THE INTERNATIONAL ECONOMY
THE MAGAZINE OF INTERNATIONAL ECONOMIC POLICY
888 16th Street, N.W.
Suite 740
Washington, D.C. 20006
Phone: 202-861-0791
Fax: 202-861-0790
www.international-economy.com

China's Aging Problem

Limited options, ominous risk.

BY CHI LO

Demographics are becoming a big challenge to China's future growth dynamics. The graying population will have far reaching implications for the country's economic policy, structural reform, and investment return. The cause-effect sequence runs as follows: An aging population leads to a shrinking labor force, which reduces the marginal product of and hence the return on capital. Investment will thus fall due to lower returns. This means a vicious chain effect—when labor falls, investment falls so that output and living standard fall too.

The only way to keep or raise the living standard on the back of aging population is to raise productivity. This needs deeper structural reform. It also needs more capital formation. But capital formation will not rise unless capital return rises, and this highlights an important policy implication. To raise the return on capital in the face of a shrinking labor force, China has to keep a loose monetary policy bias in the long-term, as low interest rates are needed to stimulate investment. The government will also need to give tax incentives and improve technology to help enhance the return on capital in the long-term.

These implications also apply to Europe whose population is likewise aging. But they have even greater relevance to Japan, whose population has started to fall this year. Behind the Bank of Japan's pledge to keep interest rates very low after it ended quantitative easing and zero interest rate policy recently is this tight demographic constraint on monetary policy. Meanwhile, Japan's acceleration of structural reforms since 2001 has indeed reflected its vision to put in place long-term solutions to tackle the demographic challenge. The lesson for China is that with the proper response, it can still enjoy sustainable growth even in the face of adverse demographics.

COMPARATIVE DEMOGRAPHICS

The falling demographic trend in China (and Europe and Japan) contrasts with growth in the United States, which benefits from a fertility rate close to the replacement rate and

Chi Lo is an economic strategist based in Hong Kong and author of Phantom of the China Economic Threat *(Palgrave Macmillan, 2006).*

high level of immigration. Europe's net immigration is not enough to offset its low birth rate and Japan has no net immigration. The major economies in Asia are facing a similar trend, as economic liberalization, rapid development, better education, and changing values are prompting later marriage and fewer children. Hence, birth rates fall, the workforce shrinks, and the share of the graying population rises.

Asia's four biggest economies—Australia, China, Japan, and South Korea—are all affected by the aging phenomenon. According to the United Nations Population Division estimates, 30 percent of the populations of China and Australia will be older than sixty by 2050, while South Korea's figure is 36.9 percent. Japan's aging phenomenon is the most serious, where 42.4 percent of its population is expected to be aged sixty or older by 2050. On the other hand, only 25.5 percent of the U.S. population will be over sixty years old by 2050.

To raise the return on capital in the face of a shrinking labor force, China has to keep a loose monetary policy bias in the long-term, as low interest rates are needed to stimulate investment.

THE DEMOGRAPHIC CONSTRAINT

The impact on the economy, investment, and living standard of an aging population can be seen in the neoclassical production function, which states that output is a function of capital and labor inputs and technological changes. The first point to note is that as the population ages, the returns to different factors of production—land, labor, and capital—will change. This is because the factors' relative scarcities will change. Second, the return on any factor of production is its marginal product, or the increment to output from an extra unit of that factor being added, holding the amount of all other production factors constant. The extra revenue added by an extra unit of capital is the return on capital.

The neoclassical school of economics argues that an aging population should depress the return on capital. This is because according to the structure of the classical production function, changes in the factors of production being used have feedback effect on each other. Labor is more productive when more capital is added, and capital is more productive when there is more labor. This is simply the flip side of the law of diminishing returns. Thus, adding capital raises the marginal product of labor and hence the return on labor, which is wage. By the same token, adding labor raises the return on capital.

Here comes the problem with an aging population and a shrinking labor force. If adding labor raises the return on capital, then reducing labor, as an aging population will do, will lower the return on capital. If the return on capital is lower, investment will fall and so will the capital stock. When both labor and capital fall, output falls too. In an aging economy like that of China, where the labor force is shrinking faster than the population, the standard of living will inevitably fall. The chain reaction becomes vicious—an aging population will lower the return on capital, which will lower the capital stock and lower living standards, all else being equal.

RELAXING THE CONSTRAINT

However, the political economy school argues that the outlook does not have to be so grim because other things are not constant. Government and society can respond to the demographic changes to prevent the fall in the living standard. The key is to raise productivity, so that the economy can produce at least the same amount with a smaller labor force. The political economists use the following simple relationship between output and inputs (capital and labor) to explain their argument.

Output (Y) can be expressed as (Y/L) x L (i.e. Y = (Y/L) x L), where L is labor and Y/L becomes output per unit of labor input, or productivity, which depends largely on the capital stock. Then relate this to the aging population problem. If P is population and if we divide both Y and L by P, the output/input relationship under the political economy school's interpretation then becomes Y/P = (Y/L) x L/P. Y/P is just output per capita, but it is also a proxy for the standard of living. Y/L is productivity and L/P is the labor participation rate.

This simple mathematical manipulation has important meanings. It states that living standard (Y/P) is equal to productivity (Y/L) times the labor participation rate (L/P). The key point to note in this simple model is that the relationship between the labor force and the population is not stable. In fact, this is a major flaw in standard growth models, which usually assume the number of workers (which is in the labor force) equals the number of consumers (which is the whole population). But this is simply not true.

Continued on page 63

Continued from page 39

With an aging population, China's labor participation rate (L/P) is going to fall in the decades to come. To keep living standard (Y/P) constant, productivity (Y/L) must rise to offset the fall in labor participation. How can productivity rise? From an investment perspective, one way to do that is to raise the return on capital. This will boost capital formation to augment labor productivity and ultimately national output or GDP.

POLICY IMPLICATIONS

Both the neoclassical school and political economy school of thoughts have relevance to economic policy tackling the aging population problem. An improvement in the technology level in the economy will raise returns on both labor and capital, as reflected in the neoclassical production function. Thus, government policies to enhance overall productivity will help maintain living standards, despite a shrinking labor force. Policies that favor the income distribution towards capital will also raise the return on capital, which will enhance capital formation and, in turn, raise labor productivity and output under the political economists' framework.

Granted, labor will lose out to capital in a relative sense under those capital-enhancing policies, as the share of income going to labor will be lower. But labor needs not lose in an absolute sense. Since increasing the capital stock also raises the marginal product (or productivity) of labor, the return on labor—wages—should also go up. Thus, if the tilt of income distribution toward capital generates a large increase in the capital stock, wages will rise on balance. Note that technology advancement will also help boost wage growth.

Meanwhile, a shrinking economy and/or falling living standard will benefit no one. Thus, labor is better off with a smaller share of a bigger pie than with a larger share of a smaller pie, as the former could still be larger than the latter in absolute terms. This is especially true when the burden of sustaining an aging population is considered. In economic sense, growing the pie is Pareto optimal, as everyone benefits from the reallocation of resources.

The private sector will not react to the problems of aging population by increasing investment because the marginal product of, or return on, capital falls in the first place when the labor force falls. Thus, the government needs to step in and change the incentives in the economy to boost capital formation. This is why the drive for structural reform is so crucial in an aging society. The need to enhance the return on capital, so as to encourage capital deepening to raise productivity, indeed constrains China's monetary policy to a loose bias over the long-term. This is because low and stable interest rates are needed to boost capital formation. Meanwhile, preferential tax policies for investment and structural policy to promote technological advancement can also boost investment in the long-term.

Standard growth models usually assume the number of workers (which is in the labor force) equals the number of consumers (which is the whole population). But this is simply not true.

Japan offers an example for China in terms of reactions to an aging population. Japan's problem is more imminent than that of China, as its population has started falling this year. Though slow, the Japanese government is reacting to the adverse demographic implications by creating better technology and tilting income distribution towards capital. It has changed the tax system to favor investment, with capital gains tax cuts, and rely more on consumption taxes to fund the government budget. It has also broken the barriers to reform and pushed structural changes to reduce economic distortions and enhance productivity of the country. The implications for China are clear: these capital deepening and productivity enhancing measures will help deliver sustainable growth even in the face of adverse demographics.

On a closing note, the demographic constraint is less binding for the United States because it is the only advanced economy that has a fertility rate of 2.1, which is also the replacement rate for keeping a population stable. From the demographic perspective, this means that the United States will enjoy greater monetary policy freedom, thanks to its more favorable immigration policy, than other economies with aging population. Nevertheless, policies for enhancing returns on capital and productivity growth remain paramount for sustaining growth in the increasingly competitive global economy. ◆