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Bank of Japan

Demographic Changes and Macroeconomic Challenges

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Introduction

I would like to express my sincere gratitude to G20 finance and central bank deputies and distinguished academics from around the world for attending this G20 Symposium organized by the Bank of Japan and the Ministry of Finance of Japan. This year, Japan assumes the G20 presidency for the first time. It is my great pleasure to co-host this symposium as one of the kick-off events of Japan's G20 presidency.

When considering the relationship between demographic changes and economic developments, the work of Malthus naturally comes to mind. In the late 18th century, Malthus argued that the means of subsistence, particularly agricultural production, would limit population growth. Later, for some time, the population issue remained a minor topic in economics. However, as economic growth theory regained its central role in economics, the relationship between population and economic developments attracted increased attention once again. Furthermore, policy makers and the business community have increasingly been interested in the impact of demographic changes on the economy, as advanced and some emerging economies have experienced, or are expected to experience, declining and aging populations.

In Japan, the working age population peaked in 1995 and the total population in 2008, and both have been declining since then. The share of the elderly population in the total population was 10 percent in 1985, but this increased to 28 percent in 2017. Among the G20 members, Japan is the most affected by the population issue. While some emerging economies in the G20 are now seeing an increase in their young-age labor force, these countries will also face the aging problem sooner or later. I believe it is important for G20 members to learn from each other's demographic conditions, institutional settings, and policy responses. Such mutual learning would be beneficial for the member countries when conducting policy management in the future. This is one of the reasons why we chose aging as one of the G20 agenda items this year.

As is obvious from the discussions this morning -- and this will no doubt be confirmed this afternoon -- there are a number of issues to be considered when tackling the demographic problem. I assume that staff members in charge of this symposium have had much difficulty

in framing discussion with a focus on critical issues, since there are so many different angles from which they can even begin approaching this problem. As I cannot touch upon all the issues in a limited time, I would like to concentrate on three basic questions here.

I. Impact on the Macroeconomy

The first question is: "Does an aging and declining population hinder economic growth?" Many people might intuitively answer "yes." However, given the impact technological innovation can have, for example, the answer could be "yes" or "no." As policy makers, we are obliged to pursue appropriate policy measures so that the answer can become "no."

Needless to say, an aging and declining population leads to a decrease in the labor force population and puts downward pressure on economic growth from the supply side. In addition, a simple back-of-the-envelope calculation suggests that per capita growth would be lower. This is because the reduced production of a declining labor force is shared with an increasing proportion of retired elderly people. If pessimism about future economic growth prevails, not only future but also present demand could be stifled as people are discouraged from current investment and consumption.

An aging and declining population, however, does not necessarily push down macroeconomic and per capita growth rates. Based on growth accounting, the economic growth of a country is affected not only by demographic changes but also by capital accumulation and changes in total factor productivity. Even though demographic changes have a negative impact on economic growth, economic growth could be stimulated by promoting capital accumulation and innovation. In fact, we have seen recently in Japan how active investment in equipment and software has been substituting for human labor amid a declining labor force. There have been major innovations in areas such as AI and IoT, and in drug developments to tackle serious diseases. In order to promote such innovations, it is important to provide the best possible education for young people, and for middle-aged and elderly people to have access to recurrent educational opportunities. This will lead to increased labor productivity across all generations and to improvements in macroeconomic growth and per capita living standards.

Changes in demography could encourage changes in a country's industrial structure. As aging proceeds, demand for labor-intensive services such as health care will increase. In Japan, the labor share of medical and care services in 2002 was about 7 percent, but it increased to about 12 percent in 2017. As a population ages and declines, the labor force also declines and labor market conditions in the medical and care service industries become very tight. Appropriate policy measures must be implemented to promote smooth labor movement between industries and to encourage innovation so that more people can receive proper medical and care services.

Since demographic changes have an impact on a country's saving and investment patterns, they will also affect international capital flows and current account developments. Savings will generally decline as the working-age population declines and the elderly population increases. This is because the working-age population is likely to accumulate savings from a life-cycle perspective, while the elderly population is likely to dissave accumulated assets. However, the longevity of elderly people has also increased, due to advances in medical technology. Therefore, we must not simply assume that all elderly people dissave their assets. If the elderly assume that their life expectancy will be much longer than before, they could hesitate to dissave and choose to continue working in order to save more in the early stages of their elderly lives. Saving patterns may differ from country to country due to differences in social security systems. Regarding investment patterns, a country with an increasing working-age population tends to have abundant investment opportunities with higher growth potentials. However, there could be differences in investment developments among aging countries due to advances in innovation.

II. Impact on Fiscal Conditions and Social Security Systems

The second question introduces a practical but most pressing agenda: "How do we maintain a social security system with an aging population and fewer children?"

Many countries maintain pay-as-you-go pension systems. Regarding medical and care services, most countries have public insurance systems, except for the United States, where private insurance is dominant. As aging proceeds, expenditure on medical and care services and pension payments increase, while tax revenues and social security premiums decline.

This raises concerns about fiscal balances. When many countries around the world established their medical, elderly care, and pension systems after World War II, it was assumed that the demographic structure of these countries was pyramid-shaped, that is, a small elderly population was supported by a much greater working-age population. However, as social security systems are commonly constructed on a pay-as-you-go basis, a decline in fertility rates and increased longevity has altered the demographic structure and put pressure on fiscal balances. Public debt continues to rise in many countries due to increased medical, elderly care, and pension expenditures. This continuous increase in public debt prompts people to defensively save more money in anticipation of increased burdens as well as decreased public payments in the future.

Pension payments as well as medical and care expenditures for the elderly are supported by payments made by the working-age population. Demographic structures are now totally different from when the social security systems were initially established. Since World War II, the fertility rate has declined, and longevity of the elderly has increased due to medical developments. These significant changes to demographic structures must be taken into account as we continuously assess the most appropriate public social security systems.

In addition, it is worth considering a division of labor between the public and private sectors for medical treatment, elderly care, and pension systems. Several decades ago, capital and financial markets and asset management businesses were still in the process of development. Households had limited opportunities to manage their portfolios at their own discretion when planning for their retirement. However, we now have various investment assets available and households can manage their portfolios in accordance with their risk profiles and needs. Now we need to consider what combination would be the most appropriate between public and private pensions, and what mix would be the most desirable between pay-as-you-go and funded pensions, and between defined benefit and defined contribution systems.

III. Impact on Monetary Policy and the Financial System

The third question is: "Does aging make our job more difficult?" That is, how does an aging population affect monetary policy and the financial system?

As was mentioned in the discussion of the impact on the macroeconomy, the natural rate, which is consistent with potential growth rates, will decline if long-term growth rates decline together with a declining and aging population. There will be downward pressure on real interest rates as the natural rate declines. As a result, nominal interest rates consistent with their economic potential decrease, given that the inflation rates are constant. In a low interest rate environment, there is a greater risk that central banks will face the zero lower bound problem, as the starting point of monetary easing is to lower market interest rates below the neutral level of interest rates. We have invented various unconventional monetary policy measures to tackle this issue, such as negative interest rate policies, lowering of longer term interest rates, and depressing risk premiums by purchasing various assets based on experiences of past financial crises. Therefore, we now know we have the tools to stimulate the economy even when we face the zero lower bound problem. However, we need to carefully monitor and evaluate the effects of these unconventional measures on economic developments, prices, and financial conditions since the transmission mechanisms, benefits, and side-effects of these measures could be different from those of conventional monetary policy measures based on controlling short-term interest rates.

Following the experience of the Global Financial Crisis, in which central banks in many advanced economies faced the zero lower bound of short-term interest rates, some economists have proposed that central banks should set higher inflation targets and maintain higher nominal interest rates during normal economic periods in preparation for times of crisis. This suggestion has been discussed at various conferences, but no central bank has moved away from a global standard of the inflation target of 2 percent. It has been pointed out that one reason for this is the possibility that, since fluctuations in the inflation rate become more pronounced as inflation becomes higher, households and firms would find it difficult to make economic decisions.^{1,2}

¹ Okun (1971) pointed out that there is a positive correlation between inflation rates and inflation variations.

Okun, Arthur M. (1971), "The mirage of steady inflation." *Brookings Papers on Economic Activity*, 1971: 485-498, 1971.

² The Bank of Canada considered the costs and benefits of increasing the inflation target above 2 percent when it renewed its inflation target in 2016. There was the benefit of reducing the risks facing the zero lower bound of nominal interest rates by setting higher inflation targets. The Bank, however,

In the face of an aging and declining population, a low interest rate environment may promote changes within financial systems and in the business models of financial institutions.³ As a low interest rate environment persists and credit demands become stagnant amid declining population, banks might accelerate their search-for-yield activities such as expanding their exposures to overseas assets and increasing loans and investments to firms with higher credit risks. If that were the case, the entire financial system could become less stable. From a longer-term perspective, there is a possibility that supply-side adjustments such as mergers and acquisitions might proceed.

On the other hand, demographic changes also promote innovation and positive changes within firms as they try to keep abreast of new trends. This creates new financial service needs, such as merger and acquisition activities and lending. A growing elderly population will lead to increasing business opportunities for life insurance companies, pension funds, and asset management firms, since elderly people need good financial management for their retirement. Policy makers need to manage prudential policy appropriately, taking into account the fact that the risk profiles of financial institutions could be dramatically transformed during times of demographic change.

Concluding Remarks

As I have explained so far, there are various issues to be considered regarding demographic changes. Japan, the host of this year's G20 meetings, is facing the most aged society in the world. I consider it an important opportunity for us all, including Japan, to share and learn from each other's experiences and knowledge.

considered that this benefit is lower than the potential costs, such as misallocation of resources due to the higher inflation rate and losing credibility by changing inflation targets when other central banks of advanced economies maintained a two percent inflation target. Therefore, the Bank concluded that it would retain the inflation target of 2 percent.

Bank of Canada, "Renewal of the Inflation-Control Target," Background Information, October 2016.

³ See the following speech for details of changes within the financial sector in an aging society. "Demographic Changes and Challenges for Financial Sector," remarks at the Paris EUROPLACE Financial Forum in Tokyo, November 19, 2018.

I would like to conclude my speech, with the hope that today's symposium will provide valuable input for subsequent meetings of the G20.

Thank you very much for your attention.