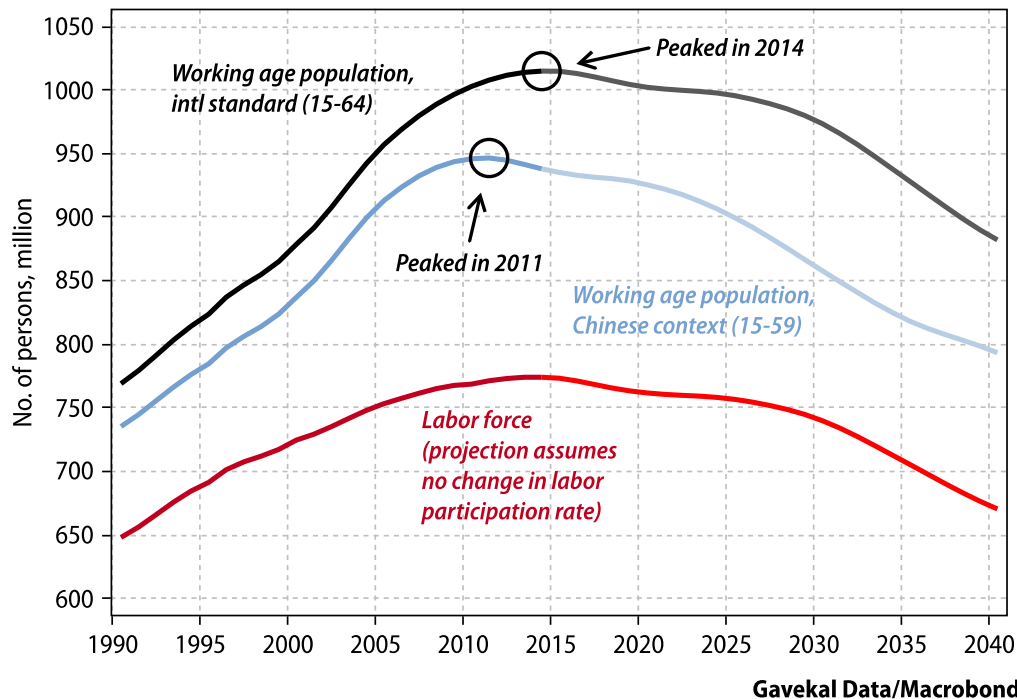
Old-age dependency ratio (65+ over 20-64 population)



The rise in China's old-age dependency ratio started to accelerate after 2010, and will accelerate further in the next two decades. The dependency ratio will match US levels by 2040, and will be similar to Europe's by 2050. While many countries face the challenge of a rising old-age dependency ratio, China's transition is happening more abruptly. Therefore, China will face increasing pressure in coming years to overhaul its labor practices and pension arrangements to ease the strain of supporting a larger elderly population.

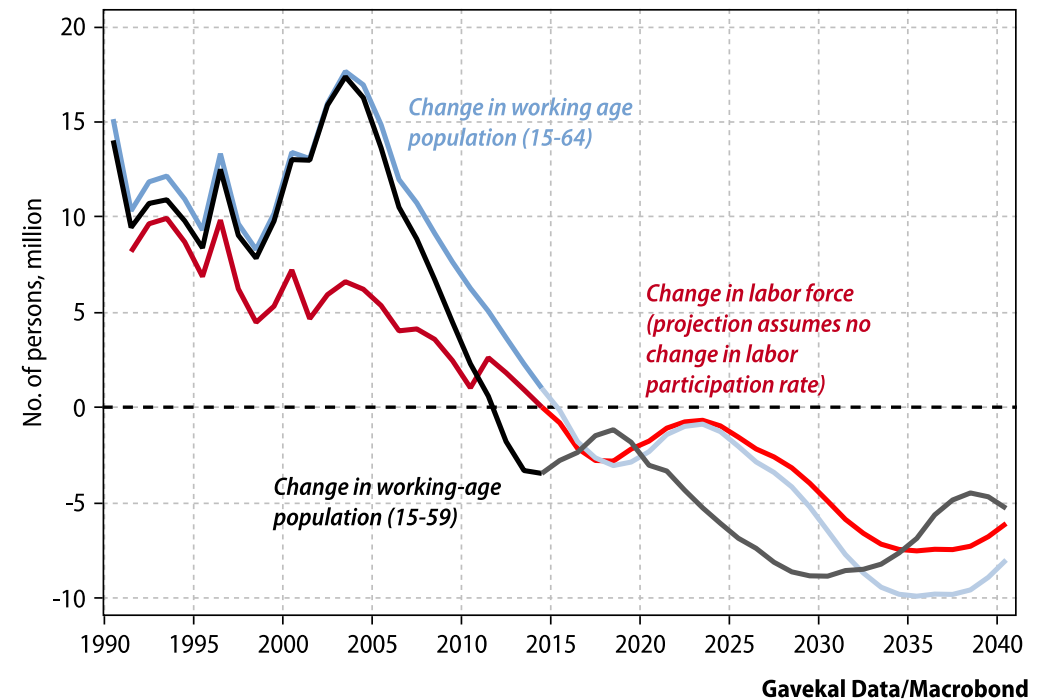
A shrinking working-age population puts pressure on the labor force

The working-age population and labor force is now shrinking



The aging population will have a profound impact on the labor market. When growth in China's elderly population started to surge in early 2010s, the working-age population had also peaked. The working-age population on the standard global definition (15-64) peaked at 1.01bn in 2014; a narrower definition based on China's official retirement ages (15-59) peaked at 938mn people in 2011. Most estimates of the employed population and total labor force have also peaked in recent years.

Following shrinking labor supply, employment just starts to decline

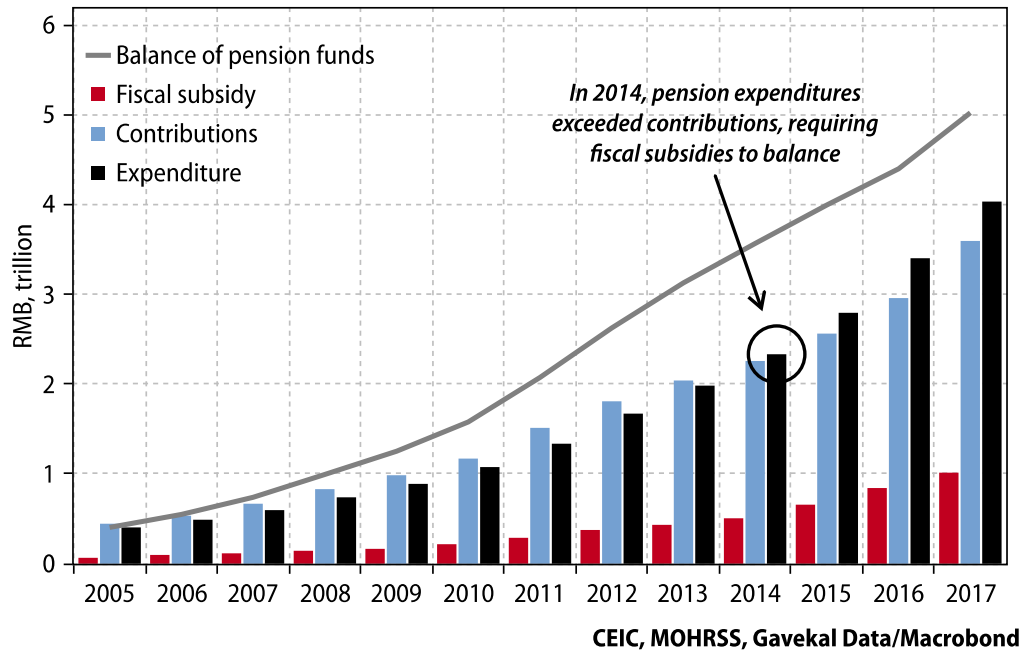


The old-age dependency ratio is an imperfect proxy of the pressure of an aging population, because the working-age population is not the same as the workforce. But if the nationwide labor participation rate does not change in coming years, the decline in the working-age population will cause the total labor force to fall by 1-2mn people annually over the next decade or so. To reduce the economic pressure of an aging population requires increasing labor participation and stabilizing the labor force.

China's pension system is facing increasing financial pressure

Retirement contributions are no longer sufficient to fund pensions

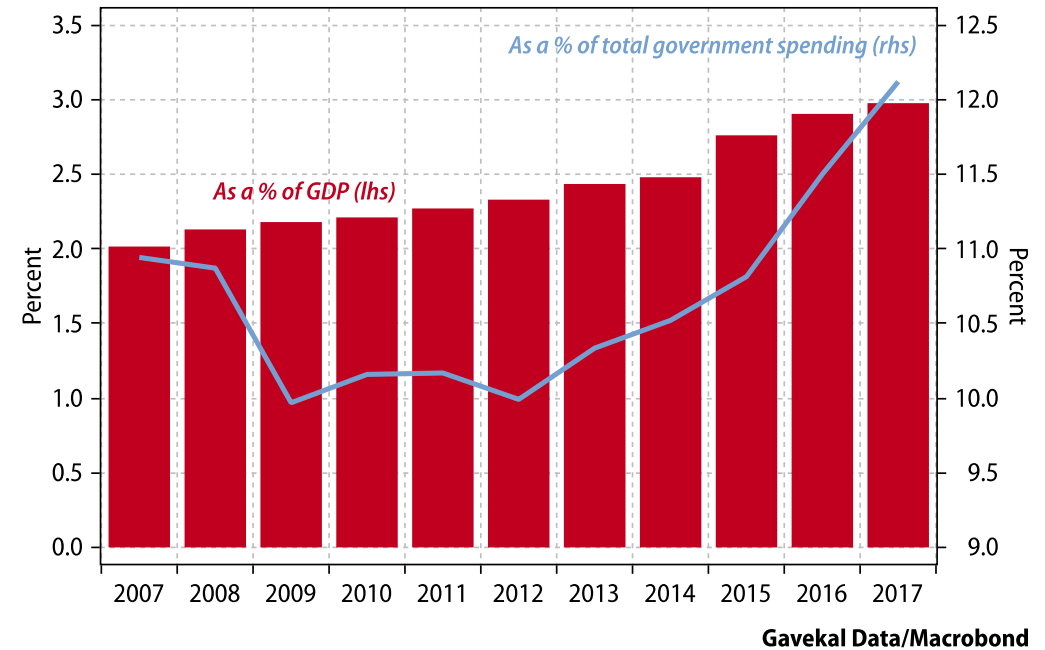
Accounting for nationwide basic pension system



An aging population and rising dependency ratio puts an increasing burden on the pension system. The national pension system was able to fund payments to current retirees from contributions from current workers after it was founded in 1998, but in 2014 these current contributions no longer covered expenses. The national government must therefore use other tax revenues to subsidize payments to current retirees. Since the number of retirees is growing and the number of workers is not, this fiscal burden will increase.

An older population means social security will eat up more of the budget

Government spending on social security, as a % of total spending and GDP

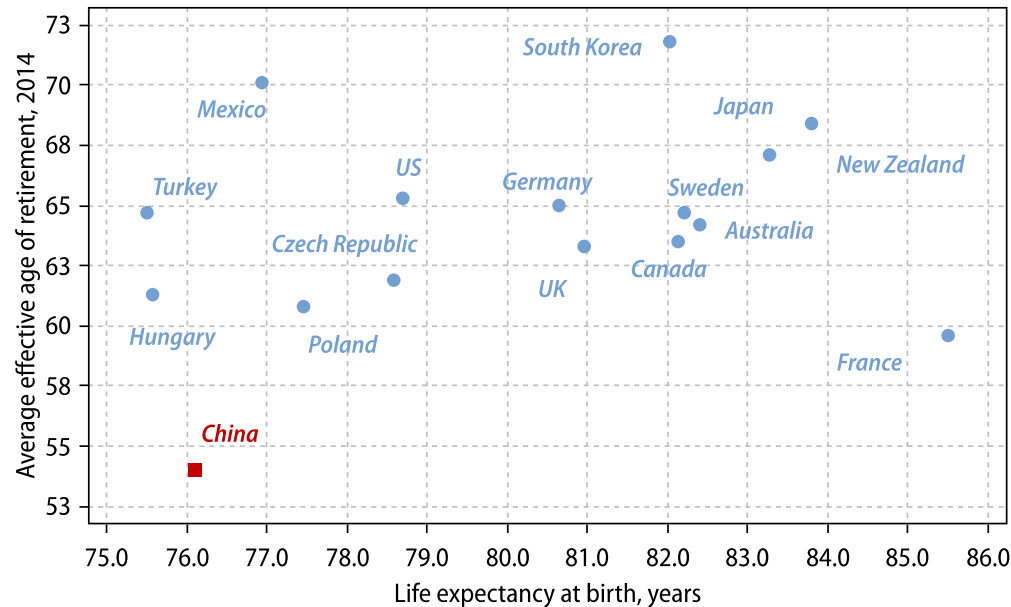


Because there will be fewer workers relative to retirees in the future, government finances will be under more pressure from the need to pay old-age pensions in coming decades. The government must either spend less on other priorities, run a larger budget deficit, or both. Total government spending on social security has risen more rapidly since 2012: it now makes up 12% of total spending and 3% of GDP, compared to 10% of spending and 2% of GDP. This trend is certain to continue in coming years as population aging accelerates.

Raising the retirement age would ease the burden of aging

Chinese people retire very early by international standards

Average effective age of retirement, simple average of men & women

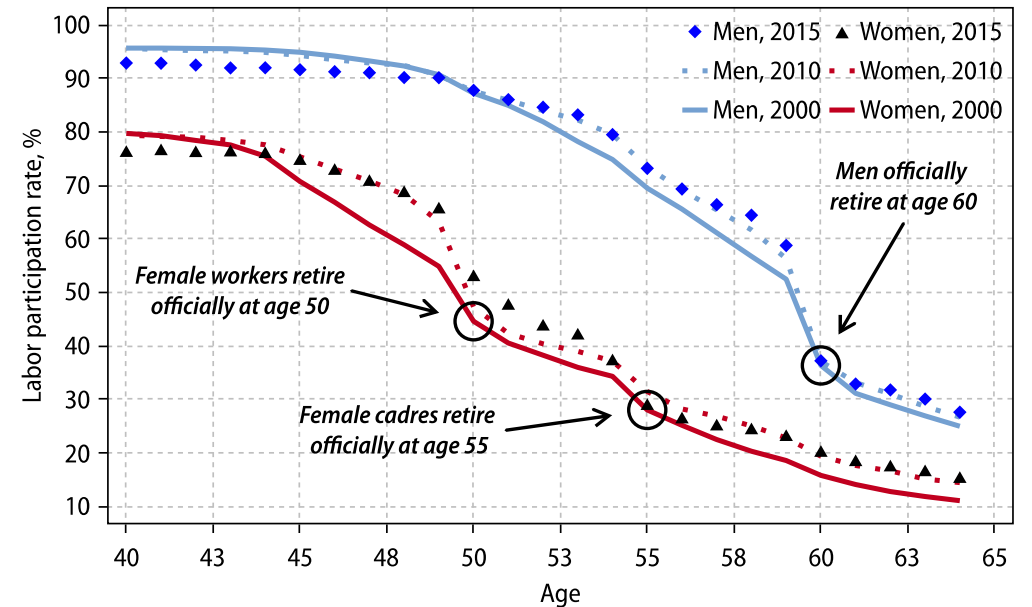


OECD, MOHRSS, Gavekal Data/Macrobond

Workers in China retire at an earlier age than in almost any other major economy. The average effective age of retirement (the age at which people actually stop working, rather than the age at which they are entitled to receive a full pension) is just 54, according to an official estimate, well below the 60+ figure more commonly seen in both developing and developed countries. In part this is because of China's low statutory retirement ages, which were established decades ago and were never changed to reflect rising life expectancy.

Labor-force participation among old workers has increased

Labor participation rate, urban

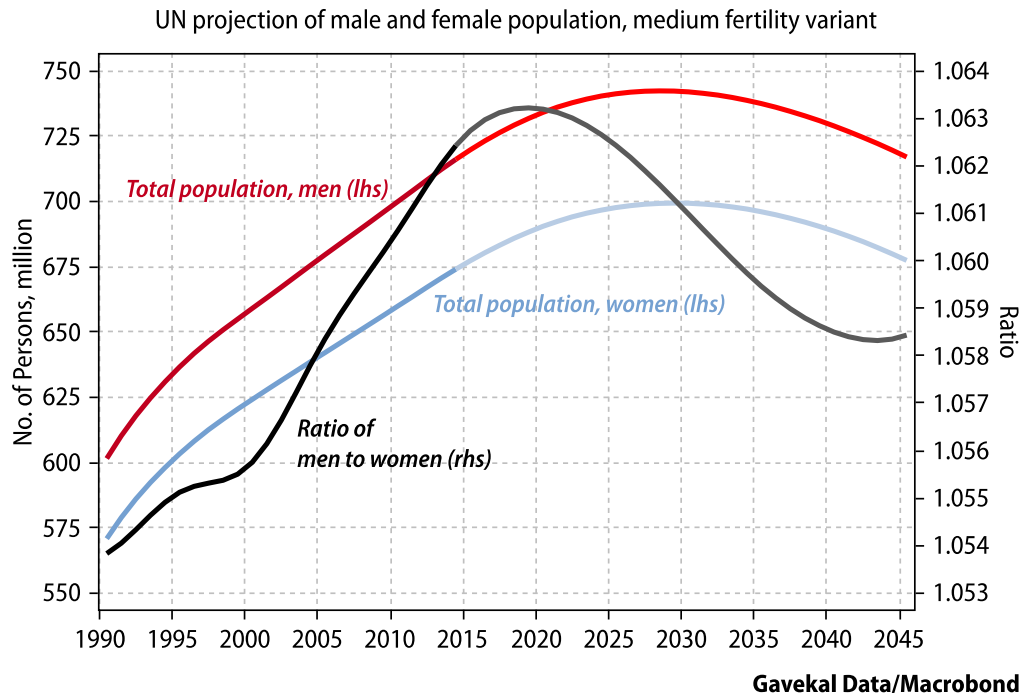


NBS census data, Gavekal Data/Macrobond

The main way to offset the negative impact from the shrinking working-age population is for people to work longer. In fact, the labor-force participation rates of urban men and women just before retirement age have risen noticeably over the past decade. Officially raising the retirement age would have an even greater impact on labor-force participation, and this has been discussed more since 2016. But no official decision has yet been made, and the government seems reluctant to push forward this change quickly.

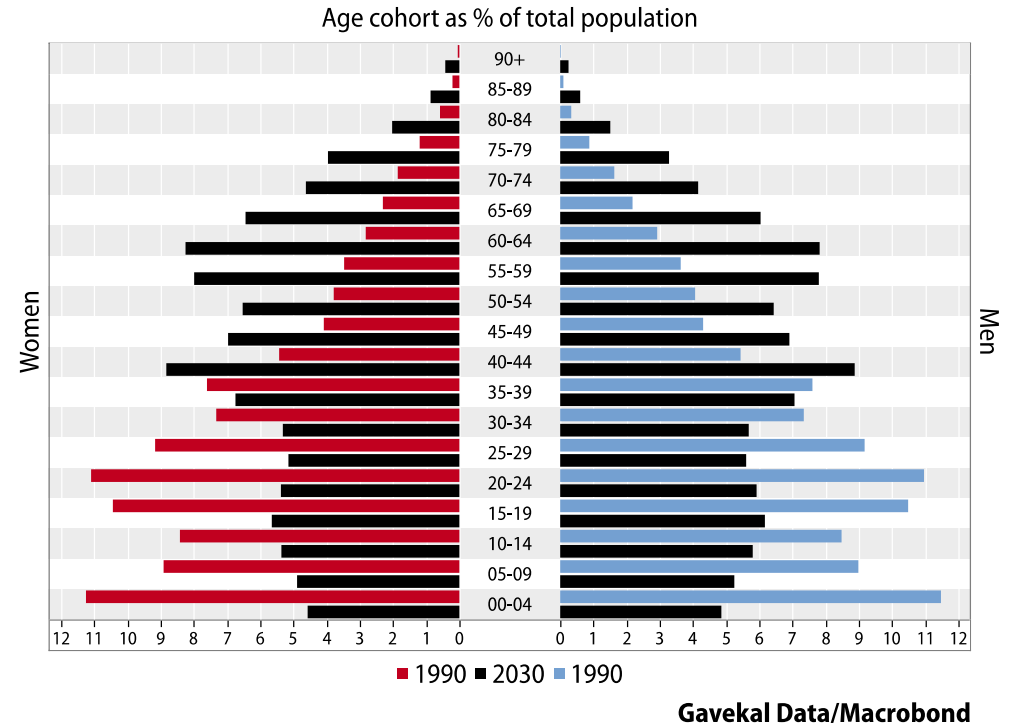
Men and women have a different aging profile

The extreme gender imbalance in the population should get better



The widespread availability of fetal ultrasounds and abortion, combined with strict family planning controls, has led to an imbalance in China's sex ratio. Sex-selective abortion is technically illegal but in fact quite common, particularly in rural areas. For many traditional families, if they are only allowed one child, they try to make sure it is male. While loosening family planning policies may not raise total fertility much, it could help gradually reduce the gender imbalance, which is currently around 106 men for every 100 women.

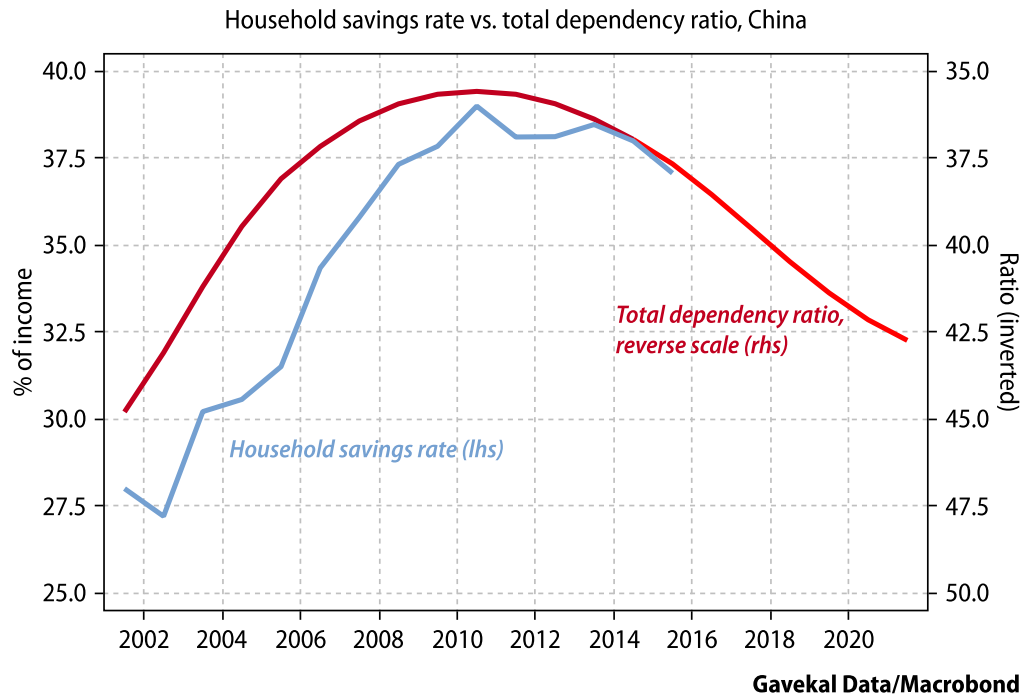
China's population pyramid is getting top-heavy, led by women



The imbalanced sex ratio means the male and female populations will age differently: with fewer girls than boys born in past years, the female population is aging faster than the male. The age structure of men and women was similar during the 1990s and 2000s, but is now diverging. By 2030, 27% of the female population will be over 60, but only 24% of the male population will be. Since men retire later than women, having more men in the working-age population could partly offset aging's impact on the labor force.

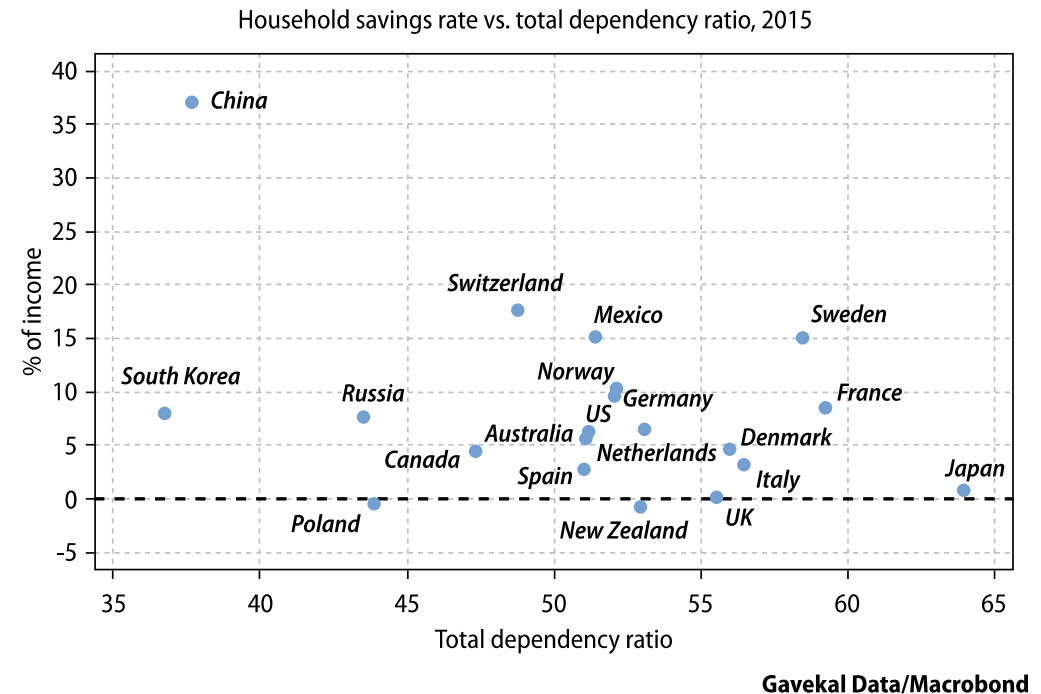
An aging population should mean a lower savings rate

A rising dependency ratio should mean a falling savings rate



The working-age population are mostly net savers, while the youth and elderly population are mostly net consumers. Therefore a rise in the total dependency ratio (old-age + youth) means fewer savers relative to consumers and thus should result in a lower aggregate savings rate. China's household savings rate rose in the 2000s as the dependency rate fell, but since 2011 the household savings rate has fallen—around the same time the dependency ratio started rising.

China's unusually high savings rate should move closer to global norms



China's household savings rate is still unusually high by global standards, given its dependency ratio. While demographics is not the only cause of high household savings in China, an aging population should mean that the savings rate becomes less of a global outlier. As the supply of savings to the economy becomes relatively less abundant, pressure will grow for China to use those savings more efficiently and rely less on extensive investment-led growth.

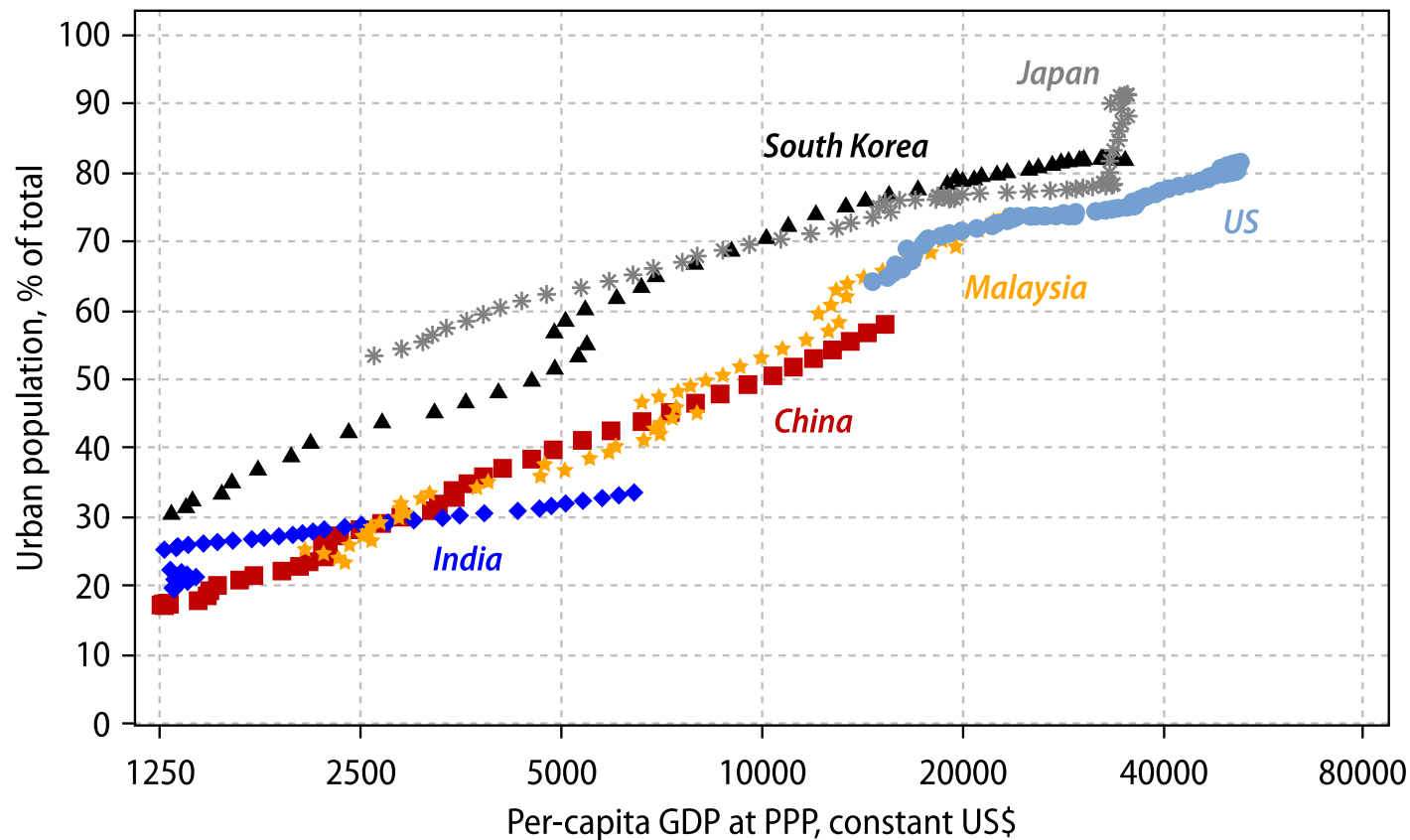
Part 3:

Urbanization and migration

China's urbanization process

China is reaching the late stages of urbanization

Urbanization rate vs. income level



Gavekal Data/Macrobond

China became a majority-urban country in 2011 and by 2017 the urbanization rate was close to 60%.

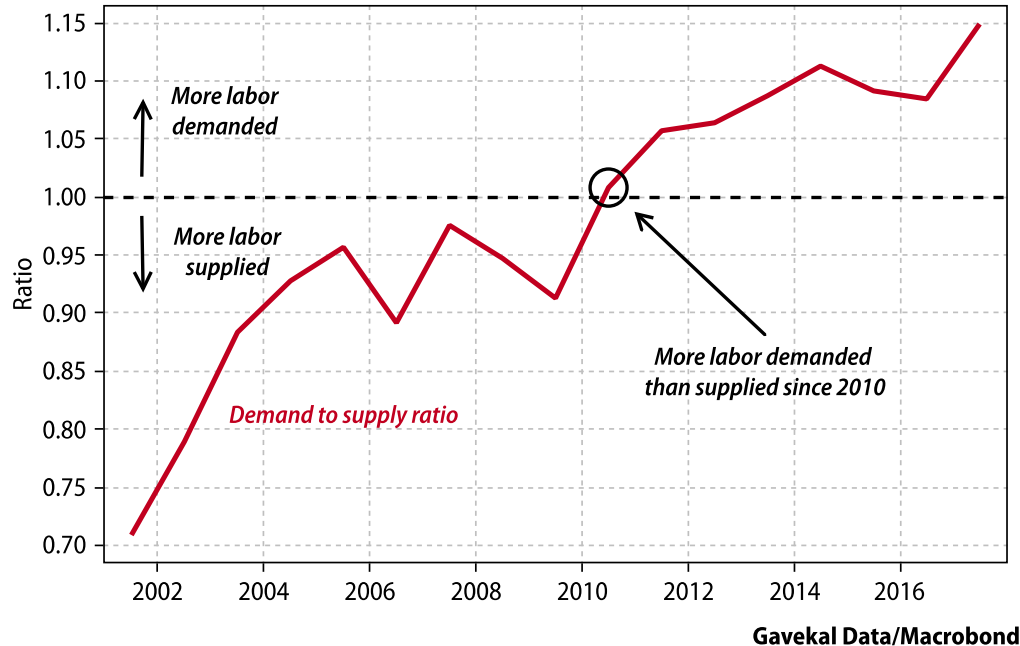
The speed of urbanization typically slows down as an economy develops: UN projections suggest China will take 30 years to go from 60% to 80% urban. It took only 15 years to get from 40% to 60% urban.

China's urbanization rate is comparatively low for its level of income, because of its household registration system and other policies that limit migration. So there could in theory be some "catch-up" urbanization if these restrictions were removed. But this appears unlikely; these policies are actually being tightened further in some places.

The labor market is getting tighter as urbanization slows

The urban job market is getting tighter as labor supply shrinks

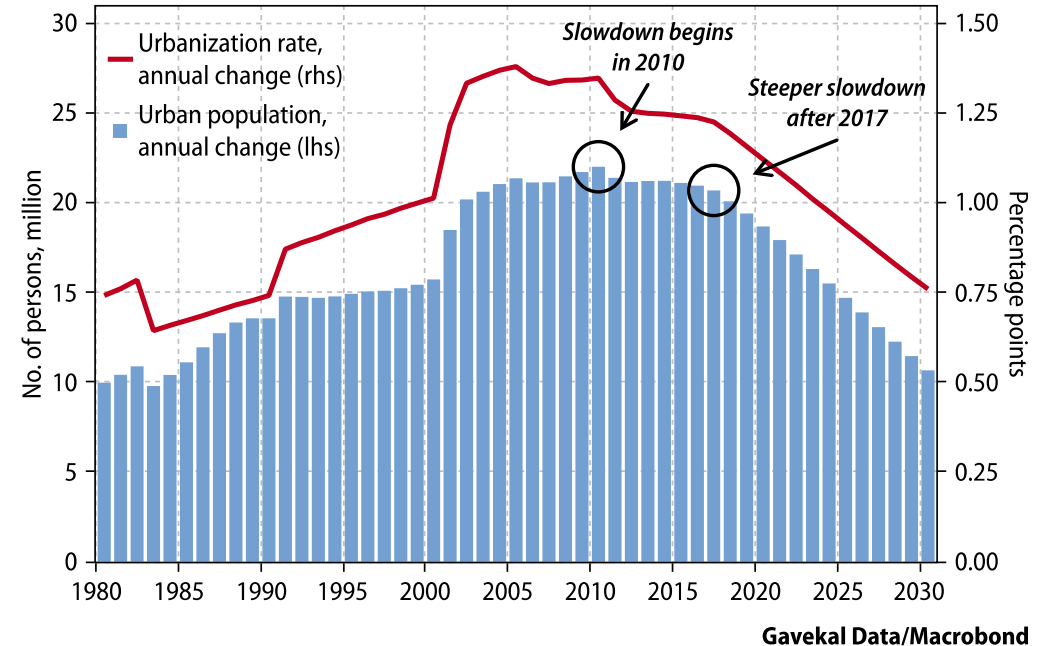
Urban job placement centers, ratio of labor demand to labor supply



The combination of a shrinking working-age population with a growing economy should mean a tighter labor market, as labor supply is not increasing to match labor demand. Surveys of the urban job market do show that labor demand has been larger than labor supply since 2010. By 2017, there were 115 open positions for every 100 job seekers. In addition to the aging population, the slowdown of urbanization is another factor in the tightening urban job market.

The pace of China's urbanization will keep slowing in coming decades

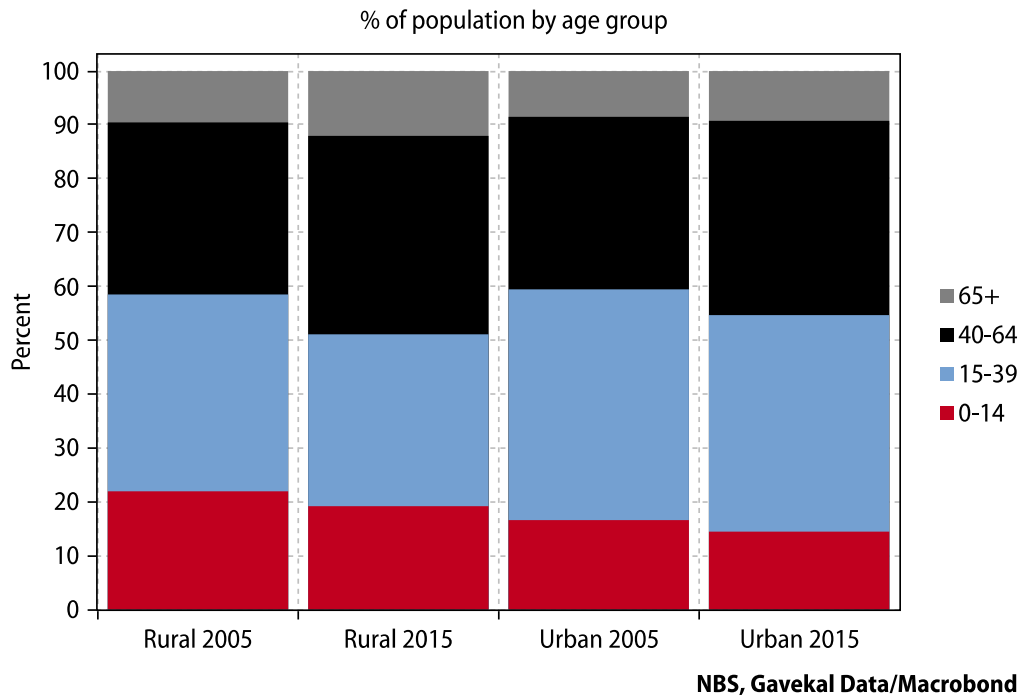
Share of population in urban areas, UN projections



China's urban job market has long been fueled by workers migrating from rural areas to do non-farm jobs in the city. The fast pace of urbanization in previous decades meant that the new supply of these low-cost workers was growing strongly every year. But the momentum of urbanization peaked in the 2010s after the urbanization rate passed 50%. This is around the time when the urban job market became much tighter. As urbanization slows further, this trend should continue.

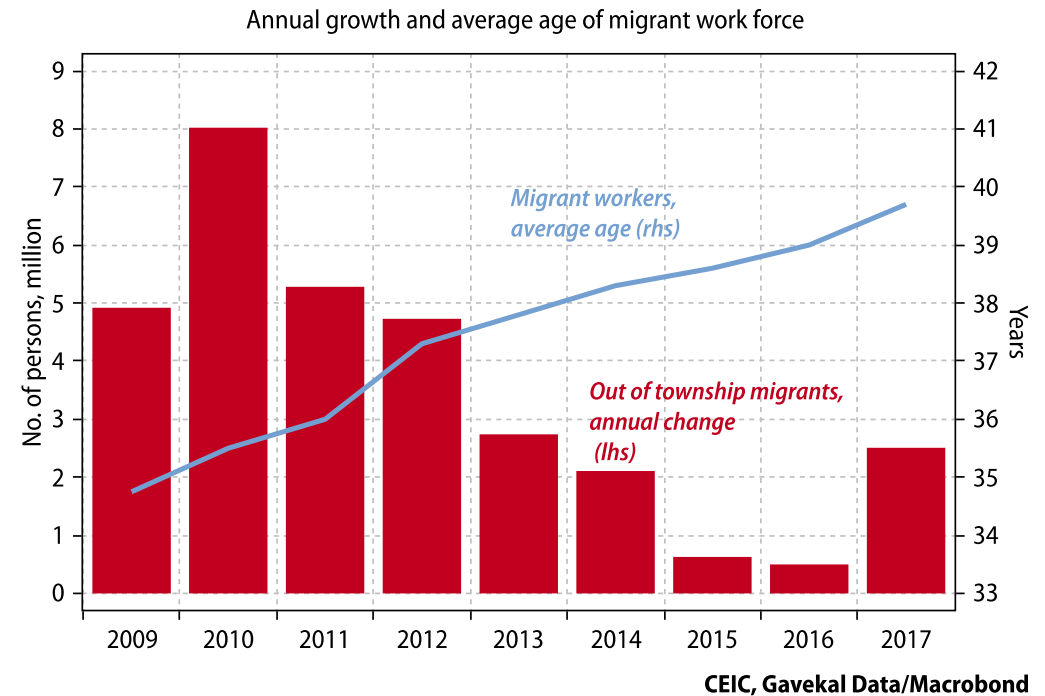
The migrant population is aging

The rural population is aging faster than the urban



The aging population and slowing urbanization are interrelated. During the rapid phase of urbanization, many young rural people moved to urban areas to work, often leaving behind their older parents. According to census data, the share of the young population (aged 15-39) in rural areas dropped by 5pp over 2005-15, 2pp faster than the decline of this group in urban areas. The aging population is thus more severe in rural areas, and the emptying out of the younger and middle-aged population has caused a lot of a concern.

As migrant workers get older, migration is slowing down

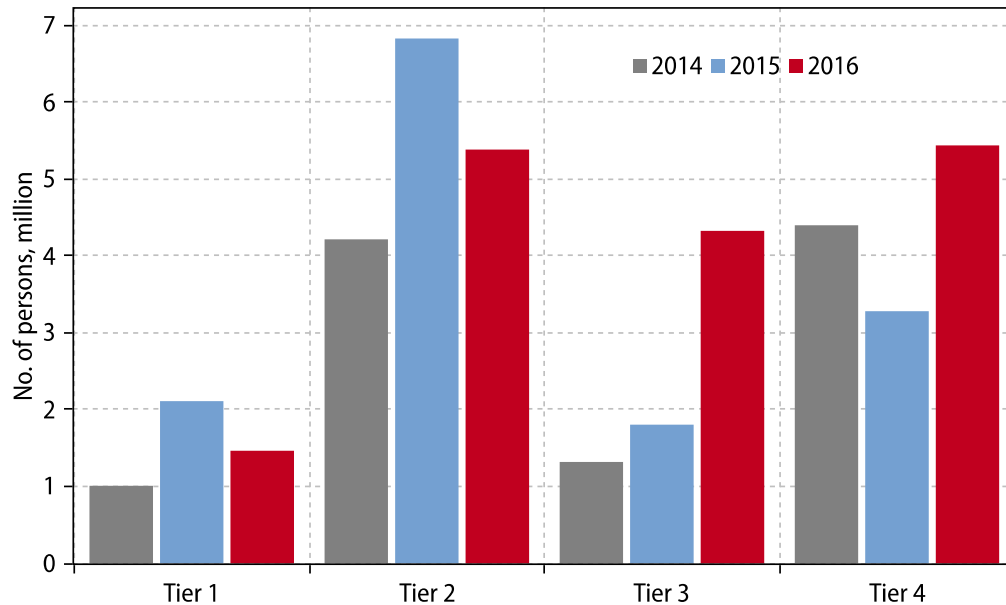


The aging rural population means that the pool of migrant workers is also aging: those migrating today are older than those who migrated in earlier years. According to an NBS survey, the average age of migrant workers reached 39.7 in 2017, almost five years higher than it was in 2009. Older workers tend to be less willing to uproot themselves and their families, which affects the volume and pattern of migration. More of these workers are seeking local non-farm jobs than long-distance migration (leaving the township).

The pattern of urbanization is changing

Population growth is accelerating in lower tier (smaller) cities

Total change in urban population for 287 cities, by tier

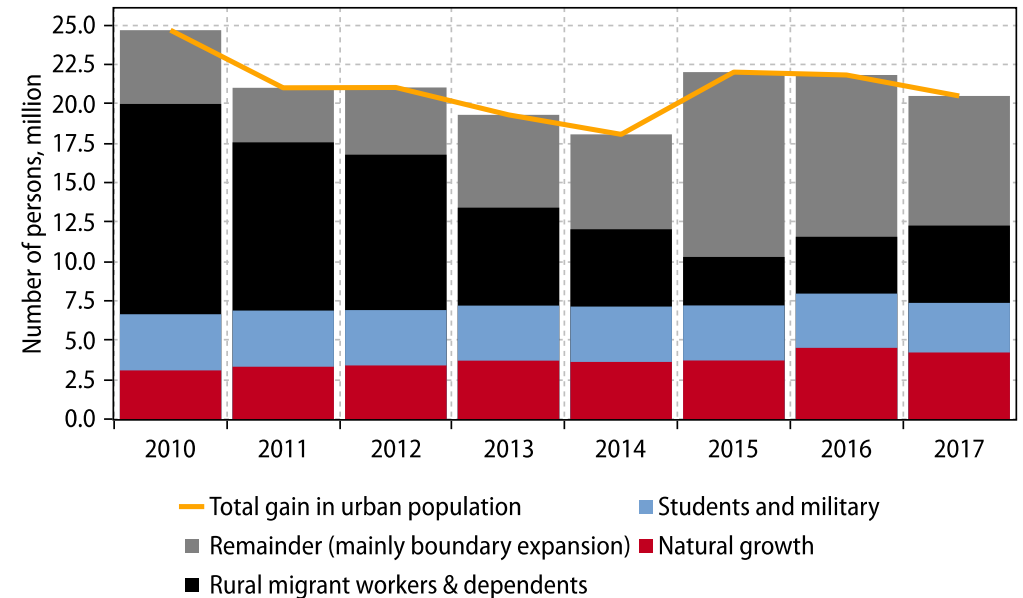


China Urban Construction Statistical Yearbook, Gavekal Data/Macrobond

The pattern of China's population movement is changing. Aging migrants are moving to places that are not as far away from their home village, which usually means smaller cities. Tougher curbs on population growth in the largest cities are also encouraging migration to smaller urban areas. In 2016, population growth in smaller Tier 3 and Tier 4 cities accelerated, while that in larger Tier 1 and Tier 2 cities decelerated. This trend has supported growth of housing and consumer markets in smaller and inland cities.

Urbanization is becoming less driven by migration

Annual increase in urban resident population, by source



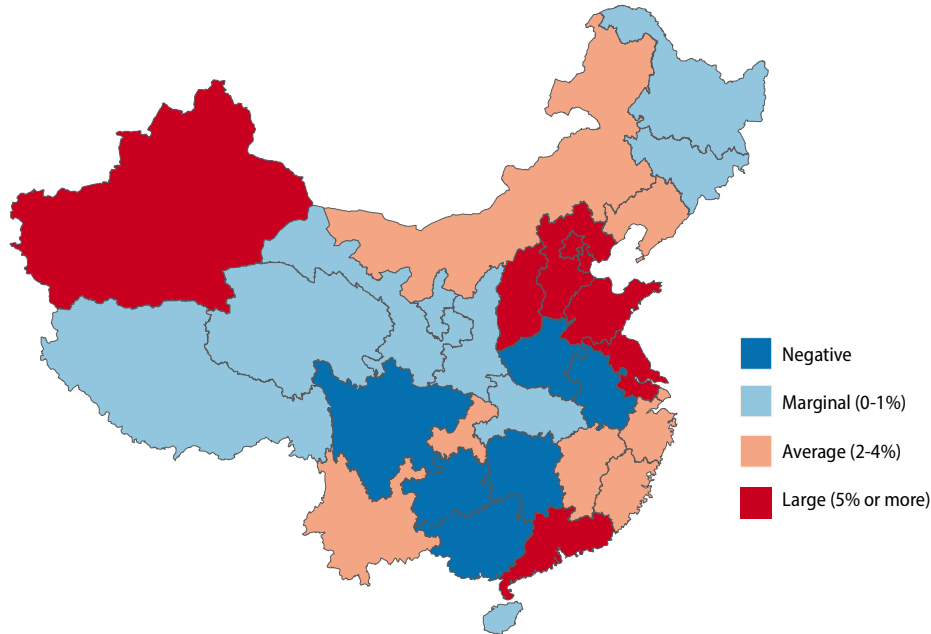
Shi et al. (2017), CEIC, Wind, Gavekal Data/Macrobond

Smaller cities have also been able to boost their growth through “in situ” or “local” urbanization: expanding the urban boundary to include surrounding areas. While rural-urban migration was the main driver of the increase in the urban population increase a decade ago, since around 2014 this has been replaced by the administrative expansion of urban areas (according to estimates by Chinese scholars). This pattern of urbanization is likely to drive less household income growth than rural-urban migration.

Population growth is shifting to central areas

In the previous decade, China's population concentrated along the coast

Provincial share of nationwide population growth over 2003-10

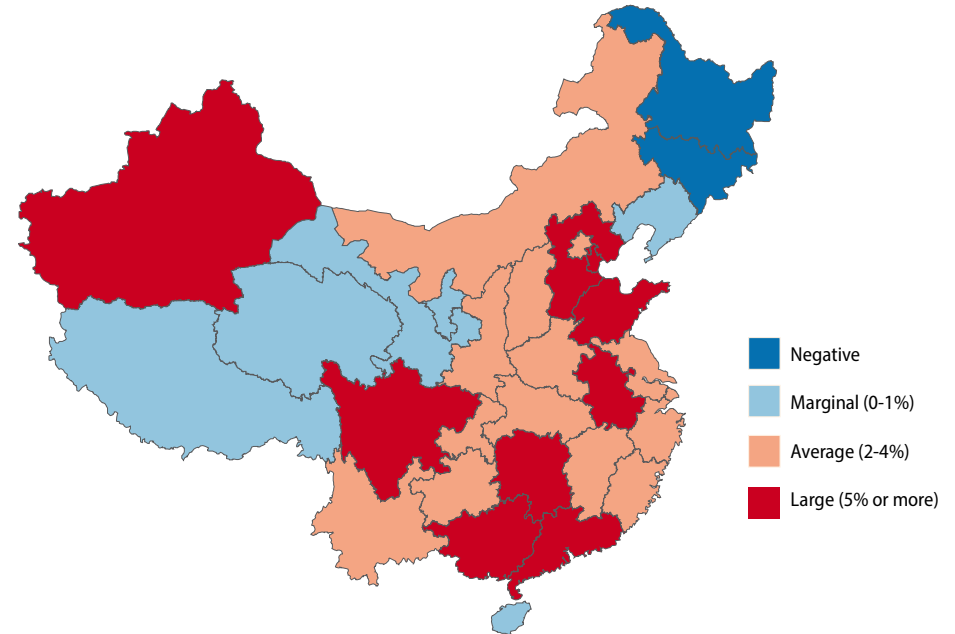


CEIC, Gavekal Dragonomics

During the most rapid period of urbanization in the 2000s, China's population mainly flowed from inland provinces to the southern and eastern coast, where the largest cities are located and export-focused factories created millions of jobs. Beijing, Shanghai, Guangdong and Zhejiang attracted the most migrants (from other cities as well as rural areas), while inland provinces like Sichuan, Henan, Guangxi and Anhui lost population. This made inequality among regions an increasing policy concern.

In this decade, central provinces have attracted more people

Provincial share of nationwide population growth over 2010-17



CEIC, Gavekal Dragonomics

As urbanization has slowed down since 2010, migration to Beijing, Shanghai and the eastern coast has also cooled off. Guangdong is still attracting many more people than any other province, but central provinces have stopped losing people and are now gaining them. Sichuan has gained more people in the last eight years than it lost in the previous eight years, and Henan, Anhui, Hunan, Guizhou and Guangxi are also growing. This trend has boosted property construction and housing prices in central provinces.

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