

## Kazumasa Iwata: Japan's economy under demographic changes

Summary of a speech by Mr Kazumasa Iwata, Deputy Governor of the Bank of Japan, at the Australia-Japan Economic Outlook Conference, Sydney, 7 December 2004.

*The references can be found on the Bank of Japan's website.*

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### 1. Introduction

Japan is one of the most rapidly ageing countries in the world. The ageing process has been promoted by a lower fertility rate, preceded by a lower mortality rate and a higher life expectancy. This pattern is common to the ageing process in other countries. The higher life expectancy reflects improved living conditions, and thus can be regarded as a success in terms of economic development. It also implies the market expansion of new services for the elderly.

On the other hand, the lower fertility rate implies a diminishing market size due to the decreasing population, if it falls below the threshold of the reproduction rate, which is 2.1. The ageing process brings about not only a sharp increase in the dependency ratio, but also a sharp decline in the working-age population as well as the total population. The total population is forecast to peak at 128 million in 2006 and decline to 100 million in 2050. It will diminish to about 40 percent of the current size in 2200, with aged persons above 65 years old exceeding 30 percent of the total population. Japan thus faces two problems: not only an increase in the proportion of retired elderly people, but also a decreasing population.

The share of the working-age population had already peaked out in the early 1990s. Furthermore, if in the future the fertility rate remains at the current level (which is 1.29), then "the last baby will be born in about eight hundred years".<sup>1</sup> South Korea, Taiwan, China and Australia will follow a similar process in the absence of immigration, although the speed of their ageing process is divergent (Figure 1).

### 2. Effects on the macroeconomy

To start with the issue of the decrease in the working-age population, it is clear that the economic growth rate will fall due to the decline in labor input. Krugman (1998) argued that the expected negative growth rate due to ageing is the basic cause of deflation in Japan, given the condition that the real interest rate cannot fall below zero under the constraint of a zero interest rate combined with persistent deflation. Nevertheless, the actual average economic growth rate since the bursting of the bubble economy has not been negative, and the expected growth rate cited by corporate managers has returned to slightly above 1 percent.

There are three ways to prevent a decline in the economic growth rate. One is to raise the fertility rate. The second is to raise the labor participation rate of women and the elderly. The third way is to increase labor productivity, namely, the increase of labor input in the efficiency unit.

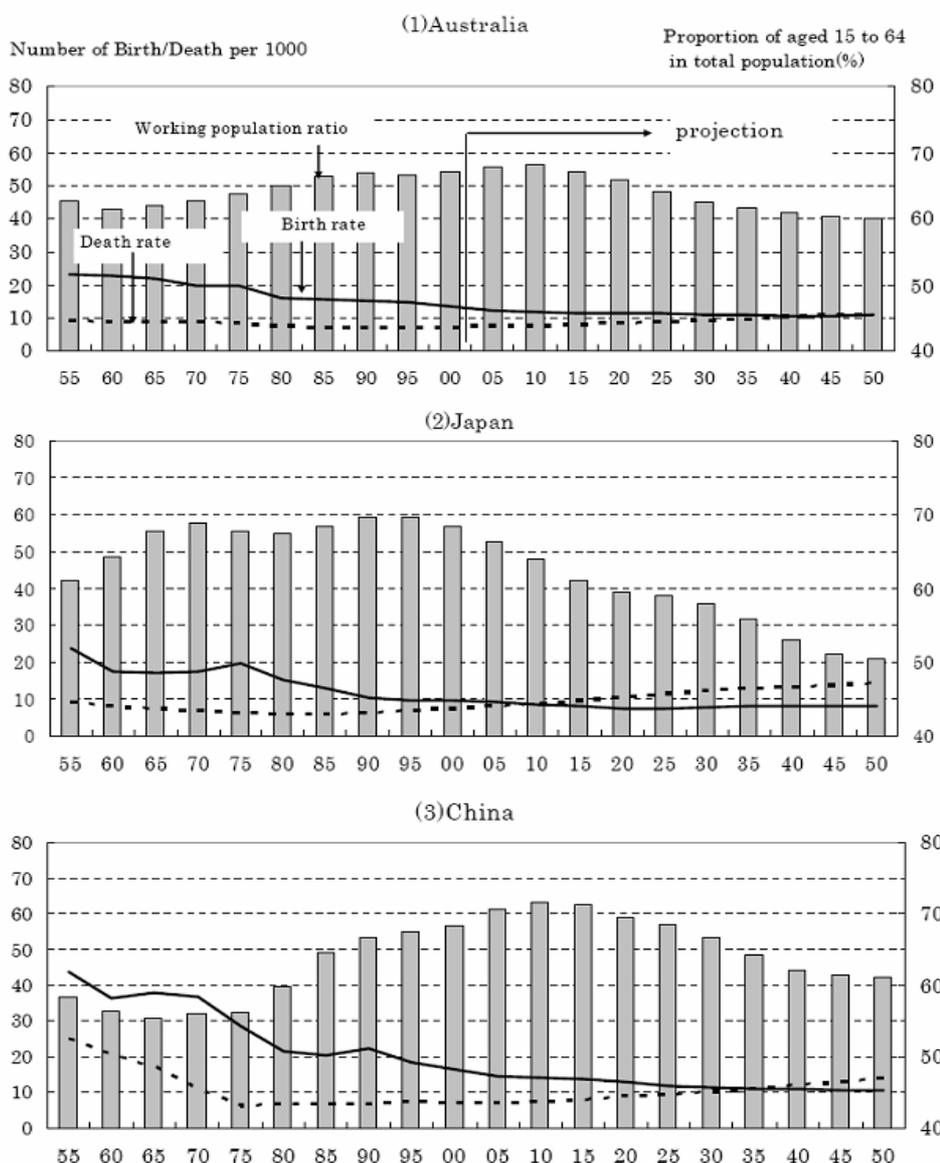
In order to raise the fertility rate, several countries such as France and Sweden have introduced special tax measures to promote child-raising. Yet in Japan, government intervention to raise the fertility rate is unpopular due to lingering memories of efforts to promote a higher birth rate before and during World War II. The labor participation rate of women in Japan is still low, as compared with the United States and Australia (Figure 2), and there is room to expand job opportunities for women. Furthermore, it seems possible to maintain or raise the fertility rate by improving the working conditions for women and men to facilitate child-raising, while at the same time increasing the participation rate of women. In addition, there may be room to raise the participation rate of the elderly by changing the incentives for retirement and adopting new employment practices on the side of corporate management, even though the participation rate of the elderly in Japan is relatively high by international standards and has shown a declining trend in recent years.

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<sup>1</sup> Broda and Weinstein (2004) argue, however, that the current fertility rate in Japan is in the bottom, and will return to a normal level in the future, because the preference for child-raising will increase as people become sufficiently prosperous to have more children. They assume that the population size will stabilize in 2060.

Figure 1

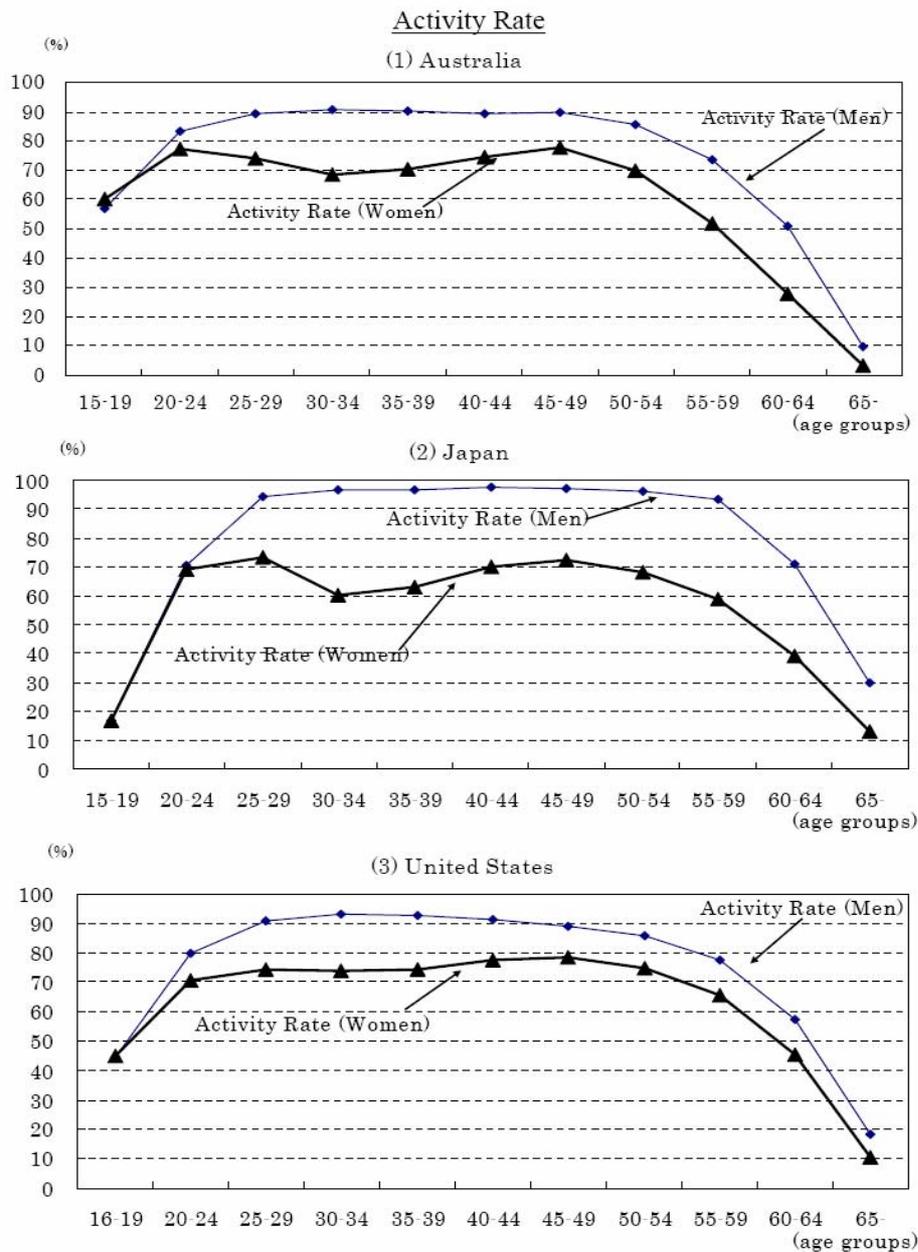
Birth rates, mortality and working population ratio



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2002 Revision and World Urbanization Prospects: The 2001 Revision

Let me turn to the third way, namely, the increase in labor productivity. It is important to recognize that what is important in terms of individual welfare is the level of per capita consumption, not the GDP growth rate. Thus, we can pose the question whether the decreasing working-age population or smaller size of the labor force will lower per capita consumption. The neoclassical growth model predicts, although it is somewhat counterintuitive, that per capita consumption will increase, because capital equipment per worker will rise due to the diminishing number of workers, given the existing capital stock. Nevertheless, this conclusion is flawed, as the neoclassical model overlooks the existence of retired elderly people. They live on revenue arising from the return on savings which are accumulated during their working lives. The increase in capital intensity may induce a lower rate of return on real capital stock and thus savings, due to the law of decreasing marginal productivity of capital. This leads to a reduction in the per capita consumption of elderly people.

Figure 2



Source: International Labor Organization "Labor Statistics Database"

For the retired elderly, it is crucially important to secure a higher rate of return on savings. In order to prevent a decline in the rate of return on capital, it is necessary to increase the labor input. In the absence of a change in the participation rate in the labor market and immigration, it is impossible to augment the labor input. However, it is possible to increase the labor input in the efficiency unit by raising labor productivity. It is well known that per capita consumption is maximized on the path where the economic growth rate is equal to rate of return on capital (called the "golden rule" growth path). The economic growth rate can be decomposed into labor productivity growth and the rate of increase in the labor input. This implies that in Japan, where the labor input will decline, the desirable increase

in labor productivity should be larger than the rate of return on capital, if the nation seeks the maximum per capita consumption growth path.<sup>2</sup>

The next question, then, is how to increase labor productivity. There are two ways. One is to promote technological innovation and more efficient allocation of resources: that is, to increase the total factor productivity. The other is to increase capital intensity. Yet an increase in capital intensity is accompanied by a decline in the rate of return on capital stock. Therefore, what we should seek to attain is an increase in total factor productivity. It is interesting to note that the Japanese economy has suffered from distortions in resource allocation created during the bubble period. The size of the distortions is estimated by the Bank of Japan's staff to be equivalent to nearly 0.5 percent of GDP growth (Figure 3). It is reasonable to assume that the final disposal of nonperforming assets by the banking sector implies the restructuring and reorganization of the corporate sector; this would lead to more efficient allocation of resources and thus the removal of such distortions. Furthermore, there exists a wide gap in labor productivity between the manufacturing and the non-manufacturing sectors. The labor productivity of the latter is less than half that of the United States. This points to the potential to raise productivity of the non-manufacturing sector through the application of advanced information technology and the more efficient management of firms.

The wide productivity gap between the manufacturing and the non-manufacturing sectors has been a basic feature of the Japanese development process after the Meiji Restoration. It has caused mild inflation in the high-growth era under the fixed exchange rate system, and given rise to the internal-external price differential problem under the flexible exchange rate system. I am inclined to the view that one of the aims of structural reform after the Plaza Accord in 1985 was to narrow the productivity gap. The effort to raise labor productivity in the non-manufacturing sector to the level of the manufacturing sector will result in a higher economic growth rate over the coming decade, although it works to delay the timing in overcoming deflation in terms of the core consumer price index, due to sustained downward pressure on the unit labor cost. The rise in productivity will nevertheless tend to increase the natural interest rate; that is, the equilibrium rate of return on capital stock in the absence of monetary disturbance. If it exceeds the real long-term market interest rate, then deflation will cease to exist. This doctrine was elaborated about one hundred years ago by the Swedish economist Knut Wicksell. His proposition can be summarized as "the higher the expected growth rate, the easier it is to exit deflation." Krugman's argument can be regarded as a corollary to this proposition. In this sense, the sustainability of recovery is the key to overcoming deflation.

On the demand side of capital stock in the process of the ageing population, the decreasing working-age population leads to diminished demand for productive investment, because the capital stock required to maintain the capital equipment per worker decreases. In many countries, we observe that the change in the share of the working-age population in the total population is associated positively with the productive investment ratio. According to the study by Poterba (2001), this positive association can also be observed with respect to the level of asset prices (measured by the dividend-price ratio), although the relationship between the rates of return on various assets and the working-age population share is ambiguous.<sup>3</sup> Several experts in demography argue that economic miracles such as those in Asia and Ireland are simply due to the rise in the share of the working-age population. In the case of Japan, the working-age population ratio increased from about 60 percent to about 70 percent in the high-growth era (from 1955 to 1970). In China, the working-age population ratio increased from 55 percent in 1975 to 60 percent in the early 2000s, and is expected to surpass 70 percent by 2010.

Now I will turn to an example with respect to asset prices in Japan. Looking at the relationship between the nation's asset prices and the working-age population, land prices continued to slide for more than ten years after the bubble burst, although land prices in the Tokyo metropolitan area seem currently to have stopped declining. The ratio of total value of land to nominal GDP, 2.8, has returned to the level of the pre-bubble period (Figure 4). The fundamental price of land in the long run can be formulated as determined by the land rent, the discount rate (that is, the rate of time preference) and

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<sup>2</sup> In my calculation, the desirable rate of increase in labor productivity on the "goldenest golden rule" growth path ranges from 6 to 7 percent under the assumption of a zero time preference rate. See Iwata (2001).

<sup>3</sup> See Poterba (2001). The different effects of demographic change on rates of return on assets and asset prices may be due to the change in labor-saving technology to offset the decrease in the labor force, while the expected growth rate is affected by demographic change, resulting in an increase in asset prices.

the expected growth rate of the population. It seems likely that elderly people have a shorter time horizon and a greater mortality risk than younger ones, and thus a higher discount rate on future rent revenue. Therefore, the combination of a decreasing population and a rising discount rate in the ageing process implies a lower ratio of total land value to nominal GDP. In my estimate, the decreasing size of the working-age population (minus 0.5 percent) coupled with a lower discount rate, is likely to further depress the ratio, to a new equilibrium ratio which is 2 in my calculation. It will take several years to reach a new equilibrium ratio of the nationwide total land value to nominal GDP.

Figure 3

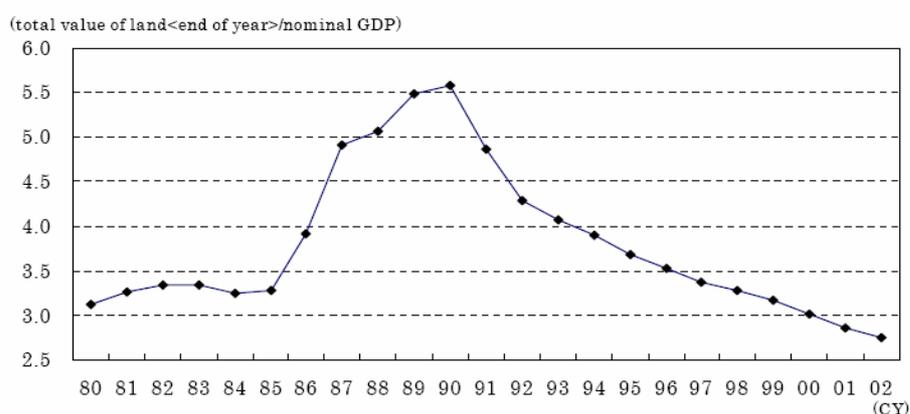
Effects of Distortion in Factor Markets on Labor Productivity

	1980-85	1986-91 (Bubble Period) (a)	1992-98 (Post-Bubble Period) (b)	(b)-(a)
GDP Growth	3.96	4.82	1.24	-3.58
TFP	1.39	2.18	0.61	-1.58
Capital deepening	1.51	2.77	1.45	-1.32
Number of workers	0.79	1.29	0.34	-0.94
Work hours	0.04	-1.85	-1.12	0.73
Distortions	0.23	0.44	-0.03	-0.47
Relative marginal productivity	0.18	0.11	-0.15	-0.26
Labor input share	0.06	0.32	0.12	-0.21

Source: Nakakuki, Masayuki, Akira Otani, and Shigenori Shiratsuka, "Distortions in Factor Markets and Structural Adjustment in the Economy," Monetary and Economic Studies, 22 (2), Institute for Monetary and Economic Studies, Bank of Japan, 2004, pp. 71-99.

Figure 4

Total value of land to nominal GDP ratio



Source: Cabinet Office, "National Accounts"

At the same time, it is encouraging to see that the market for land and real estate has revived during the process of corporate restructuring and final disposal of nonperforming assets. Prices are now based more closely on the future return on real estate, while investment in real estate by the corporate sector has begun to increase. This may suggest the start of an expansion in construction investment,

which was subdued for a long time following the bubble period. As such, it constitutes one of the brighter aspects of the current recovery phase.

Turning to the supply side of capital stock, the ageing process entails the decline of the household saving rate due to greater dissaving by the retired elderly. In the early 1970s, the household saving rate in Japan was more than 20 percent, yet it is now about 6 percent. The rate showed a particularly notable decline after 1998.<sup>4</sup> Its current level seems to almost correspond to a new equilibrium rate under the decreasing size of the population.

On the other hand, corporate saving has increased significantly in the recovery phase that started in early 2002. The corporate sector is enjoying a profit boom which is equivalent to the bubble period in the latter half of the 1980s. This is another encouraging aspect of the current recovery phase, in terms of its sustainability. The current account in the international balance of payments has registered a surplus in the face of the large government deficit (8 percent of nominal GDP) and the declining household saving rate. It is not excluded that the current account surplus may continue, even though the household saving rate will remain at a low level due to ageing, as investment demand also shrinks due to the decrease in the working-age population.<sup>5</sup>

### **3. Effects on the social security system and the financial system**

Now let me turn to issues involving the effects of ageing on Japan's social security system and the financial system. The rapid ageing process may have a significant impact on the sustainability of the social security system. The existing public pension system in Japan consists of two parts: the National Pension System, which provides a flat benefit to all persons, and the Employees' Pension Insurance System, which is an earnings-related benefit plan. They are unfunded based on a defined benefit scheme. The cap on the insurance premium was introduced at 18.3 percent in the most recent pension reform. Yet further reform is needed to sustain the public pension fund and correct the widening intergenerational inequality of burden sharing under the existing public pension system.<sup>6</sup> I have argued that it is desirable to privatize the earnings-related portion of the public pension fund. Privatization would work to prevent an excessive fall in the household saving rate and to correct the intergenerational inequality of burden sharing.

In addition to the public pension system, there are private pension funds such as unfunded severance benefit plans, the Employee Pension Funds, the Tax-Qualified Pension Plans and a new defined contribution plan similar to the 401(k) plan in the United States. They are funded based on a defined contribution scheme. If Japan moves further in a direction weighted toward a defined contribution scheme based on a funded system, then it becomes extremely important to secure a high rate of return on pension funds. The efficient function of the capital market mechanism is a precondition for the efficient management of public and private pension funds. It is unfortunate that the rate of return on assets at the corporate level is relatively low in the Japanese capital market, although a tendency toward recovery has been seen in recent years. Market-based corporate governance may strengthen the monitoring mechanism and market discipline in corporate management.

In postwar Japan, the financial system has functioned on the basis of bank-based corporate governance. As a result, bank loans provided by main banks could be interpreted as subordinated debt or quasi-equity for the borrowing firms. Thus, economic risks have tended to be concentrated in the banking sector. This has made the disposal of nonperforming assets all the more difficult and gradual.

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<sup>4</sup> The recent decline in the saving rate may be attributable to the introduction of a new system of elderly care in 1998, diminished interest income and the real balance effect. The money flow data suggest a further decline of the saving rate. The salient feature of Japanese households' asset holding is the high proportion of life insurance coupled with the low share of investment trusts and government bonds.

<sup>5</sup> I once carried out a simulation analysis on longer-term development of the external balance between Japan and the United States in the ageing process. The main finding was that the current account surplus will remain until the mid-2020s despite the more rapid ageing process in Japan compared with the United States.

<sup>6</sup> The intergenerational inequality is so large that the young decline to pay their contribution to the National Pension System. According to the Annual Report on Japan's Economy and Public Finance 2000-2001, lifetime net benefits including the tax and social security burden, in present value terms, are estimated to total 57 million yen for persons aged 60 or over. On the other hand, lifetime net benefits for those in their 20s are estimated to be 13 million yen in present value terms.

Since Japan's Big Bang in 1996, the nation's financial system has been in transition to a market-based indirect financial system from a bank-based one. The major banks are in the process of transformation from corporate-finance oriented bank management to providers of comprehensive financial services. In this regard, it seems promising for them to extend their banking business to cover risk management of individuals' assets, including human capital, over the life cycle as well as the assets of firms.

In Japan, the major portion of household savings is held by the elderly, that is, people over 60 years old. It is well known that labor supply flexibility creates a kind of insurance against the risk of financial investment. Young people have greater labor supply flexibility and thus may take larger financial investment risks than the elderly.<sup>7</sup> The preference for safe assets among Japanese households can be partly explained by the labor supply inflexibility of the elderly and the lower labor mobility.

More specifically, the lifetime employment system combined with the seniority wage system has implied that workers invest in equity of the employed company by the difference between the received wage and the marginal productivity of labor when they are young. In old age, the workers receive a higher wage than marginal productivity and the severance payment at retirement. Therefore, there is much less need for young households to hold risky financial assets such as shares and investment trusts, because the return on human capital over the life cycle is associated positively with the return on risky financial assets. The long-term profit-sharing aspect of wage payment has been reinforced by employees' deposits at their companies during the high-growth era and employees' stockholding in more recent decades. Other factors bringing about a smaller share of risky financial assets held in the Japanese household portfolio balance may be the borrowing constraint and the relatively high share of risky real asset holding (housing and real estate). It may be noted that, in Japan, there is no system such as the "home equity loan" in the United States that promotes borrowing, consumption and equity investment when housing prices rise.

The demographic changes are working to transform the traditional employment system into a new one. The structural changes in the Japanese labor market have tended to cause a shift from a seniority wage system to a performance-based system. The lifetime employment system has been eroded significantly by the increasing share of part-time and temporary workers. The delinking between the return on human capital and equity investment may enhance the tendency for the household sector to hold more risky financial assets such as shares and investment trusts in the future. It is accompanied by changes in the incentive structure for young workers; namely, an increasing number of young non-regular part-time employees (known as "freeters") totaling nearly 4.2 million and 0.52 million discouraged young people who are not in education, employment or training (known as "NEET"). For these young people, it is difficult to form a long-term life plan and thus raise children. This aggravates the problem of fewer children and the decreasing population size.

Finally, asset decumulation by baby boomers may exert an impact on the asset market. The public pension fund has accumulated about 130 trillion yen, which will be paid out as pension benefits for the baby boomers. Furthermore, the privatization of the postal saving and insurance system may complicate the debt management policy. It seems likely that a decline in the functioning of the asset market due to the decumulation of assets can be avoided by the gradual shifts in asset demand as well as the globalization of the financial market.

Nevertheless, it seems important to develop the market for asset decumulation: that is, to transform the real capital stock held by the elderly into income streams. In Japan, the market for reverse mortgages has yet to be developed. The risk related to longevity and land price declines, in addition to underdevelopment of the secondary market for housing, impedes the development of the reverse mortgage market. It seems necessary not only to implement adequate assessment of the market value of housing stock, but also to improve the quality of housing stock, in order to increase the marketability. The securitization of housing loans seems to be the key to transform the financial system into a market-based one and to develop the market of released equities. In this regard, it is encouraging to see the recent expansion of real estate investment trusts, private real estate funds, asset-backed commercial paper, asset-backed securities, mortgage-backed securities and collateralized debt obligations. The Bank has contributed to the development of the securitization market by introducing the purchase of asset-backed commercial paper and asset-backed securities after July 2003 and initiating a survey related to securitized instruments.

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<sup>7</sup> See Bodie, Merton and Samuelson (1992).

#### **4. Conclusion**

To conclude, the ageing process in Japan is accompanied by systemic social changes including the employment system, the social security system and the financial system. For the central bank that is striving to overcome deflation, the ageing issue of society presents a challenging task, because it requires the establishment of a more efficient financial system to secure a higher rate of return on savings, while maintaining price stability and avoiding the risks of inflation as well as deflation.