Introduction

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With the advent of the Millennium, substantial qualitative changes have been taking place in environmental, technological, economic and social conditions on earth. One of the most conspicuous changes in Japan is the ageing and decline of its population. It was expected that the population in Japan would decline before long, but it was still shocking to hear the confirmation of Japan's government statistics to that effect for last year's population.

The Millennium Project at the Economic and Social Research Institute (ESRI), Cabinet Office of Japan, gathered distinguished scholars from all over the world who studied the impact of ageing on the Japanese economy and its society from various angles. This book is a collection of several studies from this project and the chapters deal more specifically with the impact of ageing on the labor market in Japan. The content of the chapters observes the surprising phenomena of drastic ageing and the declining population, and explores new directions of research. Since we face a new set of problems that were not anticipated, some chapters may carry a flavor of being a simulcast of current situations as well as a scientific observation of the ageing trend.

At the turn of the new century, Japan has been encountering the advent of a rapidly ageing population. In 2000, about 17.2 per cent of its population was over 65 years old, and about 7 per cent was over 75 years old. In 2025, 27.5 per cent of Japan's population is expected to be over 65 years old, and about 11.9 per cent is expected to be over 75 years old. This means that there will be about 2.5 people in the active population for every adult aged 65 years or more.

This tendency is not a feature peculiar only to Japan; many other developed countries are following the same trend. The proportion of those over 65 years of age in the population of the United States, Great Britain, Germany, France and Sweden are expected to reach 18.8 per cent, 21.2 per cent, 23.4 per cent, 21.7 per cent and 24.3 per cent, respectively by the year 2025. Thus, similar trends are everywhere in developed countries, but the situation in Japan is probably the most extreme.

The rapid ageing process of the population presents serious questions in terms of its economic and social impact. Japan can be viewed as an

experimental ground to test various hypotheses related to these questions. This fact presents a strong contrast to the past state of Japanese economic studies. Formerly, the Japanese economy was used as a field where the already established was to be reconfirmed. Now, Japan faces new problems such as deflation, massive government debt and, in particular, ageing, which other economies have seldom experienced. These novel problems challenge economists to make accurate diagnoses and prescriptions, and they challenge, at the same time, the robustness of conventional theories. It is hoped that new directions of research and fresh insights in economic logic will be found and developed following the experience in Japan in advance of similar occurrences in other countries.

Ageing has diverse effects on the economy, polity and society of a universe. Before facing the ageing problem directly as we are currently forced to do, ageing was often an abstract concept such as the decrease in population growth rate in macroeconomics, unemployment problems in the labor market, and the balance of the social security account. By observing and experiencing the ageing problems first-hand in Japan, however, one finds that the many facets of this phenomenon seriously affect other parts of a nation's life. Not only through the macroeconomic route but also through various structural, sociological, behavioral and cultural routes, does ageing exert a strong influence on a country.

Literature illustrates various types of serious old age problems. Elderly people in ancient Japanese villages used to be sent, or sometimes even voluntarily went into the wilderness of the mountains in order to 'reduce the number of mouths in a family'. A female novelist, Sawako Ariyoshi, describes with black irony a Japanese housewife's ordeal of taking care of her father-in-law – a quite common pattern of care of the elderly in Japan where nursing homes and other public facilities are yet to be fully developed.

Since social changes have been rapidly taking place along with these demographic trends, new phrases and jargon that reflect these changes have become a part of the lexicon. Normally, a graying labor population would mean a higher demand for young workers and college (or high school) graduates. In reality, however, the conventional pattern of lifetime employment still persists and prevents young people from obtaining the status of full employees. This is reflected by a new phrase, 'parasite single' (*parasaito shinguru* as paraphrased in Japanese). 'Parasite single' is an unmarried young person who lives with his (or her) parents, and whose basic expenses are taken care of by the parents. They are not constrained by the regimen of regular employees, and conduct elegant lifestyles. Masahiro Yamada, a sociologist who coined this phrase in his book of the same title, points out that a child, now a scarcity in a family, is often capable of commanding a greater cash flow from parents than before.

The above depicts the nature of the supply side of the ‘parasite single’. At the same time, as Genda et al. analyze below, this lifestyle also stems from the nature of the demand side of employment. Employers are now reluctant to hire many employees on a permanent basis because of increasing uncertainty as well as the difficulty in firing employees, a tradition based on legal practices. For those reasons, we observe the somewhat ironical phenomenon of ‘parasite singles’, a lack of demand for younger workers in spite of the drastic ageing of the population.

Along with this trend, a Japanese–English term, ‘freeter’, was coined. A ‘freeter’ describes a young person who does not have a constant job but earns a living by irregular and part-time work. This category of young people is also created by the interaction of supply and demand. More simply put, workers are not willing to settle or commit to a lifetime job. Firms are also reluctant to hire many new workers because the firms have to provide fringe benefits and employment protection if young people are taken on as regular employees. Currently the number of ‘freeters’ is said to exceed 2.1 million in Japan.

Incidentally, ‘NEET’ (not in education, employment or training) is a word created in England, and describes young people who neither intend to obtain jobs nor have vocational training. These NEETs in England are usually considered to belong to the lower income classes. By contrast, NEETs in Japan were considered to come more often than not from relatively well-to-do families. However, recent statistics suggest that NEETs in Japan also drastically changed around 2002 so that they began to come from lower and middle income classes.¹ They rely on the parents’ income and do not study or work. The often expressed reasons for not working are that they do not find attractive work or that they do not want to be involved in an interpersonal network or to be subordinate to bosses. The number of NEETs in Japan is estimated to exceed 0.64 million in 2004.

Thus the increase in the numbers of young people who make no lifelong plan independently exacerbates the severity of the ageing problem. ‘Parasite singles’ depend on their parents for basic expenses and housework, although they work. ‘Freeters’ only work on a day-to-day basis. ‘NEETs’ cannot even take care of their everyday needs, let alone plan for their own bright future. Because ‘parasite singles’ feel little dissatisfaction about their life, the status quo continues and leads to the tendency towards late marriage or no marriage, which aggravates the ageing of the population. Quality of labor improves when a worker commits to a single job for a considerable duration. If ‘NEETs’ and ‘freeters’ stay uncommitted to a job, they may give up opportunities for improving their skills.

In short, these new phenomena are caused by the interaction of the supply side and the demand side. On the supply side, there is a behavioral

basis for the choices of young workers. On the demand side, the pattern of Japan's typical, firm-based lifetime employment and seniority wage system is changing to the extent that firms are no longer demanding a large source of regular employees.

The increase in the type of young people described here has its own repercussions. This trend makes the process of on-the-job training in a firm more difficult, a process that was considered to be a key factor in the success of Japanese firms. This absence of OJT candidates makes it more difficult to accumulate workers with firm-specific skills. The social security system suffers from a lack of new membership. Moreover, these phenomena themselves tend to delay the age of marriage and also to reduce the number of children in a household. They work to aggravate the problem of an ageing population in a kind of vicious circle.

If we turn to the field of academic economics, an ageing and declining population also creates new puzzles in economics. First, take the case of growth theory. What happens to the long-run growth path in the economy with a declining population? Even the definition of a balanced growth path in growth theory should be replaced by the definition of a balanced contraction path, but it is not easy to define such a path. On such a path, both labor and capital must be declining at the same rate. Yet, though capital can often be obsolete, it cannot be depleted easily. Therefore, it is difficult to define a balanced contraction path in a national economy with a decreasing population. Under the old view of growth theory, the welfare effect of an economy with a declining population may appear to be a blessing because the same capital stock serves fewer people. It presents a harder problem in practice, however, because the working generation is shrinking relative to the retired generation. Producers are gradually outnumbered by mere consumers.

Second, can the international economy help the problem of a shrinking working population? Definitely. Immigration of younger labor from abroad would help in the abstract sense. It is the first best policy to cope with an ageing population. On the positive side of immigration, one can learn from the US immigration policy which allows only a limited number of immigrants with selective categories of workers. In practice, migration involves various social and cultural problems as the past Gastarbeiter problem in Germany illustrated. Goto argues below, taking those problems into account, that the increasing job participation of women, more active trade, and foreign investment would fill in the gap posed by this apparently natural policy response towards increasing immigration.

In any case, a reasonable response of an economy to a declining population, aside from migration, is that a younger generation, anticipating the ageing of the economy, will save and invest abroad to prepare for the hardship of the future silvering of the population. In other words, younger

generations facing the ageing population structure in the future will work and save abroad with the hope of cashing in the results of their savings in their old age. This process is not without problems, however. If it is not feasible to import eldercare services, and these same services are not completely supplied by robots or through other technology, then the use of savings accumulated at a younger age will have its limitations. An aged society needs young workers, and cannot exist solely on the accumulation of past savings unless these same savings can be transformed into labor. Is this process still possible even if we exclude migration? These realistic questions motivate the theoretical analysis by Hamada and Raut.

In the United States, for example, the government selects those groups of workers wishing to be immigrants, and makes them compete with each other as well as with domestic workers. Thus immigration is a natural instrument to keep the vitality of the national economy sound and flexible. In Japan, which has a long history of homogeneity on a somewhat secluded island, resistance to immigration is strong, as is suggested by Goto. It is now a serious question as to whether or not Japan can continue to be a viable economy if it insists on rigorously limiting foreign workers as it has done for a long time.

Declining numbers of young workers also create serious incentive problems. Suppose a hypothetical country succeeded in enforcing 'a single child per family' rule as tried for some time in China. It would be amazing to observe that the population in such a country would reduce by half in one cycle of reproduction and to one quarter of the initial population in two cycles. Every child would have two parents and four grandparents who could extend care. It would not be surprising that a child might lose the incentive to compete for a good education or to struggle to improve his or her skills. This is the point emphasized in Makino and Sakuragawa.

Intergenerational transfers are, and should be, primarily based on love and trust. Often, however, they are also subject to explicit and implicit calculations and negotiations. The citation from *King Lear* at the beginning of Chapter 4 is a sincere but frank admission of this strategic maneuvering by Cordelia, and it anticipates the tragic saga of the Lear dynasty. Nowadays, game theory not only predicts the outcome of rational behavior but also allows us to test what kind of strategic assumptions are implied from the data. Chapter 6 is a pioneering attempt in this direction, and because of its novelty, we decided to include the chapter even though it is not directly related to Japan.

Let us now give a short synopsis of each chapter and its relationship to our main motifs.

Chapter 1, 'Ageing and employment in Japan' is the result of a collaboration of many economists in the ESRI Labor Market Study Group under

the leadership of Yuji Genda. This chapter starts off with a concise but thoughtful examination of ageing from the macroeconomic and the microeconomic standpoints. In its macroeconomic section, the chapter breaks down the incidence of unemployment into the unemployment of each age cohort and the age distribution of the population. Comparing these results with results in the United States (Katz and Krueger, 1999), this chapter concludes that the contribution of the age structure is much more important than the effect of cohort-specific unemployment in Japan. Genda et al. also find that the effect of age, education and gender on unemployment is of little importance.

The microeconomic part of this chapter highlights, by way of cross-section analysis, the negative effect of increases in middle-aged and older employees on the total downsizing of firms. The age composition effect dominates the effect of decreases in labor demand in general. The legal decisions made in Japan's courts do not allow outright dismissals though statutory laws do not have any prohibitions against this. The difficulty in dismissing old employees is in fact reducing the demand for young workers. The above-mentioned and well publicized 'parasite singles' – young persons relying on their parents after graduation and without steady jobs – are not necessarily the result of behavioral problems of youngsters but the demand problem on the part of firms. The traditional schemes of transferring employees between firms – often used among *keiretsu* firms – are no longer sufficient to absorb redundant old-age workers. This brief chapter will convey a current and vivid picture of the Japanese market as it is under the wave of rapid ageing.

Chapter 2, 'Factors affecting labor force participation in Japan', by Hirotugu Sakai and Hitoshi Asaoka presents a suitable companion piece to the first chapter by conducting quantitative analyses of labor participation. The authors' main methodology is the estimation of participation probability. The propensity to participate in labor markets is decreasing as a function of age, bad health and flexibility of the working system. The authors also evaluate the impact of Japanese tax law which acts as a disincentive on the spouse of the main wage earner in the household. More often than not the spouse under this tax treatment is a woman. Typically, a part-timer – say a wife – who earns more than 1300 thousand yen has to pay income tax even though she (or he) does not need to pay the tax if she earns less than 1300 thousand yen. Again a probit estimation is carried out of the spouse's income-adjusting behavior by withholding labor participation. Income-adjusting behavior can be clearly seen if the female is well educated, but can be mitigated by a family-friendly child care system.

Given the premise that labor participation should be encouraged in order to cope with the ageing problem, this chapter argues that: more flexible

as well as more child-care-friendly working conditions should be offered; discouraging tax and social security treatment of labor participation should be legislated; and that the government should respect and train the elderly because they have a wealth of accumulated professional experience. The reader may find a subtle difference in tone between this chapter and the previous chapter regarding the treatment of elderly workers. This chapter recommends that we keep elderly workers participating as much as possible, while the first chapter points out the side effects of keeping too many elderly workers in the market. We marvel at and are intellectually attracted by the analysis in Chapter 1, but at the same time we learn much from the objective and quantitative analysis in Chapter 2. Certainly, more careful analysis is needed to make comparisons between Chapters 1 and 2.

Chapter 3, 'Labor force ageing and economic growth in Japan' by Masaya Sakuragawa and Tatsuji Makino, takes a long-run view of the economy that is more or less on a full employment path. It offers a contrast to the previous two chapters which traced the fluctuations in unemployment and labor supply decisions along the business cycle. Because of the ageing of the population, Sakuragawa and Makino argue that younger people become relatively scarce. They tend to be employed in favorable conditions with relatively high real wages. The lifetime wage profile that faces younger workers becomes flatter. Then, younger people will lose incentives to accumulate human capital in order to enjoy the higher returns to human capital in their later ages. In short, younger workers become more relaxed in terms of self education and self training. Thus ageing reduces growth rate not only because of the reduction of labor input in the process (direct effect), but also because of the loss of incentives for investments in human capital (adverse growth effect) resulting from the flattening of the lifetime wage profile. By calibration in an overlapping generation model where skilled labor and unskilled labor are imperfect substitutes, the authors indicate that the loss due to the drastic transition of population decline can be quite substantial. According to their calculation, direct effects may account for 19.1 per cent of per capita consumption decline and the growth effect may account for 11.5 per cent of per capita consumption decline. (In contrast to the context of Chapter 1 where the pressure of large numbers of elderly workers discourages younger ones, in this full employment scenario, scarce younger workers are spoiled by improving working conditions and tend to neglect investing in their human capital for the future.)

In Chapter 4, Hamada and Raut draw direct attention to the need for caring people in a country where the population is rapidly ageing. Naturally, costs of medical care for the elderly grow rapidly and at greater proportions than the pace of an ageing population. The process requires not only material costs but input of direct human care as indicated by

classic literature described above. More capital-intensive medical care may substitute for a part of nursing care for the elderly, but *robots* can never replace a substantial part of the care needed for the elderly. Indeed, they are never able to be a substitute for the essential human ingredients, attention and loving care.

To capture the basic nature of nursing needs in terms of human labor, the authors develop a simple overlapping generation model in which a person works when young and consumes as well as demands nursing care during old age. In order to prepare for the need for care during old age, a person will need to save more from the present consumption than in the absence of elderly care. When nursing services cannot be substituted for by physical equipment, a nation is forced to import foreign young labor or to export capital abroad in order to buy more goods and shift workers from the production sector to the nursing sector.

In Chapter 5, Raut elaborates on this international aspect of an elderly population. He asks the question regarding to what extent capital movements can substitute for labor immigration as a means of mitigating the seriousness of old age problems that are magnified in present day Japan. To deal with an extended model of the previous chapter, he appeals to both a theoretical and a calibrating approach, allowing technological differences between developing and developed countries.

He indicates that under plausible values of production and consumption parameters for Japan and its surroundings, immigration of labor is likely to be more effective than exporting capital. In an extreme case, if all the young labor were absorbed for elderly care, immigration would be the only choice. This example is certainly a hypothetical case, but it is a strong one.

It seems natural to consider the use of immigrants if Japan is experiencing a crisis of a precipitous population decline. If the deficiency is in the supply of labor, why do we not replenish it by importing from abroad? In Chapter 6, 'Ageing society and the choice of Japan: migration, FDI and trade liberalization', Junichi Goto develops a completely different view. He argues that the social cost of importing substantial immigrant labor to Japan is enormous and that labor import can be detrimental to a national economy that is under import protection of consumption goods. (The second effect is generally known as the Dias–Alejandros–Brecher effect. In Japan it is known as the Uzawa effect based on his contribution in Japanese.) On the positive side, Goto emphasizes that female labor can be utilized more effectively in Japan and that capital outflows as well as freer trade will be good substitutes for labor inflow. In a neoclassical environment, his economic logic may hold theoretically. Then he proceeds to calibrate these effects for seven countries/areas in Asia, China (including the Province of Taiwan), Indonesia, Korea, Malaysia, the Philippines and

Thailand. He concludes that Japan can cope with the ageing problem even without relying substantially on immigration.

We find insightful observations in this chapter. For example, low fertility is not necessarily an outright labor shortage problem because the ratio of a supporting population may increase for a while when fertility declines. The author's theory and calibrations may seem to dissent strongly from conventional views concerning migration in Japan, but we consider that the examination of somewhat extreme views helps us to clarify the nature of this important issue. It is politically impossible to realize the free flow of labor around Japan's archipelago, but the proper policy mix seems to lie in the middle ground between free migration and its complete ban, that is, a skillful combination of selective immigration policies and other policies discussed in this chapter.

In the final chapter, 'Retirement in non-cooperative and cooperative families', Erik Hernæs, Zhiyang Jia and Steinar Strøm challenge the difficult but valuable task of testing strategic behavior using microeconomic household data. Because of its importance, we include their work though it is concerned with data other than those of Japan. In the conventional theory, a household is usually considered to be a standard economic decision unit. In practice, however, individual members in the household engage in mutual interactions and then form the household behavior. Similarly, a husband and a wife can be regarded as playing a dynamic game regarding their individual employment, retirement and saving decisions. These decisions and their strategic interplays are naturally affected by pension systems.

Hernæs et al. use the data from an 'early retirement program' (abbreviated as AFM in Norwegian) and ask the following questions: how do households decide on their retirement? The husband and the wife decide non-cooperatively, given the other spouse's decision, in the manner of Nash equilibrium. Or does a husband or a wife initiate the decision as a Stackelberg leader? Or do they cooperate completely to achieve the joint maximization of the household utility? What kind of strategic structure can be explained most reasonably by the data? Their answer for the Norwegian data can be most reasonably explained by assuming that the husband is the Stackelberg leader.

In other words, the husband takes into account how his wife may respond to his decision whether or not to retire, and then he takes the decision whether or not to retire early. In this sense the husband is the leader when retirement decisions are made and the wife is the follower. Preferences of both husband and wife matter for the husband's decision to retire early, but it matters in this asymmetric Stackelberg leadership way. Note that the wife's decision to work or not depends on her own preferences as well as on

the preferences of her husband. This result may be due to the data that have been used – the Norwegian men in the sample are born between 1930 and 1935. For other (and younger) cohorts and from other countries with a different social structure, it may well be that the female is the leader or more likely that the decisions are made jointly in a symmetric way.

The preferred model yields estimates of the effects of such variables as age and health history of partners. Calibration results suggest that economic incentives matter to a great extent, and that less generous taxation of pension benefits would postpone the age of retirement.

Game theory was once considered a normative science that cannot be tested by empirical data. Now, particularly combined with the probit analysis, this chapter shows that testing strategic analysis is within our reach.

In short, ageing problems manifest their most conspicuous patterns in the current Japanese economy. Naturally, the demographic trends present serious social and economic problems to Japan, and affect the way Japan interacts with the world. It is hard to summarize lessons for Japan's policies obtained from the chapters, but the following would indicate the common denominators of the collected chapters.

Ageing creates the problem of supporting the growing cohorts of elderly by financial transfers and actual elderly-care services. Also, it affects the labor market of young cohorts and generates various social phenomena exemplified by the existence of 'parasite singles'. In order to cope with the labor shortage, tax treatment of incomes of married couples should be corrected to encourage increased participation of women in the labor force. Part of Japan's current account surpluses in the past can be explained by the need to prepare for the aged population, and the current account surpluses will most likely end in the near future. Immigration of labor is not only an easy way out to solve the shortage of young workers, but also an effective way of stimulating competition to build up human capital. At the same time, a country must be braced for the social and cultural issues associated with immigration, if it is willing to utilize foreign sources of labor.

The problems of an ageing population present challenging puzzles and questions for economists. This volume is a serious attempt to investigate and answer these puzzles. The rapid ageing problems enrich the menu of macroeconomic and microeconomic problems, and studying Japan's experience is crucial, we may say almost indispensable, for learning about the ageing problem, because here in Japan all the symptoms are so acute. This book records our attempts to face and tackle these problems. The methodologies used here are diverse, and the reader may detect subtle differences in policy prescriptions. The diversity and differences, however, reflect the richness of the subject. Also they reflect incipient stages of the ageing problem in Japan, and they suggest the need for multiple paths of

investigation into the future. We hope the present volume will be a useful reference for the many different phases of adjustments that nations will face in an immediate or intermediate future.

NOTE

1. The percentage of NEETs, not searching for jobs, who came from households with (their parents') income levels of more than 10 million yen reduced from 25.7 per cent in 1997 to 17.0 per cent in 2002, and the percentage of NEETs from households with income levels of less than 3 million yen increased from 15.2 per cent to 20.8 per cent during the same period (Cabinet Office, 2002, 'Seisho-nen no shuro ni kansuru chosa-kenkyu' (survey on the working style of the younger generation), Japan).

REFERENCE

Katz, Lawrence F. and Alan B. Krueger (1999), 'The high-pressure US labor market of the 1990s', *Brookings Papers on Economic Activity*, **1**, pp. 1–65.