

# Introduction of Progressive Expenditure Taxation to Japan\*

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## 1. Introduction

Aging of the Japanese population is currently progressing at a rapid rate, and will continue at a speed that no other developed nation has ever experienced. Figure 1 presents the transition of the ratio of people aged 65 and above to the total population for five advanced countries. The percentage of Japan's population aged 65 and above has increased by 8.2% during the 30 years from 1965 to 1995. This proportion is expected to increase further by another 14.2% during the next 30 years from 1995 to 2025 : this increase in elderly population is of a drastic nature that no other population in the world has ever experienced.

This situation is causing serious problems in Japanese society. Under the current system, the aging population is placing an increasingly heavy burden of inflating pension and medical care expenses on a shrinking working population. For instance, because the current Japanese public pension program is operated in a manner that is similar to a pay-as-you-go scheme, the declining percentage of the working population will have a harmful effect on economic welfare. Hence, structural reforms, especially tax reforms, to accommodate this drastic demographic change, have become an urgent policy issue.

The purpose of our analysis is to establish guidelines for structural tax reforms in Japan, a society with an aging population. We evaluate the alternative tax regimes in terms of efficiency and equity to explore an optimum tax scheme. Any persuasive analysis on this subject should include the general equilibrium effects of policy choices on endogenous economic variables such as interest rates, wages, and savings. In particular, the proper choice of tax bases is a significant question, because this choice has important implications for the course of savings and economic growth, the level of economic efficiency, and the distribution of welfare across generations.

Figure 1 suggests that the aging of the Japanese population will progress rapidly in the coming decades. The saving rate in Japan will reduce further, and thus Japan may suffer seriously from a lack of savings in the future. The tax policy to promote capital accumulation will become more and more necessary in an aging Japan.

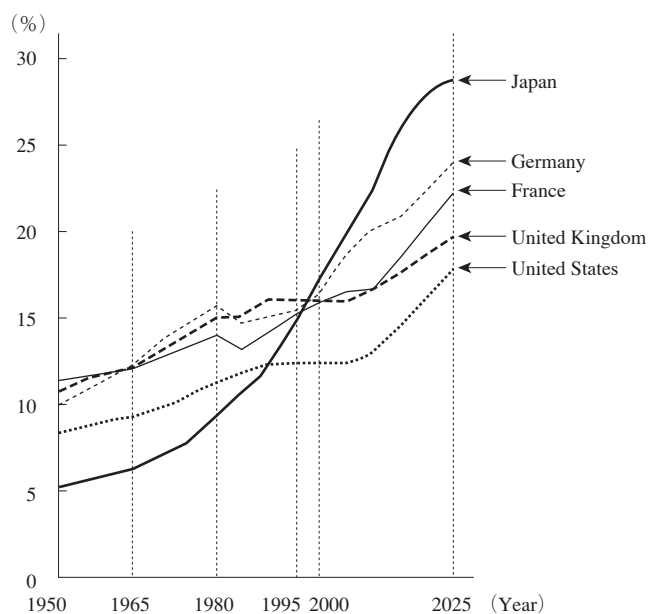
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\* This study is based on Chapters 1, 4, and 9 in Okamoto (2004). The author is grateful for insightful comments and suggestions by Professors Toshiaki Tachibanaki (Kyoto University), Toshihiro Ihori (The University of Tokyo), and Eiji Tajika (Hitotsubashi University). The author acknowledges the financial support from the Ministry of Education, Culture, Sports, Science and Technology in Japan (Grant-in-Aid for Scientific Research (C) (2) No.15530215).

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## 2. A Life–Cycle General Equilibrium Simulation Model

In our analysis, the life–cycle general equilibrium simulation model developed by Auerbach and Kotlikoff (1983) is used to take account of the rapidly aging Japanese population.<sup>1</sup> This is because the model is suitable as a basic theoretical framework to examine the impact of demographic changes on various social and economic variables. The work of Auerbach and Kotlikoff (1987) was published to share this new perspective on the macroeconomic effects of fiscal policies. They have continued to improve the simulation model, and Altig et al. (2001) undertook an analysis with the latest, large–scale, dynamic model. Several Japanese researchers have



	Year					Period	
	1965	1980	1995	2000	2025	1965 ↓ 1995	1995 ↓ 2025
Japan	6.3	9.1	14.5	17.3	28.7	8.2	14.2
Germany	12.5	15.6	15.5	16.3	23.8	3.0	8.3
France	12.1	14.0	15.1	16.0	22.0	3.0	6.9
United Kingdom	12.0	15.1	16.0	15.9	19.6	4.0	3.6
United States	9.5	11.2	12.3	12.3	17.8	2.8	5.5

Figure 1 Transition of the proportion of elderly population for five advanced countries

Figures for Japan obtained from “National Census” and “Japanese Future Demographic Projections” (National Institute of Population and Social Security Research, January 2002). Figures for other nations from “World Population Prospects: The 2002 Revision” (United Nations).

Source: *Current Japanese fiscal conditions and issues to be considered*, The Ministry of Finance, Japan (2004)

<sup>1</sup> We perform an analysis based on a life–cycle model. The crucial points are whether this model is applicable to Japan, and whether it can successfully explain its society. See Appendix A for the applicability of the life–cycle hypothesis of saving to Japan.

also employed the macro model. Homma et al. (1987) were the first to make an analysis using this model. Iwamoto (1990) incorporated uncertainty regarding the length of individual life and unintended bequests, consistent with its uncertainty, into a life-cycle general equilibrium model.

The life-cycle growth model employed in our analysis is grounded in the microeconomics of intertemporal choice, and the macroeconomics of savings and growth. The simulation model has three features. First, aggregate assets of the economy in each period consist of the assets of different generations that maximize their lifetime utility. This allows us to rigorously analyze changes in the supply of assets caused by demographic changes. Second, assets in the capital market, where aggregate assets appear as real capital, affect the production level. Third, it is possible to estimate realistic consumption-savings profiles for the elderly, by incorporating life-length uncertainty and unintended bequests into the model.

### **3. Progressive Expenditure Taxation**

We take account of progressive expenditure (or consumption) taxation.<sup>2</sup> Few studies have dealt with this new type of tax regime to evaluate the effects of structural tax reforms. Because there are only a few studies on progressive expenditure taxation, our study has some merit as a pioneering work. There are two types of progressive consumption taxes : expenditure tax and sales tax. The former definition, a direct tax that is levied on consumers, is used in our analysis.

### **4. Summary and Conclusions**

Okamoto (2004) has investigated the macroeconomic and welfare effects of structural tax and public pension reforms in Japan, a society with an aging population. A life-cycle general equilibrium simulation model developed by Auerbach and Kotlikoff (1983) was employed to take account of the rapidly aging Japanese population. That study has also compared various alternative tax regimes in terms of efficiency and equity to explore an optimum tax policy (see Okamoto (2004) for the details of the model, the method of simulation analysis, and the assumptions adopted).

The simulation results in Okamoto (2004) suggest that capital stock will decline with an aging population. Two possible reasons are as follows : the first is that in an aging society, there are many cohorts that dissave their assets based on a life-cycle motive ; the second is that payroll tax (i. e., contribution rate) rises sharply. The results also show that progressive expenditure taxation stimulates much more capital accumulation than progressive labor income taxation. Therefore, it is ultimately desirable to shift from progressive labor income taxation to progressive expenditure taxation. The switchover from an income-based to a consumption-based tax system should be executed gradually in an aging Japan.

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<sup>2</sup> See Seidman (1997) for the details of a progressive consumption tax.

Our simulation results suggest, quantitatively, that a shift to progressive expenditure taxation can overcome the large welfare loss that would occur under the current tax system as Japan ages (see Okamoto (2005b) for further details). When progressive expenditure taxation is adopted as the nucleus tax regime, its combination with an inheritance tax is preferable in terms of efficiency and equity.

With regard to the structural reforms in the current Japanese system, the contributions to the public pension scheme in a pay-as-you-go system should be replaced by general taxes, in particular by a progressive expenditure tax. Such possible integration of tax and social security systems is desirable in terms of efficiency and equity. We should promote the partial integration of tax and public pension systems as a transition process, substitute a consumption tax for the contributions, and implement a gradual shift toward perfect integration. Therefore, we recommend the introduction of progressive expenditure taxation with the complete integration of tax and social security systems (see Okamoto and Tachibanaki (2002) for further details).

## 5. Introduction of Progressive Expenditure Taxation

The simulation results in Okamoto (2005a) quantitatively suggest that a progressive expenditure tax substantially stimulates capital accumulation, and efficiently reduces within-cohort income inequality. To introduce a progressive expenditure tax, it is necessary that the tax office can grasp the total amount of expenditure for each individual or household. At present, computer technology is making remarkably rapid progress and over time will be able to provide a better environment for the introduction of a progressive expenditure tax in Japan. Thus, the possibility of introducing the tax regime should steadily increase.

The justification for introducing a taxpayer identification number system is presently being actively discussed in Japan. This system has already been adopted in the United States, Canada, and in Scandinavian countries. In this system, each taxpayer has an identification number (a tax number or a social security number) that enables a tax agency to monitor the total amounts of income and assets. Not only would this system help the introduction of a progressive expenditure tax, it is also necessary to efficiently and equitably provide public services for the elderly. Thus, it may not be long before a progressive expenditure tax is introduced in Japan.

Nowadays, the number and variety of financial transactions that occur by Internet trading are progressing on a global scale. Hence, it is becoming more and more difficult to precisely monitor personal *income*. Levying a tax on *expenditure*, an ultimate purpose of economic activity, may solve this problem. Irrespective of a means to earn income, a tax office may be able to collect taxes efficiently and equitably by taxation on expenditure.<sup>3</sup>

The amount of income of salaried workers can be precisely monitored by withholding tax at the income source. On the other hand, it is said that for self-employed persons or farm households, the ability to monitor income is substantially lower because of tax payment by self-assessment. An expenditure tax is likely to mitigate this state of unfairness between workers of different fields. Moreover, the introduction of tax

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3 Kaldor (1955) claims that the implicit taxation of individuals with vast inherited wealth via an expenditure tax is a final goal.

progressivity to the total amount of expenditure may be desirable in terms of equity, because the range of tax base of expenditure would be wider than that of income.

Okamoto (2004) suggests that a progressive expenditure tax is ultimately an ideal tax regime in terms of efficiency and equity. However, a sudden move from the current Japanese tax system (that depends mainly on a progressive income tax) to a progressive expenditure tax, would generate a substantial transition cost. With regard to a short-term policy, we should rely more on a consumption tax as a transition process, and execute a gradual shift towards a progressive expenditure tax.

The main purpose of this study is to let many academic researchers or policy makers aware of this new type of tax regime (i. e., a progressive expenditure tax) and its merits. We believe that even if a progressive expenditure tax is not actually introduced in Japan, the policy implication obtained in our analysis will still be meaningful and effective. Even in the case of implementing structural reform along the lines of the current Japanese tax system, knowledge of this new type of tax schedule will prove to be useful.

## **6. How Can Progressive Expenditure Taxation Be Implemented?**

Finally, we present the concrete measures of carrying out progressive expenditure taxation. Conceptually, it is easy to introduce progressive expenditure taxation. The feasibility of implementing progressive expenditure taxation, however, contains a serious problem in the real world : that is to measure and grasp the figures of each individual's expenditure. For its implementation, it is necessary to grasp the total amount of annual expenditure for each household. This implies that a tax authority has to grasp the whole picture of consumption activities of each individual in detail. How can we measure a tax base that is defined by expenditure? We propose that it is feasible to measure it with the method that follows.

There is a relation that states income is equal to consumption (or expenditure) plus savings. If the amounts of both income and savings are available for each individual, the balance is equal to the amount of expenditure. The income figure is efficiently obtained using the current Japanese system of withholding taxes at the income source. The savings figure can be obtained through the self-assessment system. It should be emphasized that the self-assessment of savings is the exact opposite to that of income in terms of an individual incentive. The more an individual declares savings, the lower tax rates on expenditure the individual has. This is entirely in contrast to the case of the self-assessment of income.

The savings figure can be consolidated using an electronic financial system. All financial institutions are requested to report the total amount of financial assets held by each individual with an individual tax number (or a social security number) to a tax office. Thus, the tax office is able to grasp the overall wealth of each individual. Of course, this feasibility depends solely on the development of a computer-based financial system. The introduction of progressive expenditure taxation is our recommendation in the long-term perspective.

## Appendix A : The Applicability of the Life–Cycle Hypothesis of Saving to Japan

We perform an analysis based on a life–cycle model. The crucial question is whether this model is applicable to Japan, and whether it can successfully explain the society.

For example, Horioka et al. (2000) suggest two empirical results. One is that bequest motives in Japan are weak on an absolute scale, and are also relatively weaker than those in the United States. The majority of bequests in Japan consist of unintended bequests and strategic bequest motives. The former are caused by uncertainty regarding the length of life—our analysis focuses on this bequest motive. The latter signify that parents use their wealth (which changes into bequests when they die) as a means of urging their children to look after them.<sup>4</sup>

The other is that many of the aged in Japan finance their living expenses by dissaving, and both parents and children are inclined to take selfish actions. These empirical results indicate that the applicability of a life–cycle model to Japan is fairly high, and even higher than that in the United States. Hence, the findings of Horioka et al. (2000) are likely to support the fact that our study, based on a life–cycle model, provides a reasonably good description of the actual Japanese situation.

The life–cycle hypothesis of saving suggests that as the population ages, the aggregate household saving rate diminishes, because of a decrease in the ratio of younger households in their accumulation phase to older households in their dissaving phase. Thus, when discussing the applicability of the life–cycle hypothesis to Japan, it may be useful to point out the fact that the aggregate household saving rate tends to gradually decrease in Japan.

Figure 2 presents the transition of the aggregate household saving rate from 1985 to 2001 for four advanced countries. The aggregate household saving rate in Japan shows a tendency to decrease as the population ages (see Figure 1). This rate dropped further to 6.2% in 2002, the lowest value in the past. Certainly, this decline may come, in part, from the prolonged recession during the 1990s. However, this decline can also be partly explained by the life–cycle hypothesis of saving.

Figure 3 shows the transition of the ratio of the households aged 65 and above without occupations to the total households from 1995 to 2002, and of their saving rate in Japan. The proportion of these elderly households continues to increase, and it reached 22% in 2002. Their saving rate has a tendency to diminish, and it dropped to –26% in 2002.

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<sup>4</sup> Bernheim et al. (1985) addressed strategic bequest motives.

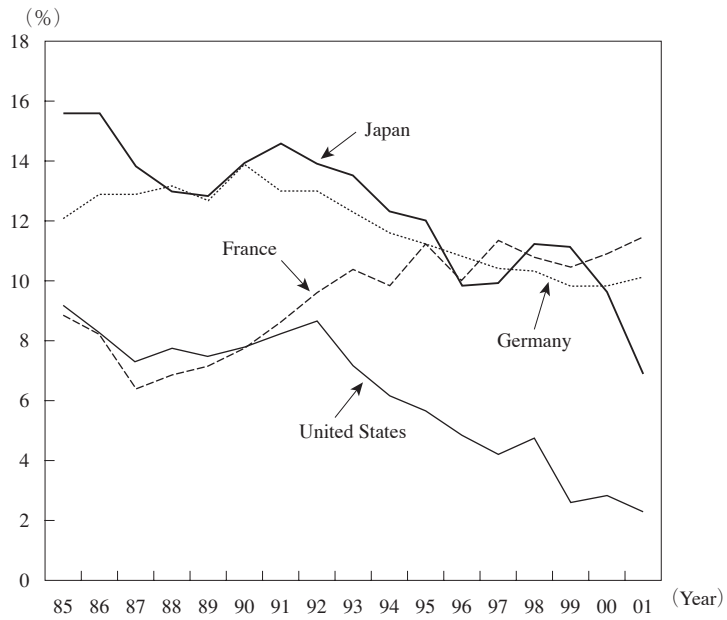


Figure 2 Transition of the aggregate household saving rate for four advanced countries

Figures for Japan obtained from Annual Report on National Accounts (Economic and Social Research Institute, Cabinet Office, Government of Japan). Figures for other nations from OECD Economic Outlook No.73.  
 Source : <http://www5.cao.go.jp/keizai3/2003/1120getsurei/image5.pdf>, Cabinet Office, Japan (2003)

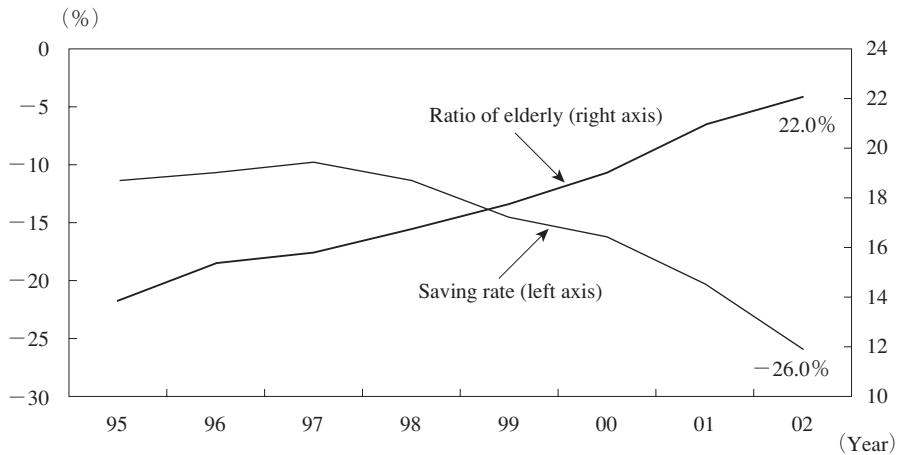


Figure 3 Transition of the ratio of the aged households without occupations and of their saving rate

Figures from Annual Report on the Family Income and Expenditure Survey : Income and Expenditure (Two-or-more-person Households), Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications, Japan.  
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## **Introduction of Progressive Expenditure Taxation to Japan**

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With a population that is aging faster than any other in the world, Japan faces serious public finance problems, particularly when it comes to tax and social security issues. The structural reforms are urgently needed to accommodate the impending demographic change. We look at the Japanese tax and social security systems through a life-cycle general equilibrium simulation model. We aim to establish guidelines for fiscal reform in Japan's graying society and use such advanced modeling techniques to permit the calculation of the effects of alternative tax policies on capital accumulation and economic welfare. We also examine the impact of progressive expenditure taxation, coming to the novel conclusion that this form of taxation may hold the key to overcoming the large welfare loss Japan faces as its society ages under the current tax system. Furthermore, we present the concrete measures of implementing progressive expenditure taxation.