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**THE ROLE OF OLDER PERSONS' CHANGING HEALTH AND WEALTH
IN AN AGING SOCIETY: THE CASE OF JAPAN**

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A. INTRODUCTION

The world population has been growing at a slower pace over the past few decades, primarily owing to the reduction of fertility in most countries, both developed and developing. In 1970-1975, the number of countries with below-replacement fertility was 19, but it had increased to 65 by 2000-2005. During the same time period, the number of countries having lowest-low fertility (i.e., those with a total fertility rate (TFR) below 1.3) grew from zero to 17. In terms of the population share, approximately 40 percent of the world's population lives in countries with below-replacement fertility, and 13 percent of the global population lives in the countries with lowest-low fertility.

In addition to fertility reduction, mortality has been improving at a rapid rate over the past several decades. In some industrialized nations, life expectancy at birth for females has already exceeded or is now approaching 85 years without any signs of slowing down.

Due to these rapid demographic transformations, population age distributions are changing markedly in numerous countries, with a relative increase in the numbers of the elderly and a relative decrease in the numbers of the young. Thus, the 21st century is likely to become the century of population aging (Lutz, Sanderson, and Scherbov, 2004). In addition, the size of population is expected to shrink considerably in the years to come in various countries.

There seems to be little to be said about the demographic mechanism of population aging. The greater interest lies in the policy responses to these demographic trends (McNicoll, 2002). Undoubtedly, the policy responses to these population changes will influence economic growth and poverty, intergenerational equity, and social welfare for decades to come. For instance, how do we sustain economic productivity with an aging labor force, and maintain economic growth with a declining population? How do we manage transfers between age groups under the new age structures that are emerging? What are the roles of the public sector, the market, the family, and individual life-cycle saving strategies? Are there acceptable means to raising low fertility nearer to a replacement level? What are the prospects for accepting immigration?

These policy-oriented issues are particularly important in a number of countries in East Asia. At present, fertility is the lowest in East Asia in the entire world (McDonald, 2005). Virtually all countries in the East Asian region have undergone an extremely fast demographic transition, and are now experiencing unprecedented changes in their age structures. In these countries, the child dependency ratio has declined rapidly, generating an important demographic dividend, and the rise in old age dependency has created significant new policy challenges.

Among these East Asian countries, Japan is the most aged society. In fact, Japan is expected to become the most aged society in the entire world sometime in 2005 (Ogawa, 2005; Ogawa and Takayama, 2006). This paper discusses some of the policy-oriented issues on the aging and declining population of Japan, with particular emphasis on the improving health and increasing wealth of the elderly in Japan and their contributions to the country's economic dynamism as a partial solution to the problems of population aging. Prior to discussing these policy-oriented issues, we highlight in the next section some of the key features of Japan's demographic dynamics observed in the postwar period and those expected to occur in the first quarter of the 21st century. In addition, we relate these demographic developments, both past and future, to Japan's long-term economic growth performance, by focusing an important role played by demographic dividends. In the ensuing section, we briefly describe some vital dimensions of Japan's socioeconomic system that have already been substantially affected by such rapid population aging and are likely to affect the welfare of the elderly in the foreseeable future. In the following section, the Japanese elderly's

changing health conditions and their accumulation of wealth to be used for their old-age are analyzed and discussed as a base for mitigating the formidable difficulties arising from population aging over the next few decades. In the final section, we summarize the principal findings with a brief discussion pertaining to their policy implications.

The scope of this paper is confined largely to the Japanese context. Nonetheless, Japanese experiences of population aging and policy responses seem to serve as a valuable source for forming effective policy strategies to cope with the problems of population aging in other East-Asian countries and elsewhere. Furthermore, in the face of its fast economic development, Japan has retained some of its traditional cultural values, so that the Japanese experiences may be of relevance to policy makers in the developing region interested in combining the best of traditional and modern approaches in order to provide support to the elderly.

B. JAPAN'S AGE STRUCTURAL SHIFTS AND DEMOGRAPHIC DIVIDENDS

1. Demographic Trends: Past and Future

Japan's postwar fertility decline was the earliest to occur in the non-Western world, and was the greatest in magnitude among all the industrialized countries. Following its short-lived baby boom period (1947-1949), Japan's fertility dropped dramatically (Hodge and Ogawa, 1991; Ogawa and Retherford, 1993). Between 1947 and 1957, TFR declined by more than 50 percent from 4.54 to 2.04 children per woman. This 50 percent reduction of fertility over the 10-year period is the first such experience in the history of mankind. Subsequent to this rapid fertility reduction in the 1950s, there had been only minor fluctuations around the replacement level until the first oil crisis in 1973. Thereafter, TFR started to fall again and reached 1.29 in 2004, which was an all-time low in postwar Japan. As has been the case with dramatic declines of fertility in other East Asian countries, Japan's recent very low fertility has been attracting a great deal of attention, both domestically and internationally (Retherford and Ogawa, 2005).

Unlike Japan's low fertility, however, only a limited amount of attention has been paid to the unprecedented rapidity with which its mortality transition has been under way. Age-specific mortality rates have declined remarkably over the past several decades. During 1947-1965, Japan's life expectancy at birth rose from 50.1 to 67.7 years for men and from 54.0 to 72.9 years for women. When Japan joined the OECD at the end of 1964, and Japan's life expectancies for both men and women were the lowest among all the OECD member countries at that time (Mason and Ogawa, 2001). By the mid-1970s, however, Japanese life expectancy had become one of the highest among all the OECD members. In 2004, male life expectancy at birth reached 78.6 years to become the second highest in the world, following Iceland, and female life expectancy became 85.6 years, the highest in the world. Moreover, between 1964 and 2004, life expectancy at age 65 grew to a substantial extent, from 12.2 to 18.2 years for men and from 14.8 to 23.3 years for women, thus implying a marked increase in the retirement period and in the joint survival to older ages of both husbands and wives.

As a result of these demographic transformations, as shown in Table 1, the age structure of the Japanese population has been shifting to a pronounced degree. Table 1 also reports the projected values for total population size and age structural indices, computed from a population projection produced from the most recent version of the population-economic-social security model constructed by the Nihon University Population Research Institute (NUPRI).

First, the proportion of those 65 and over increased from 4.9 percent in 1950 to 17.3 percent in 2000. It is expected to exceed 20 percent in 2005, which implies that the Japanese population will become the oldest national population during 2005, surpassing the Italian

population (Ogawa, 2005). In addition, the proportion of those 65 and over is anticipated to be more than 31 percent in 2025, thus suggesting that Japan's population will be by far the world's oldest by that year. More importantly, Japan will reach the world's highest level of aging at an unprecedented rate, as discussed elsewhere (Ogawa and Retherford, 1997; Ogawa et al., 2003). Japan's aged population reached the 10 percent level in 1984 and was the latest among all the industrialized nations. The length of time required to increase from 10 to 20 percent of the Japanese population is only 21 years. Compared with such European countries as Sweden and Norway, Japan is aging at a tempo approximately three times as fast.

Second, Japan's total population size grew from in 1950 to in 2000, with its annual growth rate declining to a substantial extent over time. The data recently released from the Statistics Bureau of the Japanese government indicate that the total male population size has already been declining since March 2005. Because the total female population size is also expected to show the same demographic trend in the near future, the nation's total population is anticipated to start decreasing before the end of 2005, and is expected to diminish continuously to a level of 120.1 million by 2025. The prospects of imminent population decline have raised grave concern at many levels of Japanese society (Ogawa and Retherford, 1997).

Third, the proportion of those aged 75 and over in the population aged 65 and over has been increasing almost continuously from 24.0 percent in 1950 to 40.9 percent in 2000, as displayed in Table 1. In the first quarter of the 21st century, the pace of growth of this proportion is expected to accelerate, thus reaching 60.0 percent in 2025. A close examination of this projected result and country-specific data produced from the recent population projection prepared by the United Nations (2005) reveals that Japan's level for 2025 is likely to be by far the highest in the world, followed by Sweden (51.9 percent) and Italy (49.9 percent). This marked age compositional shift of the Japanese elderly population is prone to generate a substantial effect on the pattern and level of demand for medical services and long-term care services, both formal and informal.

Fourth, although the total dependency ratio declined almost continuously from 67.5 in 1950 to 43.5 in 1990, the index is expected to increase monotonically from 1990 onwards, thus reaching its peak value of 70.0 in 2025, as displayed in Table 1. Japan's value for 2025 will be the highest among all the industrialized nations at that time. Furthermore, over the next three decades, Japan's pace of the increase in total dependency is the fastest among all the industrialized nations, thus suggesting that Japan, compared with other developed nations, is likely to face more formidable adjustment problems in reallocating resources among various age groups.

Fifth, the familial support ratio, which relates the female population at ages 40-59 to the total population aged 65-84, is expected to decline substantially over the next 25 years. The value of this index was 1.30 in 1990, and is projected to be 0.65 in 2010, thus indicating that it will decline by 50 percent in 20 years' time. These results indicate that the demographic potential of familial support by adult children for the elderly diminishes rapidly, starting from 2007 when a large age cohort glut of baby boomers disappears from the age group 40-59. The declining trend of the familial support ratio points to the high likelihood that the traditional extended family system will be continuously weakened over time. Although the government started in 2000 the Long-term Care Insurance Scheme (LCIS) to alleviate the family's burden in taking care of older parents at home, the number of households without any caregivers is expected to rise so that the effectiveness of this new scheme is likely to be increasingly limited over time.

These above-mentioned projected results are now compared with those of the United Nations population projection undertaken in 2004. In 2004, Japan's familial support ratio (0.79) became the lowest in the entire world, followed by Italy (0.80) and Greece (0.81). It

should be noted that these projected results are highly reliable because the numbers going into the denominator and the numerator have already been born.

2. Demographic Dividends

These demographic trends, particularly in the change of age composition, have been closely intertwined with changes in the economic growth performance in postwar Japan (Ogawa, Kondo, and Matsukura, 2005). As has been recently discussed extensively elsewhere (Mason, 2001, 2005; Mason and Lee, 2005), one of the important linkages between demographic transformations and economic growth is the role of demographic dividends in the process of economic development. As a country advances along the stages of the demographic transition, it undergoes considerable age structural shifts. When the country's fertility begins to fall, the first dividend arises because changes in population age structure have led to an increase in the working ages relative to the non-working ages. To be more precise, the first dividend arises because an increase in the share of the population at ages during which production exceeds consumption. Putting it differently, the first dividend is positive when the rate of growth in output per effective consumer exceeds the rate of growth in output per effective producer. It should also be noted that the difference between these two rates corresponds to the support ratio (Mason, 2005).

Figure 1 depicts the age-specific profiles of consumption and production in contemporary Japan, based on the National Survey of Family Income and Expenditure (NSFIE) carried out in 1999. By utilizing the computed results displayed in this graphical exposition as statistical weights to adjust for the population, we have calculated the annual growth rate of output per effective consumer and the annual growth rate of output per effective producer over the period 1920-2025. The computed results are shown in Figure 2. To do this computational task, we have assumed that the 1999 age-specific profiles remain applicable to the entire period in question. Moreover, we have computed these two annual growth rates, using data gleaned in the 1994 round of NSFIE, but the results have been basically the same.

A brief glance at the results reported in Figure 2 reveals that Japan's first dividend had been positive for 45 years from 1949 to 1994, although there was a short period of the positive first dividend in the late 1930s. But the magnitude of the positive first dividend was extremely large during the rapid economic growth of the 1960s. This result provides an additional piece of empirical evidence, pointing to the high likelihood that the unprecedented fertility reduction subsequent to the baby boom (1947-1949) played an important role in boosting the growth of per capita income at the phenomenal rate during this high economic growth period. It is also conceivable that in the case of Japan, the first dividend was heavily invested for augmenting physical capital rather than for spending it primarily for higher consumption. It seems to be reasonable to infer that what the Japanese people had experienced in the 1950s and 1960s was also observed during the economic success of East Asia's high-performing economies in the 1990s.

In addition to the first dividend, the age structural shifts lead to the second dividend which arises in response to the prospect of population aging. For instance, in countries that rely on capital accumulation to meet the retirement needs of the elderly, population aging provides a powerful incentive to accumulate wealth. It is important to note, however, that in countries that rely on transfers, both public and familial, to meet the retirement needs of the elderly, the second demographic dividend may not emerge. While the first dividend is purely accounting-oriented, the second dividend consists of both compositional and behavioral effects (Mason, 2005). The second dividend is affected not only by the numbers of the elderly persons relative to younger persons, but also by the extent to which consumers and policy makers are forward-looking and respond effectively to the demographic changes that are

anticipated in the years ahead. When life expectancy is increasing, for example, the accumulation of wealth is stimulated, which, in turn, leads to a permanent increase in income.

Compared with the first dividend, measuring the amount of the second dividend is considerably more difficult. However, Figure 3, which illustrates changes in the household savings rate over the period 1955-2003, seems to provide partial evidence that the second dividend was generated in postwar Japan. As can be easily inspected from this graph, the household savings rate increased to a substantial extent up to the mid-1970s, during which life expectancy improved remarkably, as explained in the earlier section.

C. ECONOMIC GROWTH PERFORMANCE AND SUPPORT SYSTEMS IN JAPAN

1. Economic Growth in Postwar Japan

During World War II, the Japanese productive capacity was utterly shattered. Japan's per capita GNP for 1950 was only US\$153, which was lower than that for Mexico (US\$181) or the Philippines (US\$172). By the end of the 1950s, however, Japan's real per capita income had recovered to the prewar level. During the 1960s, Japan's real GDP grew at a phenomenal rate of about 11 percent per annum. As mentioned earlier, the first dividend was one of the principal engines behind such rapid economic growth. A substantial part of the first dividend was saved and invested for strengthening the country's infrastructure and augmenting the firms' productive capacity.

It is also important to note that the magnitude of the impact of the first dividend on economic growth is generally policy dependent and is subject to socioeconomic and political environment. During the 1960s, for instance, Japan promoted an export-oriented development strategy in an era of a favorable international trading environment. In addition, Japanese bureaucrats demonstrated an outstanding leadership in importing an optimal mix of advanced technology from industrialized nations. Furthermore, the massive amount of well-educated and highly trained human resources was available in both the 1950s and 1960s. Besides, Japan's political climate was stable throughout the second half of the 20th century.

As indicated in Figure 2, the amount of the first demographic dividend declined gradually in the 1970s. To make the situation worse, the oil crisis occurred in 1973, which triggered a series of changes for restructuring of the Japanese economy. As a consequence, its economic growth performance became much less impressive than that for the 1960s. In the face of this major change in its growth performance, Japan's average annual growth rate of real GDP for the 1980s was 4.2 percent—still considerably higher than the figures for many other industrialized nations.

Subsequent to the Plaza Accord in 1985, the Japanese economy entered into the bubble economy phase, and this investment boom abruptly ended in the second half of 1990, and a number of leading banks and other financial institutions went into bankruptcy. It was a tragedy that the Japanese government implemented inappropriate macroeconomic policies to rectify these unfavorable economic conditions. Although many of these economic problems were attributable to the influence of globalization, the Japanese government regarded them as part of business cycles, thus increasing government spending to boost its economy without much success. It took the government several years to realize that more drastic economic restructuring policies were needed to make the Japanese economy more competitive in international markets. Because of such delayed government policy responses, some economists call the 1990s "Japan's lost decade" (Yoshikawa, 2001). It is worth noting that the bursting of the bubble economy coincided with the timing of the end of the positive first dividend. Although age structural changes can hardly be held responsible for the real estate bubble and the banking crisis, one interesting question may arise: Could the duration of Japan's lost decade be shorter if there was still a positive first dividend throughout the 1990s?

In 1979, Ezra Vogel's well-known book *Japan as Number One: Lessons for America* was published, and in the 1980s, Japan's management style was highly praised by international business communities. Unfortunately, Vogel's description of Japan contrasts fairly strikingly with Japan of the last decades, as it has been mired in recession and deflation. In the 1990s, the Japanese management strategy became no longer effective, and numerous government regulations and restrictions were modified and/or abolished.

Despite these major changes in the Japanese economy, its mandatory retirement policies still remain as an extreme among the practices of industrialized nations. It is important to observe that the proportion of firms having mandatory retirement rules has been increasing, not declining. In 2003, the average retirement age for large-scale businesses was 60 years, markedly low in comparison to other highly industrialized countries and in view of Japanese life expectancy (Clark, Ogawa, Lee, and Matsukura, 2004). One of the principal obstacles to changing the mandatory retirement age is related to the practice of the seniority wage system, under which the postponement of retirement age leads to larger wage bills. The other deterrent to the extension of retirement age is related to the provision of lump-sum severance benefits which are basically a function of duration of an employee's service. In 2003, an employee with more than 35 years of service received severance pay equivalent to 46 months' worth his/her final monthly salary. Because a substantial proportion of business firms have their own accumulated funds to cover such payments, or have already incorporated such grants into pension benefits provided by employers. In this context, these funds can be regarded as part of the second dividend. More importantly, this lump-sum severance pay program has recently been drawing much attention from various financial institutions because the baby boom generations are about to retire in a few years' time.

Another feature of Japan's labor market is a high labor force participation rate among the elderly. Figure 4 illustrates that Japan stands out in its labor force participation rates for men and women aged 65 and over. In 2000, the labor force participation rate for elderly Japanese men was over 30 percent. In sharp contrast, the corresponding figure for the developed countries in Europe was below 10 percent and is 18 percent for the United States. Similarly, as depicted in Figure 4, Japanese women are also more likely to continue working than older women in Europe and the United States.

2. Changing Social Security Programs

Apparently, the first dividend played an important role in generating enormous economic dynamism in the late 1950s and throughout the 1960s in Japan. As a result of the miraculous economic recovery from the shamble of World War II, Japan managed to establish its universal pension and medical care schemes in 1961. Since then, Japan's social security system has grown remarkably. Between 1961 and 2002, social security benefits increased from 5 to 23 percent of national income (Social Insurance Agency, 2004). Moreover, the proportion of the social security expenditure allotted to the elderly population increased from 26 percent in 1975 to 56 percent in 2001. Contributions to social security increased somewhat less than did benefits, and the growing difference between benefits and contributions has been covered by general tax revenues.

Japan's social security system encompasses both old-age pension schemes and medical plans, as well as the Long-term Care Insurance Scheme and some other smaller programs. The share of social security expenditures accounted for by the two main components has changed substantially over time. Pension benefits and medical benefits respectively accounted for 22 and 57 percent of total expenditures in 1965, and 53 and 31 percent of total expenditures in 2002 (Social Insurance Agency, 2004). The major shift toward pension benefits has occurred mainly because of population aging, maturation of the pension system, and major changes in medical plans intended to rein in mushrooming health costs. Another

reason is that pension benefits are more affected by population aging than are medical benefits, inasmuch as medical benefits are provided to the entire population regardless of age.

Public pension schemes were initially established for specific occupational groups, with some groups covered earlier than others. There are currently six different public pension schemes. Two of these, the Employees' Pension Scheme (EPS) and the National Pension Scheme (NPS), cover approximately 90 percent of the work force. The EPS was established in 1941. The NPS was established in 1961 to cover workers not already covered by the other public pension schemes. Thus, 1961 marks the onset of universal pension coverage for workers in Japan.

A major difference between the EPS and the NPS is that paid employees working for a firm with at least five regular workers belong to the EPS, whereas farmers, other self-employed workers, employees of small firms with less than five regular workers, and certain other categories belong to the NPS. The two schemes also differ in levels and methods of contribution. In the EPS in 2005, 13.934 percent of a worker's total annual earnings including bonuses was contributed to the government, evenly split between employee and employer. In the NPS, the government collects a flat contribution from members, most of whom are self-employed. In 2005, this contribution was 13,580 yen (about US\$125) per month. Because of lower contributions, benefits paid to NPS recipients are considerably lower than those paid by the EPS. In both the NPS and the EPS, benefits have been automatically linked to changes in the consumer price index only since 1999.

The 1994 reforms mandate the elimination of inter-scheme differences in pensionable age by 2013, by which time the legal pensionable age will have gradually risen to 65 for everyone. An unresolved problem, once the pensionable age reaches 65 for everyone, is that as mentioned earlier, many firms currently require employees to retire at or before age 60, thus implying an intervening period with no income from either the employee's firm or the social security system.

When Japanese pension schemes were initially established, they were organized on the principle of reserve financing, and a large amount of reserved funds was accumulated to cover the payment of old-age benefits for its future retirees. Figure 5 indicates the long-term growth of reserved funds accumulated over the period 1965-2002 for all the public pension schemes combined. Obviously, these accumulated funds can be considered as part of the second dividend. It should be stressed that these accumulated funds have been injected into the Japanese economy to finance numerous public works (highways to nowhere, bridges, and bullet trains) at an unreasonably low level of interest rates set by the government.

As the social security system has evolved, however, reserves have been insufficient to cover current benefit payouts and have required the government to shift away from reserve financing toward pay-as-you-go financing via subsidies from general tax revenues. Unlike reserve financing, pay-as-you-go financing is directly affected by the age composition of the population. As shown in Figure 5, the tempo of growth of the accumulated reserve funds has been slowing down to a marked extent in the second half of the 1990s as the proportion of the elderly population has increased. Consequently, Japan's public pension schemes have been increasingly of the transfer nature. Moreover, various calculations have revealed that intergenerational equity considerations will become an increasingly divisive social issue as population aging accelerates in Japan during the next few decades (Ogawa and Retherford, 1997). Mainly due to such gloomy long-term prospects, an increasing proportion of the population enrolled in the NPS has discontinued to make contributions, accounting for 36.4 percent of the participants in 2004.

In 2004, another major pension reform was made. One of the primary objectives of the 2004 pension reform was to fix the level of future contributions to make the program more

transparent for younger workers, thus reducing benefits to a considerable degree. The government introduced a mechanism to automatically balance benefit levels according to future changes in the population age structure. The goal was to avoid repeated reforms and to restore the younger generation's trust in the government's scheme. This may be regarded as a paradigm shift in Japan's social security provisions (Sakamoto, 2005). Putting it differently, Japan's public pension schemes are now sustainable from a financial point of view, although the adequacy of benefits to be paid out may become an increasingly serious issue in the years ahead.

As a result of the 2004 reform, the replacement rate for the Japanese public pension declined considerably. According to OECD's computation, it is 59.1 percent of the average earnings of a male worker. It is lower than the average of those for the OECD member countries, which is 68.7 percent (OECD, 2005a). According to the 2004 reform, it is projected to continuously fall to 50.2 percent by 2023, after which it is assumed to remain unchanged up to 2050.

The second major component of social security benefits is medical benefits. Five separate major plans exist, and coverage by one or another of them has been universal since 1961. The Association-managed Health Insurance Plan (AHIP), the Government-managed Health Insurance Plan (GHIP), and the National Health Insurance Plan (NHIP) are the three major plans, and together they cover 87 percent of the population. Employees of large-scale enterprises are enrolled in the AHIP, and employees of small or medium-sized businesses are enrolled in the GHIP. Persons not covered by other plans are enrolled in the NHIP. The age structure of members is older in the NHIP than in the other plans, primarily because a large proportion of NHIP members are self-employed small business owners and farmers.

Subject to Japan's economic growth performance, the coverage of the medical insurance plans has been revised. As a result of the rapid economic growth in the 1960s, the free medical care program for those aged 70 and over was implemented in 1973. Due to the slower economic growth beginning from the mid-1970s, this free medical care program for the elderly was abolished in 1983. Since 1984, the amount of copayment has been revised repeatedly. Over the period 1961-1984, no copayment was required for the insured. In 1984, however, the 10-percent copayment was required. It was raised to 20 percent in 1997 and 30 percent in 2003.

Despite these changes in the medical care plans over the past few decades, the absolute amount of financial resources allotted to medical care services has been continuously rising, as mentioned earlier. As a result, the health condition of the Japanese people has been improving to a substantial degree over time, as reflected in the remarkable rise of life expectancy. Data reported in Figure 6 shows a change in the average age of the 50 oldest deaths in each year over the period 1950-2003 are plotted separately for men and women. It is worth remarking that the average age of the 50 oldest deaths increased substantially over the second half of the 20th century for both sexes. More importantly, the plotted average age trends of the 50 oldest deaths indicate that the tempo of life prolongation has been considerably faster for both sexes since 1973 when the medical care programs were substantially upgraded, including the implementation of free medical care services for those aged 70 and over. More importantly, as a consequence of extended life expectancies for both men and women, the people have been motivated to save more for their longer retirement life, which is part of the second dividend.

The proportion of GDP allocated to medical care services was only 4.5 percent in 1995, but grew to 5.8 percent in 2003 (OECD, 2005b). Although it has been on an upward trend, it is still considerably low among the industrialized nations. For instance, in 2001, the proportion was 10.3 percent for the United States, followed by 8.7 percent for Switzerland, 7.3 percent for Germany and Iceland, 7.1 percent for Denmark, and 7.0 percent for Sweden.

One of the factors that cause the rapid growth of medical costs and set Japan apart from other industrialized nations is an extremely long period of hospitalization. As presented in Figure 7, in 2003, it was 36.4 days in Japan, as opposed to 4.1 days in Mexico, 6.2 days in Sweden, 6.5 days in the United States, 7.6 days in Italy, 10.9 days in Germany, and 13.4 days in France (OECD, 2005b). There are a variety of reasons for Japan's unusually long length of hospitalization (Ogawa and Retherford, 1997). One of them is related to the fact that institutions for long-term care for the elderly have been a fairly recent development, and their supply is still considerably short of the rising demand for such services. The other reason is the cultural one connected with Confucian filial piety; for the majority of Japanese families, placing their frail elderly family members at a hospital is "less shameful" than at an institution.

It is worth noting that to curb a further upward spiral of the medical care costs, the government of Japan implemented the LCIS in 2000 with a view to reducing the average duration of hospitalization for inpatient care by facilitating in-home care. The LCIS is expected to alleviate the care-giving burden to be placed upon family members, many of whom are the middle-aged women (Ogawa and Retherford, 1997).

The expenditures for both medical plans and the LCIS are projected to grow at a phenomenal rate (Ogawa et al., 2003). In view of these future trends, further downward adjustments need to be made with respect to the social security benefits paid out. The downward adjustments of benefits for these two components of the social security system are very likely to pose a formidable challenge to maintain the care-giving capacity of the Japanese family system.

3. Deteriorating Familial Support

Unlike the Western European countries, multigenerational households are still fairly common in Japan (Ogawa and Ermisch, 1996; Ogawa, Retherford, and Matsukura, 2006). According to the 2001 round of the International Survey of Lifestyles and Attitudes of the Elderly (Cabinet Office, 2002), the proportion of the elderly at ages 60 and over living in three-generation households in Japan was 22 percent. By contrast, corresponding figures indicated only 2 percent in the United States, 1 percent in Germany, and virtually 0 percent in Sweden. It should be stressed, however, that due to rapid demographic shifts as well as changing lifestyles, the figure for Japan has been steadily declining over the past two decades, as depicted in Figure 8; it was 37 percent in 1981 and 32 percent in 1991. Although the Japanese government often views the persistence of coresident households as a unique asset that could be tapped to offset the adverse effects of population aging on the sustainability of the social security system, the validity of this view has been increasingly questionable as the process of population aging advances.

Because coresidence facilitates an exchange in resources between generations within each household, these recent declining trends in the prevalence of multigenerational coresidence have been affecting various aspects of post-retirement lifestyle of the elderly in Japan. One of the salient examples of these effects can be seen in the change in the place of deaths among the elderly. For instance, the proportion of deaths among the elderly aged 65 and over that occurred at home has declined steadily over time. In 1965, it was 86.5 percent, but declined to 13.5 percent in 2003, as displayed in Figure 9.

Attention should be drawn to the fact that the familial support ratio is expected to decline substantially over the next 20 years, as indicated in Table 1. The value of this index was 1.3 in 1990, and is projected to be 0.65 in 2010, thus indicating that it will decline by 50 percent in 20 years' time. These results indicate that the demographic potential of familial support by adult children for the elderly diminishes rapidly, starting from 2007 when a large age cohort glut of baby boomers disappears from the age group 40-59.

In addition to these demographic shifts in the first quarter of the 21st century in Japan, value shifts among the Japanese people have been massive and dramatic. These value shifts are well captured in time-series data gathered in a series of the National Survey on Family Planning, undertaken every other year since 1950 by Mainichi Newspapers (Population Problems Research Council, 2000). Since the first round of the survey, except for a few rounds, the question regarding the dependence on children for old-age security has been asked of currently married women of reproductive age who have at least one child. The precoded responses are as follows: (1) “expect to depend on children,” (2) “do not expect to depend on children,” and (3) “never thought about it.” Figure 10 shows inter-temporal changes over the period 1950-2004 in the percentage of the respondents who chose the category of “expect to depend on children.” The proportion of respondents who expect to depend on their own children declined almost continuously over the period in question. Almost two-thirds of Japanese married women in 1950 expressed the expectation to depend on their own children for old-age security, but only 11 percent in 2004 intended to do so. It can be safely inferred that these long-term downward trends in parents’ expectations for relying on their children for old age are closely connected with the rapid improvement of old-age pension schemes.

In addition, since 1963, the question on the attitude of these married women towards taking care of aged parents has been asked in the successive rounds of the Mainichi Newspapers’ surveys. The precoded response categories are as follows: (1) “good custom,” (2) “natural duty as children,” (3) “unavoidable due to inadequacy of public support resources,” and (4) “not a good custom.” Figure 10 presents changes in the percentage of those who chose one of the first two response categories: (1) “good custom” and (2) “natural duty as children.” The plotted result indicates that the proportion of respondents who felt that providing care for elderly parents was either a good custom or natural duty had been, by and large, stable over the period 1963-1986. From 1986 to 1988, however, a dramatic decline occurred in this proportion. Up to 2004, the proportion of married women of reproductive age who chose one of these two response categories has been on a gradual downward trend.

Additional interesting survey results have recently become available. The results derived from a recent international comparative survey covering high school students in Japan, the United States, and China further endorse these trends. As displayed in Figure 11, the proportion of high school students aged 15 who are willing to take care of parents when they are sick was 43 percent for Japan, as opposed 84 percent for China and 68 percent for the United States (Japan Youth Research Institute, 2005).

D. THE GROWTH OF HEALTHY AND WEALTHY ELDERLY PERSONS IN JAPAN

To cope with numerous difficulties cropping up in the process of rapid population aging in Japan, what should the Japanese people do? In recent years, not only demographers but also scholars in other disciplines have discussed a variety of population aging scenarios and policy options (MacKellar, 2003; Onofri, 2004). For instance, Sinding (2002) has listed the following four broad alternative scenarios: (1) the slow fadeout (in this scenario, population ages without any policy responses), (2) healthy aging (in this scenario, public policy recognizes the necessity of increasing the longevity and effectiveness of the labor force), (3) replacement migration, and (4) successful pronatalism. Bongaarts (2004) has recently analyzed the impact of population aging on public pension plans. He has discussed some policy options from the following four angles: (1) counteracting population aging (encouraging higher fertility and permitting more immigration), (2) increasing labor force participation, (3) raising the retirement age, and (4) reducing public pension benefits.

Because various policy options available to 21st-century Japan have already been discussed in detail elsewhere (Ogawa, 2005), we examine the following two policy options facing Japan to cope with its population aging: (1) better utilization of aged workers and

extension of the retirement age, and (2) more effective utilization of the financial and non-financial wealth of the elderly.

1. Health and Work among the Elderly

With a view to estimating the number of elderly persons aged 65 and over by health status, we have first analyzed micro-level data gathered from the first two rounds of the Nihon University Japan Longitudinal Study of Aging (NUJLSOA). The NUJLSOA is designed to be comparable in many respects with the United States Longitudinal Study of Aging. The first round of the NUJLSOA was conducted in November 1999. The initial sample size in the first wave of the survey amounted to 6,700 persons aged 65 and over. Proxy respondents were allowed to answer questions in cases where the original respondent was not competent enough to answer questions or not available at the time of the interview. The total number of completed interviews is 4,997 persons, but persons aged 75 and over were over-sampled by a factor of two. When analyzing the data, therefore, weights need to be used so that the observations in the sample are representative of the Japanese population at ages 65 and over. Despite strenuous efforts to include institutionalized persons in the NUJLSOA, such persons remain underrepresented in the survey. The second wave of the survey was conducted in November 2001, with the sample size of 4,621 persons including 631 new respondents added to the sample.

To project the number of elderly persons by health status, their health status has been defined in the following manner: if a respondent does not have any difficulties of performing all seven ADLs and all seven IADLs at the time of the survey, he/she is considered to be healthy/active. On the other hand, if the respondent is unable to perform even one ADL or IADL, he/she is considered to be unhealthy/inactive. The seven ADLs include bathing, dressing, eating, transferring from/to bed/chair, walking in a house, going outside, and toileting. The seven IADLs consist of preparing own meals, shopping personal items, managing money, making a phone call, doing light house work, doing out alone by using public transportation, and taking medication.

By applying data gleaned from the two rounds of the longitudinal survey to the multistate method called “IMaCh” (Lievre and Brouard, 2003), Lievre and Saito (2005) have estimated annual transition probabilities among the following three states: healthy/active, unhealthy/inactive, and dead. Figure 12 shows the computed results by age and sex. By incorporating these calculated results by age and sex in the newest version of the NUPRI model, we have projected the number of healthy/active elderly persons and the number of unhealthy/inactive elderly persons over the period 2000-2025. It should be noted, however, that the computed transition rates have been assumed to remain unchanged throughout the projected period. Moreover, although we have attempted to include the education variable as one of the covariates, it has turned out to be statistically insignificant, thus dropping it from our numerical experiments.

Figure 13 depicts the changing composition of the elderly population aged 65 and over by health status. As can be seen from Figure 13, the proportion of the elderly population who are unhealthy/inactive is projected to marginally increase from 13.8 percent to 18.7 percent over the projected period. However, the number of the healthy/active elderly persons is projected to increase substantially from 18.9 million in 2000 to 30.3 million in 2025.

These projected results suggest that Japan’s productive capacity might expand considerably in the years to come if these healthy/active elderly persons could participate in the work force and be gainfully employed. In order to assess such potentials, we have run the following simulation exercises. In Simulation 1, we assume that all healthy elderly persons participate in the labor force throughout the projection period, 2005-2025. In Simulation 2, we assume that the labor force participation rates for both men and women aged 60-64 are raised

to those for their counterparts aged 55-59. Putting it differently, in Simulation 2, the legal age of mandatory retirement is raised from 60 to 65 and that companies comply with this change. Furthermore, Simulation 2 assumes that the labor force participation rates for both men and women aged 65 and over are higher by 10 percentage points than those currently observed.

These two simulation exercises have been undertaken, by utilizing the newest version of the NUPRI model. The simulated results for these two exercises are presented in Table 2. In the first simulation exercise, the difference between the base run result derived from the NUPRI model and the counterfactual case is 22.7 percent in terms of real GDP and 29.4 percent in terms of GDP per capita. In the second simulation exercise, the change in the employment rates of older persons would produce in 2025 approximately 12 percent higher real GDP and real GDP per capita than those implied by the base run, yielded from the NUPRI model.

If the health status of Japanese older persons continues to improve and life expectancy at age 60 continues to increase, it is highly conceivable that more Japanese over the age 60 will desire to remain in the labor force. These two simulation exercises suggest that if changes in industrial relations policies are made appropriately to accommodate this desire, the contribution to be made by Japanese older persons working in the labor force could be quite substantial. It may be worth remarking that a larger work force to be generated by higher labor force participation among older but healthy persons may lead to a considerable increase in the first dividend, although it may reduce the amount of the second dividend as a result of the shorter period of retirement life.

2. Accumulation of Wealth among the Elderly

In recent years, many financial institutions in Japan have been paying great attention to the baby boomers and their accumulated wealth. Those born from 1947-1949 are now approaching their mandatory age of retirement. It is estimated that the baby boomers hold total financial assets worth 130 trillion yen (US\$1.3 trillion), or nearly 10 percent of the nation's overall assets (The Nikkei Weekly, 2005).

As has already been discussed in the earlier sections of this paper, both first and second demographic dividends have been generated over the course of Japan's demographic transition after World War II. Figure 14 plots the age profile of asset holding in Japan in 1999. Using the 1999 round of NSFIE, we have estimated the age-specific pattern of holding the real assets and the financial assets. In addition, we have computed the present value of the expected future stream of public pension benefits. To be consistent with the data for the real assets and the financial assets, we have calculated the present value of public pension wealth, evaluated in 1999. In this computation, we have incorporated the structural change in the contributions and benefits amended by the 1999 and 2004 pension reforms. The discount rate used for calculation was 1.25 percent, which corresponds to the average interest rate for the long-term government bonds over the period 1999-2004.

A quick glance at this graph reveals that the Japanese elderly persons are wealthy. At age 60, the total amount of assets an average person owns is more than 50 million yen, or US\$0.5 million. In fact, they are wealthier than what this graph shows, because private pensions are not included in the computation. In addition, various types of familial transfers have not included.

It is interesting to observe that the amount of public pension wealth is greater than that of real assets at a relatively early stage of retirement life, but the latter exceeds the former by a great margin at a later stage of retirement life. This seems to suggest that the liquidation of real assets such as land and housing is crucial for very old persons, particularly those who are living alone. There seems to be substantial potentials for developing various financial

schemes such as the reverse mortgage plan. The Musashino City Scheme is a well-known reverse mortgage program (Martin, 1989), but the availability of such financial arrangements has been extremely limited to the Japanese old persons.

Attention should also be drawn to the fact that the Japanese people's preference for land has been changing to a considerable degree over the last 10 years or so, or Japan's lost decade. According to the National Opinion Survey on Land Issues conducted by the Ministry of the National Land and Transportation in 2004, the proportion of those aged 20 and over who think that land is a better asset than financial assets such as savings and securities declined from 62 percent in 1993 to 33 percent in 2004. This result may suggest that an increasing proportion of the Japanese elderly need more information regarding investment opportunities. Caution should be exercised, however, with regard to the lack of appropriate knowledge pertaining to various financial markets. According to a recent report released by the OECD (2005c), 71 percent of the population aged 20 and over have no knowledge about investment in equities and bonds, 57 percent have no knowledge of financial products in general, and 29 percent have no knowledge about insurance, pensions, and tax.

If Japanese elderly persons are provided with sufficient knowledge about the dynamics of the financial market, they may have a good potential for investing their accumulated assets possibly outside Japan. Moreover, as analyzed by Cheung et al (2004), the timing of the "first demographic dividend" for selected Asian countries varies considerably. As examined earlier, Japan's first dividend ended in 1994. In contrast, in the case of China, for instance, its first dividend lasts for 40 years from 1990 to 2030. In an era of globalization, the healthier and wealthier Japanese elderly will be able to invest their assets in a dynamically growing Chinese economy, and bring in financial gains back to Japan. Obviously, to facilitate such international transactions, proper institutional and legal arrangements need to be developed to protect the elderly investors.

At present, the elderly tend to be considered as "debts" for Japanese society. However, the foregoing discussion points to the high likelihood that Japanese elderly persons will become "assets" to save 21st century Japan.

E. CONCLUDING REMARKS

In the present paper, we have discussed the role of both first and second demographic dividends in Japan's postwar miraculous economic growth. Through these demographic dividends, the Japanese elderly have been and will be healthier and wealthier in many more years to come. Because many of them will be healthier, they appear to have a great potential for saving Japan from its financial crisis to a considerable extent, by working beyond the age of mandatory retirement. Because many of them will be wealthier, they will be able to earn substantial financial resources from abroad, by taking advantage of the differential timing of the first demographic dividend among different countries. Through these two policy options available to Japan, the elderly will contribute to achieving healthy aging and retaining the dynamism of the country's economic growth. However, depending upon government policies to be adopted, the effectiveness of these two policy options varies to a considerable extent..

In this paper, we have shown that the Japanese elderly persons will be generally very healthy and wealthy. It is important to note, however, that income disparities have been expanding at an alarming rate in Japan, not only among the population in general but also among the elderly (Time, 2005). Thus, more research on population aging and the deterioration of income distribution needs to be urgently conducted, and this paper might be able to provide a useful base for such research activities.

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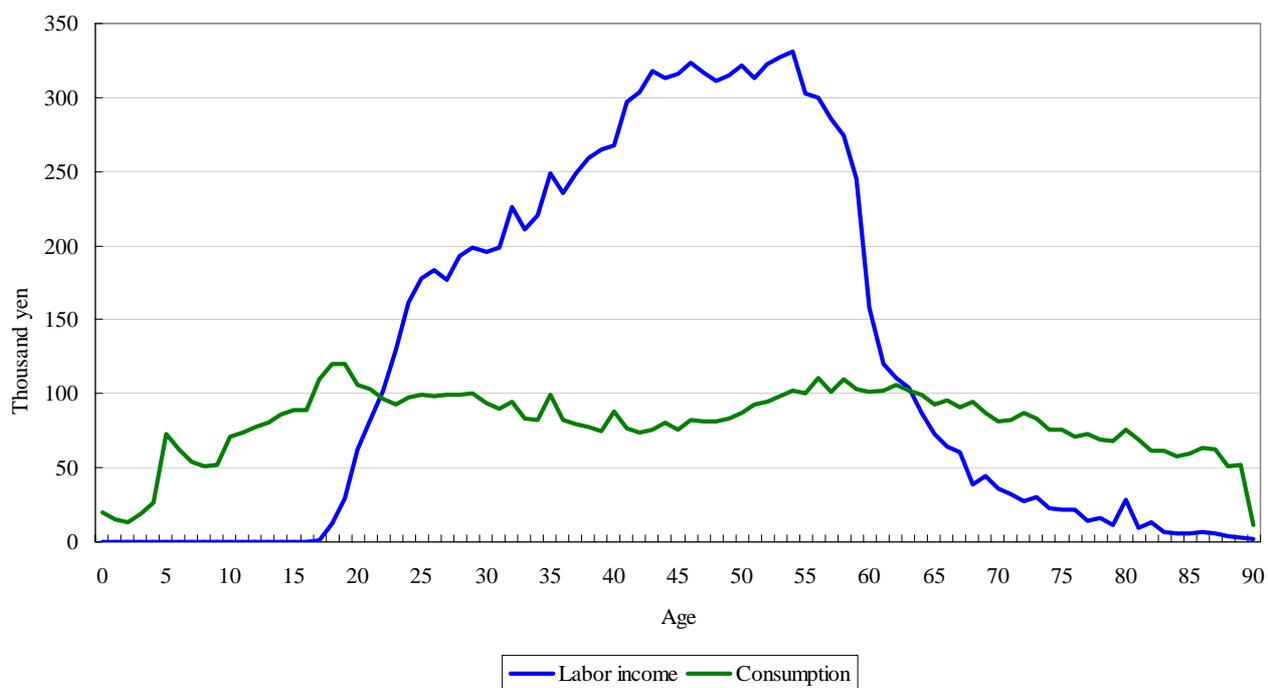
Table 1. Population change in Japan, 1950-2025

Year	Tota population (1000 persons)	0-14(%)	15-64(%)	65+(%)	Total Dependency Ratio	75+/65+(%)	Women 40-59/65-84
1950	83200	35.4	59.7	4.9	67.5	25.7	1.8
1955	89276	33.4	61.3	5.3	63.1	29.2	1.8
1960	93419	33.0	64.2	5.7	60.4	30.4	1.8
1965	98275	25.6	68.1	6.3	46.8	30.3	1.8
1970	103720	23.9	69.0	7.1	44.9	30.2	1.7
1975	111940	24.3	67.8	7.9	47.6	32.0	1.6
1980	117060	23.5	67.4	9.1	48.4	34.4	1.5
1985	121049	21.5	68.2	10.3	46.7	37.8	1.4
1990	123611	18.2	69.7	12.1	43.5	40.1	1.3
1995	125570	16.0	60.5	14.6	50.4	39.3	1.1
2000	126926	14.6	68.1	17.4	46.9	40.9	0.9
2005	127449	13.8	66.2	20.0	50.6	45.1	0.8
2010	127013	13.0	64.0	23.0	55.6	48.0	0.7
2015	125603	12.1	61.0	26.9	63.2	48.4	0.6
2020	123235	11.0	59.5	29.5	67.6	52.1	0.6
2025	120094	10.2	58.8	31.0	70.0	60.0	0.6

Sources: Statistics Bureau, Population Census, various year.

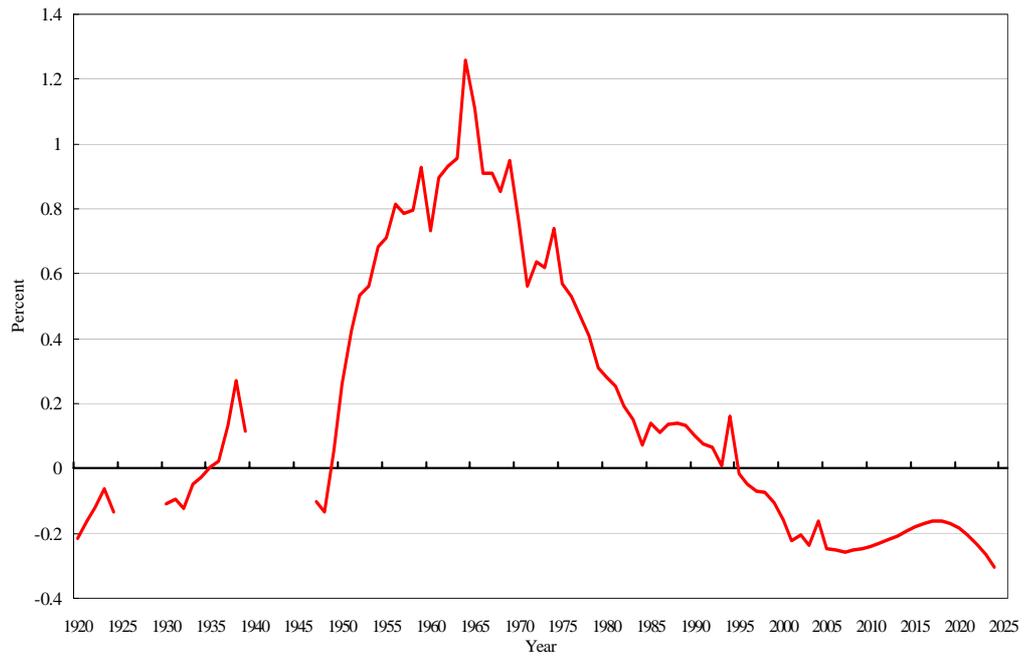
Nihon University Population Research Institute Population Projection, 2003.

Figure 1. Age specific profiles for labor income and consumption in Japan, 1999



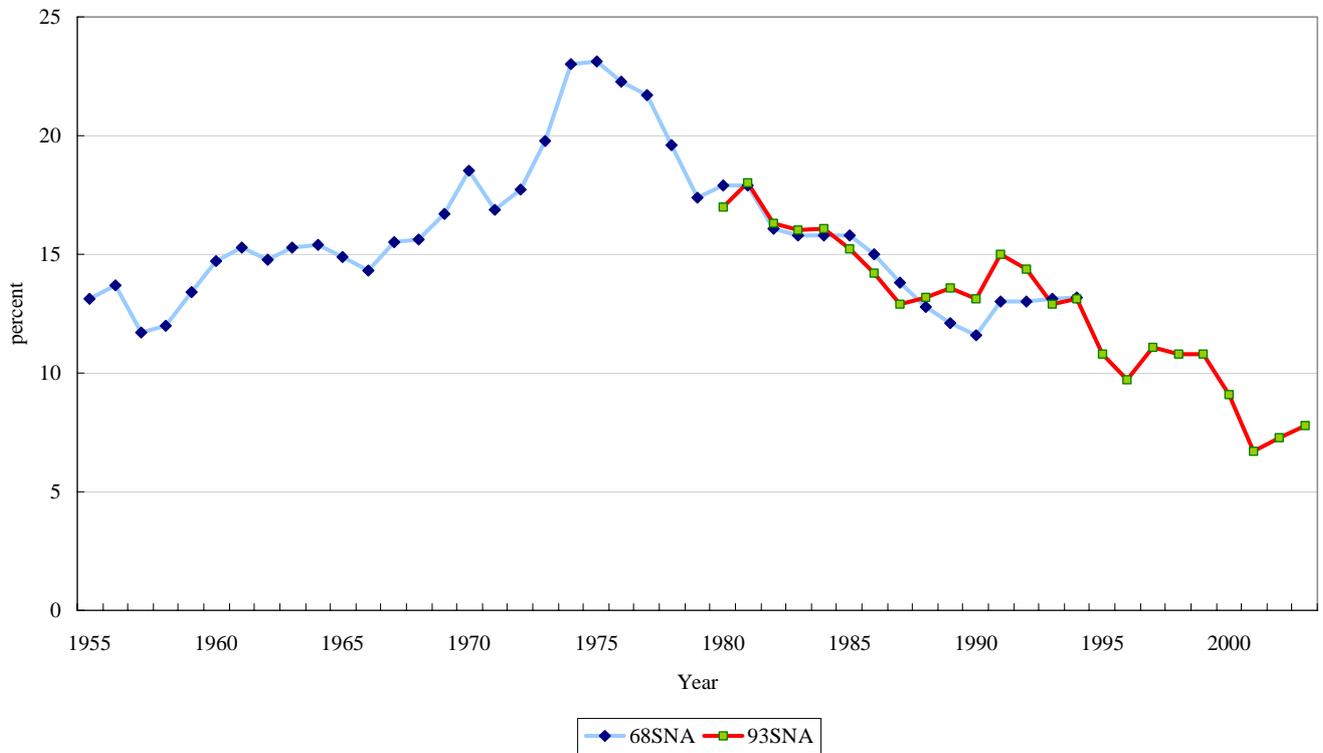
Source: Statistics Bureau, National Survey of Family Income and Expenditure, 1999.

Figure 2. Trend in first dividend in Japan, 1920-2025



Note: The first dividend is represented the support ratio which is defined as the difference between the annual growth rate of output per effective consumer and the annual growth rate of output per effective producer.

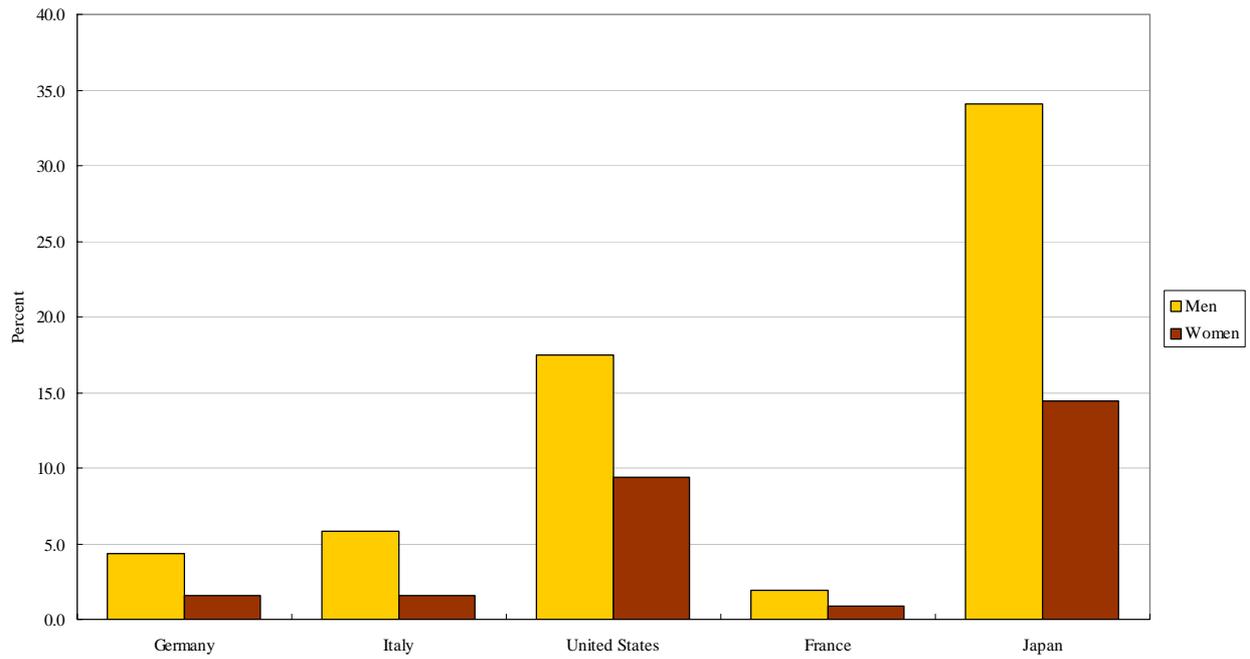
Figure 3. Change in the household savings rate in Japan, 1955-2003



Source: Cabinet Office, Government of Japan, *Annual Report on National Accounts*, Various years.

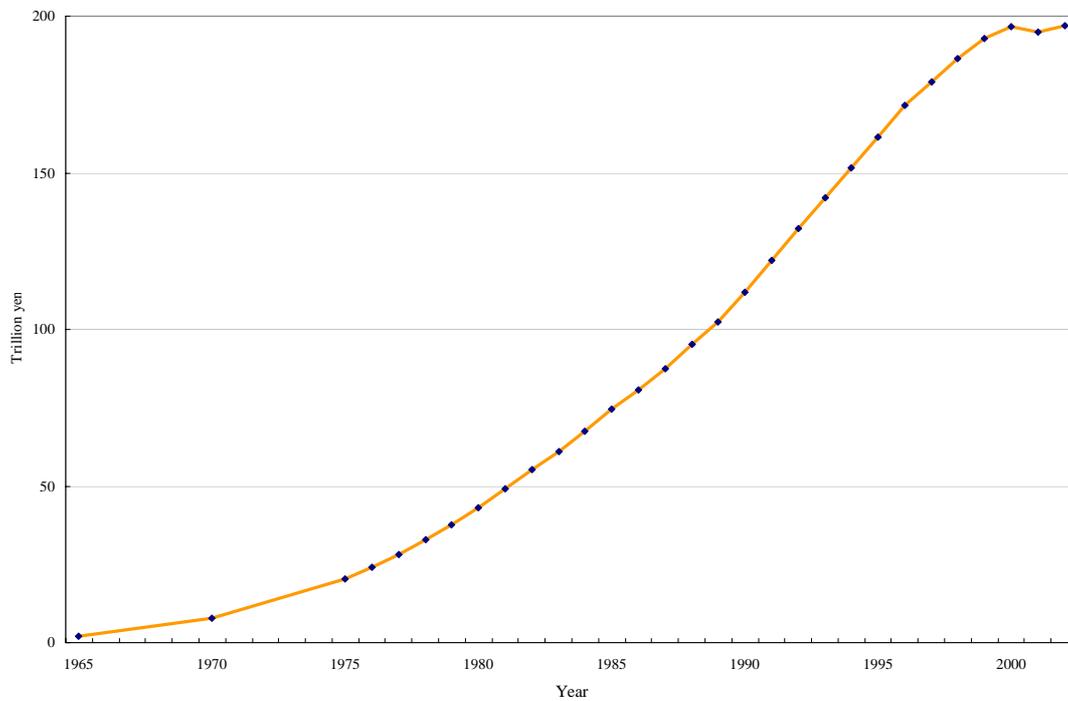
Savings rate = Net saving ÷ (Disposable income + Changes in pension reserves in pension funds)

Figure 4. Labor force participation rates for men and women aged 65 and over in selected countries, 2000



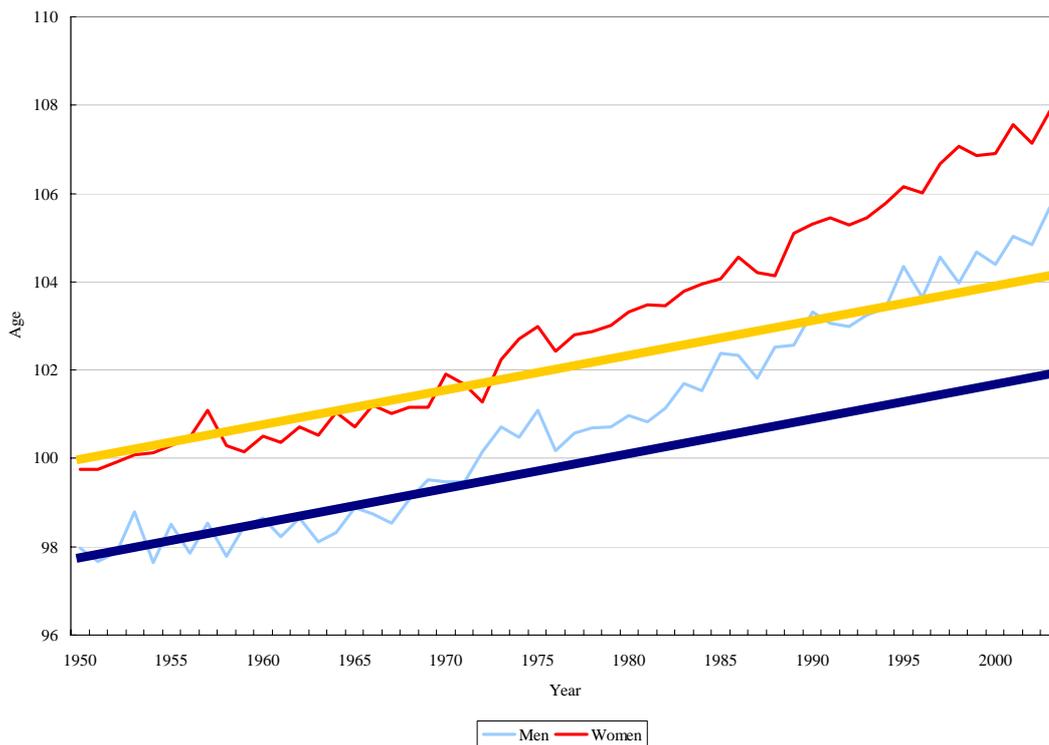
Source: ILO, *Yearbook of Labour Statistics* 2002, 2003.

Figure 5. Growth of reserved funds for all public pension schemes combined, 1965-2002



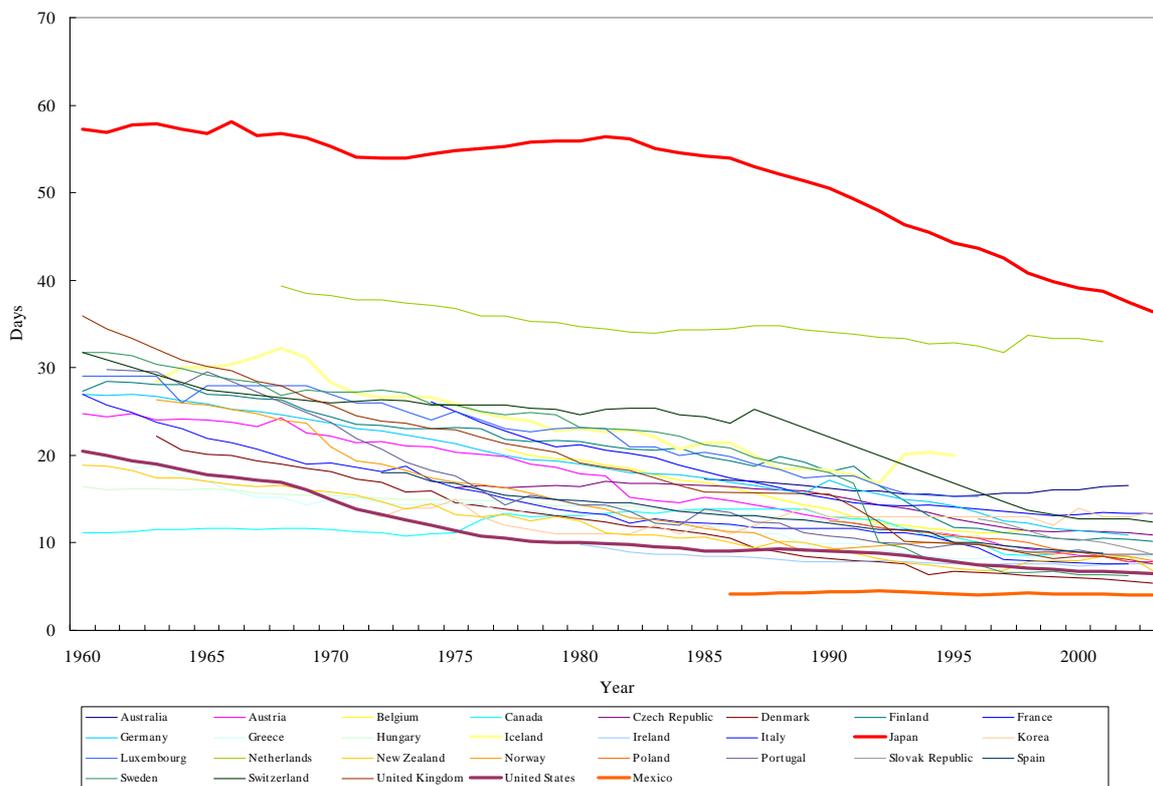
Source: Ministry of Health, Labour and Welfare, *Financial Report on the Public Pension System: Fiscal Year 2003, 2004*.

Figure 6. Change in average age of death among 50 oldest persons in Japan, by sex, 1950-2003



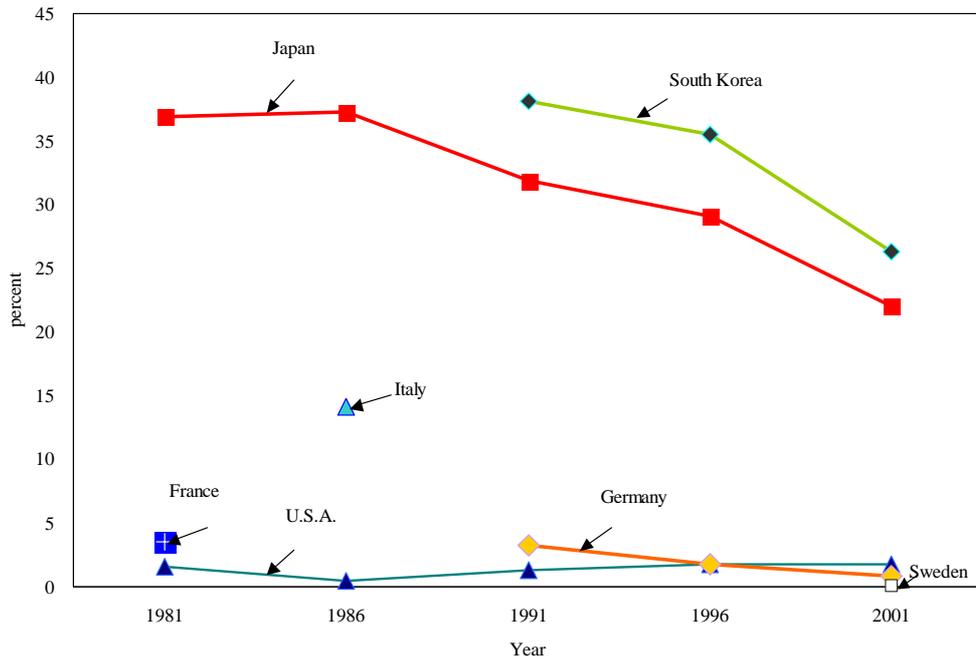
Source: Ministry of Health, Labour and Welfare, *Vital Statistics*, various years.

Figure 7. Trends in average days of hospitalization in OECD countries, 1960-2003



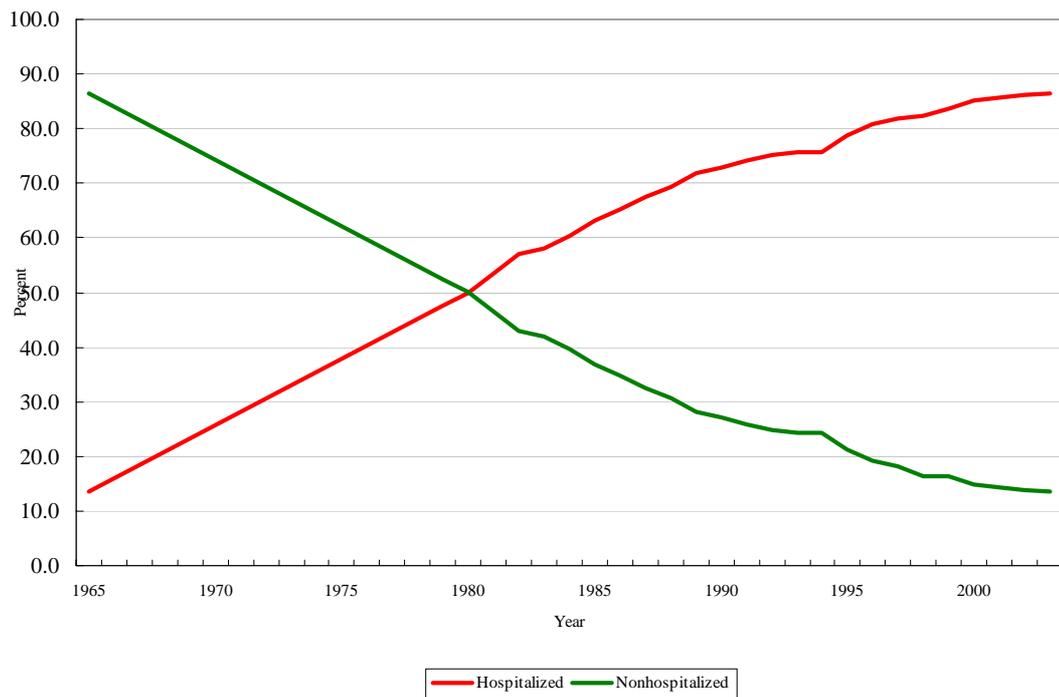
Source: OECD, *OECD Health Data 2005*, 2005.

Figure 8. Change in the proportion of those 60+ living in three-generational households, selected countries, 1981-2001



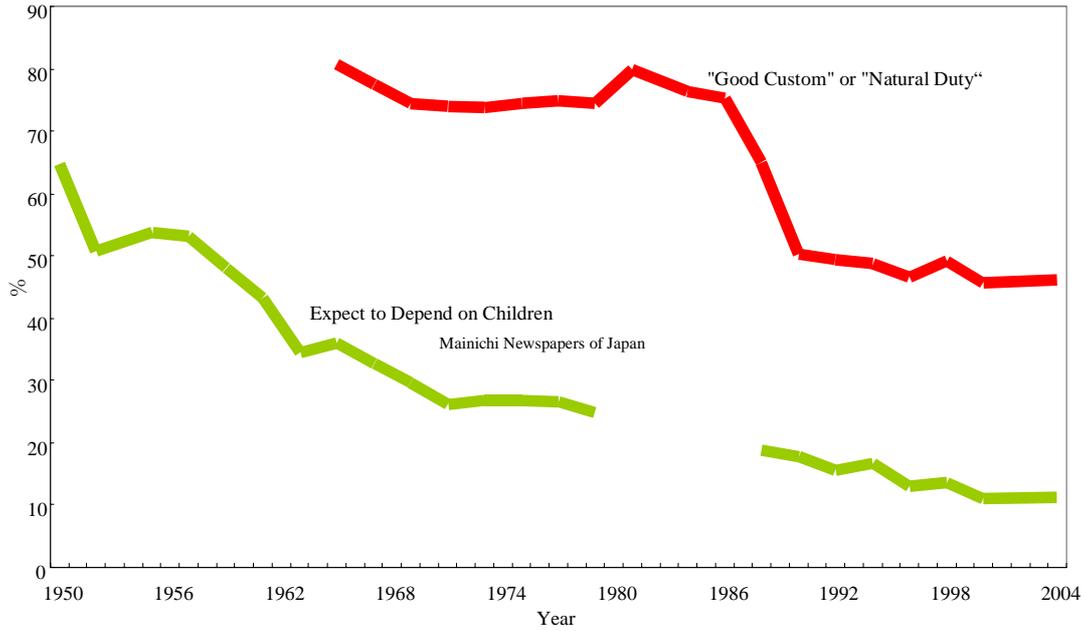
Source: Cabinet Office government of Japan, *Fifth round of the International Survey of Lifestyles and Attitudes of the Elderly*, 2002.

Figure 9. Change in the place of deaths among the elderly in Japan, 1965-2003



Source: Ministry of Health, Labour and Welfare, *Vital Statistics*, various years.

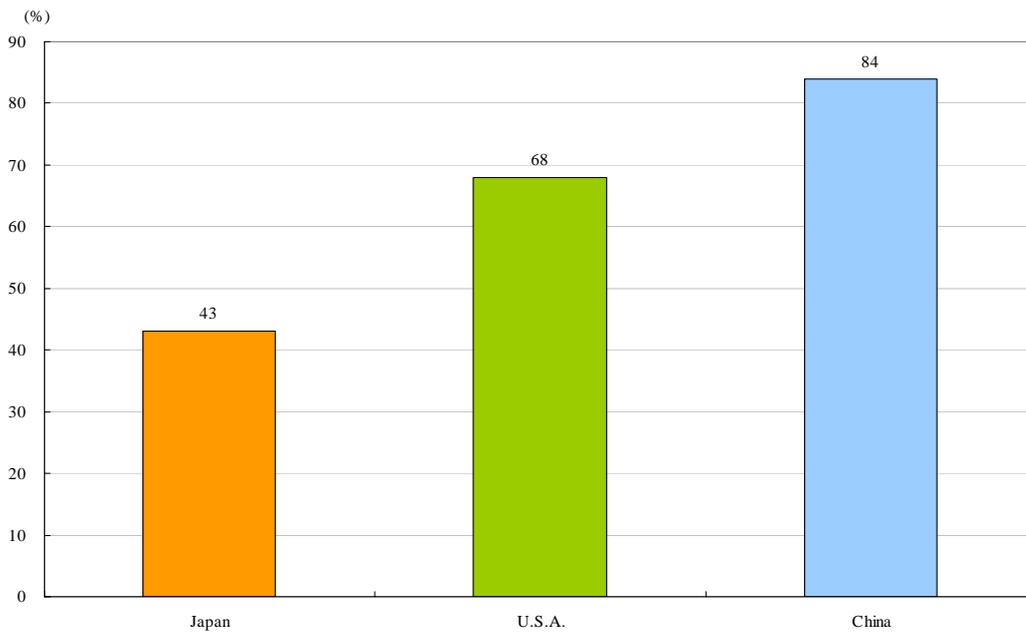
Figure 10. Trends in norms and expectations about care for the elderly: Japan, 1950-2004



Sources: Mainichi Newspapers of Japan, *Summary of Twenty-fifth National Survey on Family Planning*, 2000.

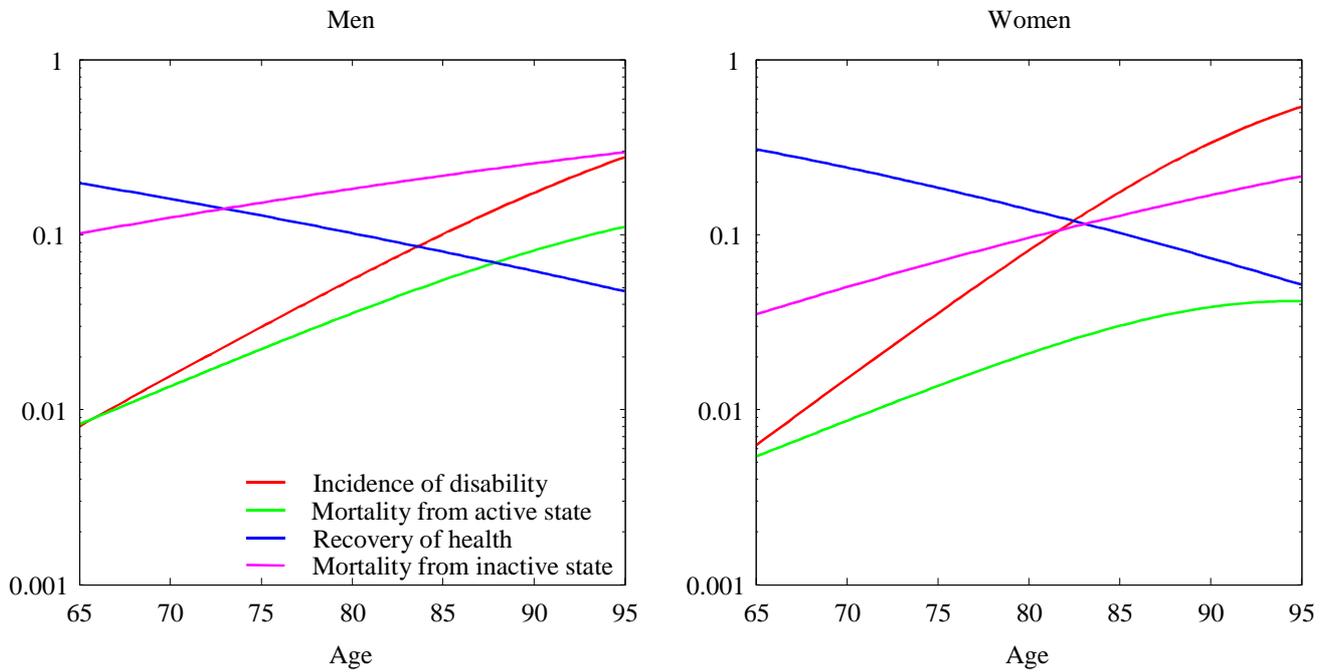
Mainichi Newspapers of Japan, *Summary of the 2004 round of the National Survey on Population, Families and Generations*, 2004.

Figure 11. Proportion of high school students willing to take care of parents under any circumstances, when their parents get older and need some help in their daily lives due to poor health, Japan, United States and China, 2005



Source: Japan Youth Research Institute, *High School Students' Lifestyle Survey*, 2005.

Figure 12. Estimated annual transition probabilities in Japan



Source: Lievre and Saito (2005).

Figure 13. Projected elderly population by health status, Japan 2000-2025
(based on health status transition rates)

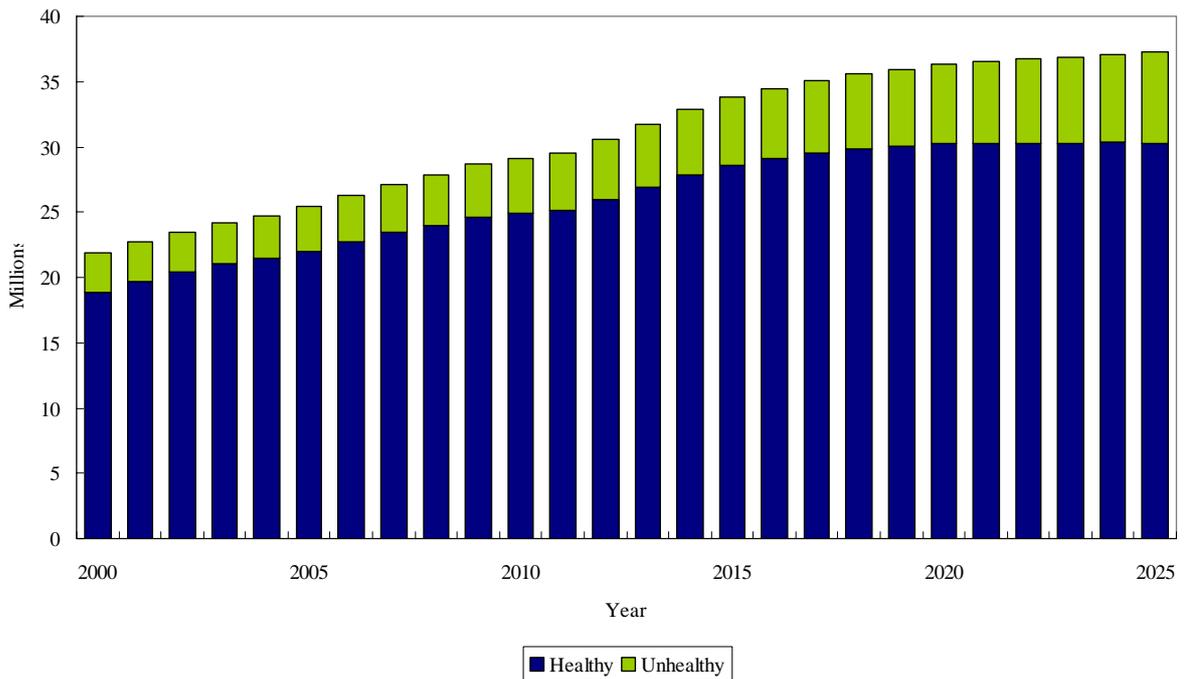


Table 2. Simulation exercises for alternative labor force participation among the elderly in Japan, 2005-2025

NUPRI Model projection (Base run)	Simulation 1	Simulation 2
Potential GDP (Trillion yen)		
2005	653.8 (16.5%)	576.4 (2.7%)
2015	747.2 (24.4%)	661.8 (10.2%)
2025	791.3 (27.8%)	692.3 (11.8%)
Potential GDP per capita (Million yen)		
2005	5.1 (16.5%)	4.5 (2.9%)
2015	5.9 (23.9%)	5.3 (10.8%)
2025	6.5 (26.7%)	5.7 (12.3%)
Labor force (1000 persons)		
2005	86803 (29.6%)	70386 (5.1%)
2015	89107 (41.8%)	73938 (17.7%)
2025	87880 (48.5%)	70921 (19.9%)

Simulation 1: We assume that all healthy persons aged 65 and over will participate with labor force throughout the projection.

Simulation 2: We assume (1) that the labor force participation rates of those aged 60-64 are raised to those of 55 to 59 and (2) that the participation rates of those aged 65 and over are raised by 10 percentage points above the current rates.

Figure 14. Age profile of assets and pension wealth in Japan, 1999

