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The Japanese Tax Reform: Efficiency Versus Equity

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Abstract

Efficiency, equity (fairness), and simplicity are three key words in characterizing the principles of proposed tax reforms in many countries. The internationalization of the financial market through capital mobility among the industrial countries is a recent phenomenon and it is possible that the effect of domestic tax reform is dictated by international capital flows. The purpose of this paper is to examine whether the tax reform proposed recently in Japan satisfies the above principles, in particular, efficiency and equity, and to investigate the effects not only on the real economy in Japan, but also on capital outflows from Japan to abroad. Also, the aging problem is examined briefly.

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Contents

Summary

The paper examines various aspects of tax reform in Japan. One important tax reform, effective as of April 1988, is the abolition of tax-free savings accounts. The other was the introduction, in April 1989, of a broad-based consumption tax. Changes in both personal income tax and corporate tax are additional elements of the tax reform.

The paper analyzes the effect of the reform on labor supply and the propensity to save, which influences efficiency and equity. It also considers the effect of the reform on capital outflows from Japan to the United States. The first part of the paper examines these issues without utilizing any models, while the second part uses a general equilibrium tax model. The final section discusses the aging problem in Japan in relation to tax reform.

Several noteworthy findings may be summarized. The effects of these tax reforms on the labor supply for both males and females in the aggregate will be very small, or almost negligible, despite claims that taxes have major disincentive effects on the supply of labor. The effect of the reform on the female labor supply, however, is not negligible. The effect on aggregate saving will also be small, but a change in the composition of domestic financial assets and a small effect on capital outflows will likely be observed. Combining the above effects, the efficiency gain attributable to tax reform will be minor. It is likely that the current tax reform will be beneficial for higher-income households and detrimental for lower-income households. Finally, it is suggested that the most neutral financing tool for an aging society would be to increase the rate of social security contributions of both working and nonworking people and to abolish the transfers from the general tax system to the social security account.

Efficiency, equity (fairness), and simplicity are three key words in characterizing the principles of proposed tax reforms in many countries. The internationalization of the financial market through capital mobility among the industrial countries is a recent phenomenon and it is possible that the effect of domestic tax reform is dictated by international capital flows.

The purpose of this paper is to examine whether the tax reform proposed recently in Japan satisfies the above principles, in particular, efficiency and equity, and to investigate the effects not only on the real economy in Japan, but also on capital outflows from Japan to abroad. Also, the aging problem is examined briefly because a specific tax for social security payment is suggested frequently in Japan to deal with the aging problem in the future.

I. A Brief Overview of the Japanese Tax System

Before discussing the tax reform in Japan, it may be useful to summarize several features of the Japanese tax system before the reform. The majority of these features are the targets of the proposed reform.

(a) The component of total tax revenue is, very roughly, equally distributed among (i) personal income tax; (ii) corporate tax; and (iii) indirect tax. Two noteworthy natures arising from the above equal weights are as follows: First, the share of corporate tax is fairly high in comparison with the other industrial countries which experienced declining trends in tax revenues from corporations in recent years. Second, indirect tax consisted mainly of various commodity taxes levied on particular goods and services. In other words, a broad-based indirect tax was not a major tax in the past.

(b) There exists a considerable degree of tax avoidance and evasion both in personal income tax and corporate tax. With respect to personal income tax, it is often said that there remain significant underreportings of income among self-employed workers and farmers. Employees who pay their personal income tax according to withholding taxation complain that the Japanese income tax system is unfair. With respect to corporate tax, a large number of incorporated firms, in particular, small-sized firms, do not pay any corporate tax because their taxable income is often negative. "Incorporating a family-oriented firm" is a symbol of skillful tax avoidance.

(c) Tax progressivity in personal income tax is fairly high. This is true not only on a statutory basis, but also on an effective basis, which takes account of the status of before-tax income distribution. Thus, employees whose before-tax incomes are higher than the average income level complain about a high tax burden. It is interesting to note that even though some of the employees complain about their high tax burden and a possible detrimental effect on labor supply, no empirical evidence supports a strong tax distortion associated with labor supply.

(d) Capital income taxation deserves to be mentioned. In the past, the effective tax rate on capital income, especially interest income and dividend income, was very low because there was a tax-free savings account for each individual up to a certain limit. As of April 1988, the amount of tax-free savings was greatly reduced. Ordinary people, except for the elderly (65 years and older), the handicapped, or single mothers, have to pay a separate 20 percent interest income tax. This reform may have a potentially significant effect on the Japanese saving behavior and capital outflows. This will be discussed later.

II. Proposed Reform and Evaluation

1. Efficiency

Taxes create "wedges" between the before- and after-tax prices of goods, services, and factors of production. A tax distortion occurs when households and firms respond to changes in prices caused by taxation. Several types of tax distortions are, in particular, important as a source of welfare costs. First, taxation of labor income may have a negative effect on labor supply. Second, not only general income taxes, taxation on interest and dividend incomes, but also deductibility of interest payments imposes a distortion by driving a wedge between before- and after-tax returns on capital. This discourages saving and thus leads to a welfare loss. Third, there is a widespread belief that the effective tax rates on capital income are considerably different across suppliers of funds, types of financing, industries, and types of assets. This is one of the tax distortions which may misallocate capital and thus lead to an efficiency loss.

The above are several examples of welfare losses due to tax distortions. Several industrial countries have been concerned with these losses and have attempted to reduce them by adopting a reformed tax system. This paper evaluates the Japanese tax reform with respect to the welfare or efficiency criterion.

a. Labor supply

A frequently suggested source of welfare (efficiency) loss is the labor-leisure distortion due to income taxation. Hausman (1981), for example, found that the welfare loss of the pre-1981 tax system for the average married man was 21.8 percent as a fraction of tax revenue raised in the United States. With respect to the Tax Reform Act of 1986, Hausman and Poterba (1987) suggested a ratio of deadweight loss to compensated taxes raised of 0.135 in comparison with 0.165 for the pre-1986 law. These U.S. examples suggest that the welfare loss due to income taxation is substantial, although the degree of the loss may differ from time to time.

The source of the welfare loss comes from a change in labor supply caused by the income tax. An increase (or decrease) in after-tax wage income will have both a substitution effect, which raises (or lowers) labor supply, and an income effect, which lowers (or raises) it. The income effects operate through changes in the various deductions and the average tax rate on unearned income, while the substitution effects are due to changes in marginal tax rates. Both effects, in principle, may be evaluated empirically by using data on labor supply. The net result of these effects can be indicated by the elasticity of labor supply with respect to after-tax wage income, and it affects the welfare loss due to income taxation. The elasticity varies across households such as men versus women, married versus unmarried, primary earners versus secondary earners, etc.

There are a large number of empirical estimations for many countries. While early empirical investigations found the wage elasticity of labor supply to be either small or nonexistent, more recent research efforts found larger supply elasticities for males, and, in particular, for married secondary-earner women. Some studies for Northern European nations suggest significantly higher elasticities even for prime-age males, and these are used for advocating a lower marginal income tax rate to avoid excessive efficiency losses.

What is the situation in Japan? Unfortunately, there are few studies which provide econometrically reliable and robust results for the labor elasticities in Japan. There is, however, a strong consensus among economists and tax specialists that male workers are hardly affected by any change in income taxation, although high income tax progressivity is often criticized by claiming that it hurts the work incentive of middle-class and higher-income male workers.

The story, however, is somewhat different if the elasticity of labor supply is estimated for married women. Since the majority of married women in Japan work as secondary earners, their labor supply behavior is influenced not only by their own after-tax wage levels, but also by the income level of their husbands.

Higuchi (1984) presented reliable estimates of the labor supply elasticities for married women. According to his study, the estimated elasticity with respect to the wives' own wage is 1.103, and the elasticity with respect to family income is -0.238. Incidentally, a comparable U.S. estimate is 0.353 with respect to the wives' own wage and -0.092 with respect to family income (See Villingsworth (1983)). Thus, the two elasticities in Japan are higher in absolute value than those in the United States, which suggests that the average Japanese married woman is influenced more strongly by a change in income taxation than the average American married woman. The studies for France by Riboud (1985) and for West Germany by Frantz (1985) give similar elasticity values to those in Japan. It may be possible to conclude, by combining the above findings, that married women in France, Japan, and West Germany behave differently from those in the United States. This

does not necessarily imply, however, that the American married women behave as if they were independent of their husbands, as Hausman and Poterba (1987) suggest.

The current income tax reform in Japan contains three elements, namely (1) a reduction in marginal tax rates; (2) an increase in the special allowance for spouses in calculating taxable income; and (3) an increase in the basic allowance. These three elements have different degrees of influence on the labor supply of married women, and the consideration of husbands' income makes the story more complicated. Unfortunately, there is no study which reveals the quantitative impact of each of the above elements. It is, therefore, almost impossible to assess the quantitative influence of income tax reform on the labor supply behavior of married women with accuracy. However, it is possible to conclude that there will be a minor positive effect on the labor supply of married women because of an increase in after-tax wage income after tax reform, and that there will be no significant effect on the labor supply of men. Combining females and males, it is suggested that the overall labor supply effect is marginally positive, and consequently, that the efficiency gain due to the reform in income tax would be marginal.

b. Savings

Another major source which imposes a distortion is related to savings, yielding a wedge between before- and after-tax returns on capital. Taxes, mainly income taxes, discourage savings by discriminating against future consumption relative to current consumption. A lower rate of savings caused by taxation may lower the domestically-owned capital growth, and thus growth and productivity. Future consumption may be decreased by slow growth and productivity. The distortion associated with savings and taxation is summarized by the above mechanism. Thus, a consumption tax which replaces an equal-yield income tax is preferred on efficiency grounds, although the precise evaluation depends on saving and labor supply elasticities. See a useful survey by Stern (1984), for example.

The real story, however, is not so simple as was described previously. A large number of factors determine future welfare level. Some examples are discount rates, bequests and gifts, population growth, international capital mobility, savings/income ratios of households, etc. One of the important factors is international capital mobility which is quite common among industrial countries in recent years. Capital mobility facilitates an optimal capital resource allocation internationally, and thus welfare distortion due to a reduction in domestic savings in a closed economy, may no longer be a problem in an open economy with international capital mobility. Obviously, there is an opposing opinion against this idea, namely, some economists say that capital mobility may make distortions. For example, Bovenberg (1989)

proposes that even international capital mobility may exacerbate tax distortions. The international aspect associated with savings and investment will be discussed later.

There are several reasons why it is important to investigate the issue of savings. First, the determination of savings and investments is crucial in the working of a macroeconomy. It has various effects on the government budget, balance of payments, employment and unemployment, productivity, and others. Second, the level of international capital flows is partly determined by the level of domestic savings and investment. A high demand for investment (in some cases, government deficit) in one country may be financed by a high level of savings in another. The current relationship between Japan and the United States is an example of the above mechanism. This example suggests the importance of *savings in Japan for the world economy. Japan is currently the "world's* number one capital exporter" and a closer examination of the impact of tax reform on the level of savings is warranted.

c. International capital mobility and Japan

The importance of international capital mobility is not a well-established and universally accepted doctrine yet. Feldstein and Horioka (1980) showed, by using cross-country data, that countries' investment rates were highly correlated with their national savings rates, and minimized the role of international capital mobility. Many other cross-section studies, and even time-series studies such as Sachs (1981), confirmed the high savings-investment correlation. It is widely believed that the correlation coefficients are higher for the industrial countries than for the developing countries. This leaves a contradiction between the saving-investment correlations and the widely discussed integration of international capital markets.

Several reasons have been suggested for explaining the difficulties in interpreting saving-investment correlations. First, both national savings and investment rates are endogenous variables. For example, governments attempt to react systematically to current account imbalances. If the government, say, in Japan, reacts to a trade surplus induced by an increase in savings by raising government expenditure or cutting taxes, national savings and investment will be correlated for reasons other than international capital mobility. This "policy-reaction" argument was put forward among others by Fieleke (1982), Tobin (1983), and Westphal (1983).

Second, several authors such as Murphy (1984), Obstfeld (1986), and Tobin (1983) propose that the failure of the world interest rate to be exogenous and the ignorance of the countries' size are responsible for the spuriously high savings-investment correlation. For example, it is possible that a big country, say, the United States, can affect world financial market conditions. Hence, a decrease in national savings may raise interest rates and crowd-out investment worldwide.

Third, as Frankel (1985), Dooley, Frankel, and Mathieson (1987) propose, it is unlikely that a high degree of substitutability for claims on physical capital located in different countries is supported by data. If capital mobility is defined by the tendency of investors to equalize expected rates of return on a subset of liquid, short-term, default-free financial assets denominated in different currencies, or issued by residents of different countries, there is little doubt that capital is mobile internationally among the industrial nations. It is hard, however, to believe that physical assets are highly mobile internationally. Thus, equalization of expected returns on physical assets is not guaranteed, especially in the presence of nontraded financial assets. Dooley, Frankel, and Mathieson (1987) presented findings supporting the view that savings and investment ratios may be highly correlated. Also, they showed that their model is consistent with a world of capital immobility by taking account of physical capital and nontraded financial assets.

How can we evaluate the issue of saving-investment correlation when we are interested in studying capital flows between Japan and the United States and the impact of tax reform on these flows? Before discussing this issue, one general remark is made on the issue of saving-investment correlations. That is, almost all the studies described before used a large number of cross-country data, both industrial and developing countries, and obtained high correlations between the rates of savings and the rates of investments. It might be possible to find a somewhat different picture if only a pair of countries, for example, Japan and the United States, or West Germany and the United States, is investigated. For example, there has been no correlation between savings and investment in Japan and the United States in the past several years, and data suggest that capital outflows from Japan to the United States are considerable. In sum, the number of countries in an empirical analysis may be crucial in determining the degrees of correlation between countries' savings rates and their national investment rates.

Going back to each factor explaining the savings-investment correlation, the first factor, namely, the endogeneity problem, is discussed. Again, the relationship between Japan and the United States gives a counter-example against the role of governmental policies. Although the two countries have supported reducing current account imbalances and U.S. governmental budget deficits, the actual economic policies were largely unsuccessful in achieving the goals. According to the author's judgment, the "policy-reaction" argument is not so convincing, at least for the relationship between Japan and the United States.

With respect to the second factor, namely, the size of a country, both Japan and the United States are among the largest industrial countries. It is hard to expect that the United States dominates Japan and vice versa with respect to the influence of one country's savings on the

other country's investment. Consequently, the spillover effect from a large country to smaller ones is not supported essily, at least for Japan and the United States.

The third factor is potentially important. We have to investigate why the isolation of national markets for physical capital has continued, as Dooley, Frankel, and Mathieson (1987) emphasize. There is already a nice starting attempt toward a better understanding of the issue in relation to the effect of international taxation (see Bovenberg (1989)).

To summarize, the international mobility of at least financial capital among industrial countries, in particular, between Japan and the United States, is an important phenomenon. Capital flows are influenced by changes in domestic saving and investments, both in Japan and the United States. Consequently, it is a worthwhile attempt to inquire into the effect of tax reform on domestic saving in Japan in view of the "world's number one capital exporter."

d. Japanese savings and tax reform

Among industrial countries, one of the largest differences in the level of personal saving rates is seen between Japan and the United States. The Italian saving rate (20.3 percent in 1987) is, in fact, higher than the Japanese one (16.1 percent in 1987). Since it is often suggested that in Italy severe measurement and definitional problems exist, Italy may be excluded from the list of industrial countries if saving is investigated. The large difference in saving rates between Japan and the United States has caused a large number of economists to investigate why the difference is so large. Since the purpose of this paper is not to investigate the issue of savings, only several important factors are briefly mentioned.

Some U.S. economists are concerned with the measurement and definition problems of savings. Here are some examples of measurement and definition problems in the United States. Useful surveys are given by Bovenberg and Evans (1990) and Summers and Carroll (1987).

(1) *The difference between gross and net saving is one problem.* If depreciation in national income accounts is wrongly measured, net savings will also be measured incorrectly (see Summers and Carroll (1987) or Hendershott and Peek (1987)). Incidentally, only Hayashi (1986) among the Japanese economists is concerned with the role of depreciation in the Japanese national income accounts and showed its seriousness in measurement errors.

(2) There is a conflict between the national income accounts and flow-of-funds as a measurement basis which suggests measurement errors.

(3) The treatment of consumer durables and government spending on capital goods are important issues (see Hendershott and Peek (1985)).

(4) Accrued capital gains and losses on existing assets are normally ignored in measurement. Summers and Carroll (1987) conclude that there is little to be gained from including capital gains and losses in measuring savings, while Hendershott and Peek (1985) suggest a nonnegligible measurement error in savings if capital gains and losses are included. While the United States has not settled these issues yet, the Japanese case is far underdeveloped in this field except for several studies such as Hayashi (1986) and Ogawa and Takenaka (1986).

(5) Pensions and social security: Bernheim and Shoven (1988) emphasize the importance of pension issues in evaluating personal savings, and conclude that adjustments of pension fund contributions depress personal savings. With respect to the influence of social security, both Japan and the United States show relatively lower rates of public pension programs in comparison with the majority of European countries. Thus, adjustment for the effects of social security in the United States and, in particular, Japan, is not so imoortant in measuring personal savings rate.

(6) There is one condition peculiar to Japan, namely, "the extended family." When many elderly people merge their households with those of their sons or daughters, they usually are counted as dependents of the younger households. Therefore, savings for elderly people of the extended family are not reported in the data, and saving only for independent elderly people are reported. This causes a bias in the saving rate. A large number of the elderly in Japan live together with their children, and we need a task of adjustments due to this complicated measurement problem in personal savings (see, for example, Ando and Hayashi (1988)).

Reviewing the above issues of measurement and definition of savings, it can be concluded safely that the Japanese personal savings rate is much higher (around 10 percentage points) than the American rate, even after several adjustments, as concluded by Makin (1986), Hayashi (1986), Hayashi, Ito and Slermrod (1988).

Several important reasons for the high personal savings rate in Japan are described very briefly below, since some of them are crucial in understanding the relationship between tax reform and the saving rate.

(1) A bequest motive which generates a strong intergeneration wealth transfer is important as Haysshi (1986) and Tachibanaki and Shimono (1986, 1990) suggest. An inheritance tax favors strongly real estate as a vehicle of bequests because the assessed price of land for tax purposes is much lower than the prevailing price in the market.

(2) There are insufficient government pension programs, especially for the future. This is a general feeling of the average Japanese people in the face of the following two facts: (a) the current generous

social security payment does not stem from sound actuarial calculations; and (b) Japan faces a serious aging problem which will most likely lower the level of social security benefits in future.

(3) Some other factors are mentioned here without much explanation: (a) the existence of bonus payment twice a year for almost all employees encourages savings, at least temporarily; (b) liquidity constraints (borrowing constraints) in financial markets have been fairly significant; (c) the share of self-employed workers and farmers who have a higher propensity to save than employees is somewhat higher in Japan than that in other industrial countries; (d) since housing and land prices are extremely high in urban areas, people have to pay a large amount of downpayment for the purchase of a house; and (e) the Japanese tend to be risk-averse and saving is regarded as a virture.

Some factors related to the tax system, which has an influence on the rate of savings, are discussed in detail.

e. The tax treatment of interest incomes and expenses

It is frequently suggested that the tax treatment of interest incomes and expenses has a strong effect on both saving and consumption. Makin (1986) and Tanzi (1987, 1988a, 1988b) are representative examples. The contrast between the two countries, namely, Japan and the United States, is illustrative. While the United States fully taxes the nominal interest income of individuals, and until recently, allows unlimited deductibility for all interest expenses, Japan exempts a large part of interest incomes. The Tax Reform Act of 1986 introduced limitations of interest expenses in the United States, and it is hoped that this will encourage savings. The Japanese Tax Reform of 1988, starting April 1, abolished tax-free savings accounts for various sources of deposits. Some say that this reform may discourage savings.

Let us examine the effect of the change in the Japanese tax on interest incomes. All interest incomes are now taxed for all individuals, except for the elderly, the handicapped, and single mothers, at a separate 20 percent withholding rate. Whether changes in after-tax returns will significantly affect household savings depends on the interest elasticity of savings. As is well-known, this is one of the most controversial parameters in economics. Theory suggests that an increase in interest rates has opposing income and substitution effects on current consumption, and thus may have only a small effect on savings.

Summers (1981), however, argued that a reduction in after-tax returns would raise the present value of future labor income and thus it would increase wealth, raise consumption, and lower savings. Summers suggested a fairly high savings elasticity with respect to interest rates. Boskin (1978) also reported a rather high aggregate elasticity. Others found low elasticities (see, for example, Hausman and Poterba (1987)).

How about the situation in Japan? There are not so many studies which estimated interest elasticity of savings in Japan. Examples are: Makin (1986), Turner (1986), Horioka (1987), Ishikawa (1987), Tachibanaki and Suruga (1987), and some others. Estimation procedures and data bases are considerably different among them. Despite the differences, they typically conclude that the effect of interest rate on savings is either statistically insignificant, or very small if it is statistically significant. Nearly all the studies support the classical study by Komiya (1966) who suggested that there was no evidence for a strong effect of the Japanese generous tax treatment of interest and dividend incomes on savings.

There is one remaining issue about tax-free savings accounts mentioned by, for example, Tanzi (1969). If tax revenue from interest incomes had been very small, it is plausible that tax revenues from other sources have been larger to compensate for a loss of tax revenue due to tax-free savings accounts. No study has seriously investigated this secondary effect on the determination of savings rate in Japan.

Assuming a very small interest elasticity of savings in Japan, what kind of conclusions can we derive after the introduction of a separate 20 percent tax rate on interest incomes? The answer is fairly straightforward; it is unlikely that there will be a significant reduction in aggregate savings rate. Japan will continue to have a fairly high rate of savings despite the recent tax reform in interest incomes.

Several tax simulations confirm the above conjecture. Ishikawa (1987), who performed a simulation before the tax reform, proposed that the saving rate would not be reduced even if the generous treatment of interest incomes was abolished. Hayashi, Ito, and Slemrod (1988) predict that the abolition of tax-free savings accounts causes a drop in the steady state savings rate by only a few percentage points, and the introduction of tax deductibility of mortgage interest payments yields a very small increase in the aggregate savings rate. They conclude that only 1-4 percentage points of the 10-point gap of savings rates between Japan and the United States are attributable to the difference in the tax incentives.

It is, however, too hasty to conclude that there will be no effects at all. Two important effects due to the abolition of tax-free savings accounts must be considered. The first is a change in the composition of financial assets, and the second is an effect on capital outflow from Japan.

First, the issue of the composition of financial assets is reviewed. The April 1988 Tax Reform imposed a separate 20 percent taxation on interest incomes. This includes taxations on deposits at both private banks and postal offices, public bonds, loan trust and money in trust, and dividend on stocks and shares. However, some financial assets, for example, life insurance companies' fixed-term (over five years) insurance, are exempted from taxation. The effective tax rate on

capital gains for individual shareholders is still virtually zero, although capital gains taxation was introduced recently. Some data suggest that there is a shift of financial assets from taxable to non-taxable ones. Although we have to await further data availability to confirm whether this is indeed happening, or whether it is permanent or temporary, a shift is likely.

Second, somewhat related to the first point, the difference in the after-tax rate of returns on some financial assets between Japan and the rest of the world (mainly the United States) may be widened after the tax rate on interest income of these financial assets in Japan is raised. Consequently, capital outflows from Japan may increase. Tachibanaki and Kikutani (1989) showed that taxes were important in explaining capital flows between Japan and the United States. The truth, of course, is not so simple as described above. As Blejer (1984), Mutti and Grubert (1985), and Bovenberg (1989) suggest, tax differential is not the only significant incentive for short-term capital mobility, but capital mobility is influenced also by interest rates and exchange rates between two countries. Moreover, the tax treatment of a host country and a residence country, and substitution possibilities among different financial assets, make the matter more complicated. Additionally, as Tachibanaki (1989a) emphasizes, institutional investors in Japan such as banks, trust banks, postal offices, insurance companies, and others, who act as agencies for individual investors, play a much more important role in allocating financial assets, both domestically and internationally, than individual investors. An overall evaluation of the effect of the recent tax reform with respect to interest incomes in Japan will be determined only when these complicated issues are made clear.

2. Equity

There are basically two issues with respect to equity (fairness) in the Japanese tax system. The first is fairness of tax burdens by different occupations (horizontal equity), and the other is vertical equity related to tax progressivity. One of the motivations for advocating the introduction of an indirect tax (a value-added tax, or a broad-based consumption tax) is that there is too much reliance on the personal income tax which violates horizontal equity by occupations. Some suggest that the Japanese personal tax produced too high progressivity. Let us examine those two arguments in more detail.

a. Horizontal equity

"To-Go-San (ten-five-three)" or "Ku-Ro-Yon (nine-six-four)" is a popular and symbolic word which means violating horizontal equity. It is widely believed that employees report their income fully because of withholding, while there are considerable underreportings by both self-employed workers and farmers. The degree of accuracy with respect to income reporting is expressed symbolically by 100 percent for employees, 50 percent for self-employed persons, and 30 percent for farmers, or

90 percent, 60 percent, and 40 percent. A serious study on the underground economy would be needed in order to obtain the exact figures of underreportings. However, underreporting of incomes of certain occupations is fairly common. A large number of employees whose incomes (especially wages) are fully exposed to the tax office, complain that they are treated unfairly. One of the best ways to mitigate this unfairness is to shift a tax base from income to consumption.

b. Vertical equity

A steeper income (or progressive) income tax function together with a considerably high level of minimum taxable income (i.e., generous deductions and exemptions from total income) has been one of the features of the Japanese personal income tax system. Not only the steep rising statutory marginal income tax rate, but also the effective marginal income tax rate which takes account of the status of before-tax income distribution, showed strong income redistribution by taxation, as shown by Itaba and Tachibanaki (1987). Japan, in fact, was one of the most egalitarian countries, judging not only from the before-tax income distribution but also from the after-tax income distribution. The situation regarding before-tax incomes hss eroded considerably due to recent price increases in land and stocks, however, (see Tachibanaki (1989b)).

The Japanese tax reform enacted in 1988 lowered marginal income tax rates. This reform was made in order to prepare the introduction of a broad-based consumption tax in 1989 to keep revenue neutrality, and more importantly, to ease frustrations of tax payers. Concretely, these reforms were demanded largely by middle-class and higher-income earners who had complained about their excessive tax burdens. According to them, excessive tax burdens hurt their work incentive. As noted previously, however, there is no strong statistical evidence that rising marginal tax rates lowered the labor supply of males. Thus, the complaint does not stem from any empirical justifications, but it should be interpreted as follows: A considerable number of people in Japan do not prefer too much tax progressivity, and thus, too strong vertical equity. During the period of rapid economic growth, such an emotion was not provoked because the growth rate of personal income was extremely high. In other words, everybody was able to enjoy an increase in personal income and did not pay much attention to taxation. However, the growth rate has declined considerably. Consequently, people are now concerned with the tax payment taken away by the Government. It is interesting to see how the conflict among occupations (largely employees versus non-employees) will be resolved.

The American Tax Reform Act of 1986 gives one interesting example of the vertical equity issue, as only two tax rates, 15 percent and 28 percent, were substituted for the earlier 14 rates which rose to a maximum of 50 percent. Pechman (1987), for example, argues that the reduction of marginal rates went too far. Some economists like Pechman still stress the importance of horizontal equity and the ability to pay.

III. General Equilibrium Evaluations

1. Methodology and issue

This section examines two issues of tax reform. The first is to examine how the introduction of a broad-based consumption tax in 1989, which necessarily changes the ratio of direct tax revenue to indirect tax revenue, is evaluated on both efficiency and equity grounds. Too much reliance on direct taxation is blamed for various reasons. Some of the reasons have already been mentioned before. Therefore, the introduction of a broad-based consumption tax seems desirable. We will examine whether it is indeed desirable. The other is to assess a broad-based consumption tax as a specific tax which is aimed at easing the government budgetary constraint under the pressure of the aging trend.

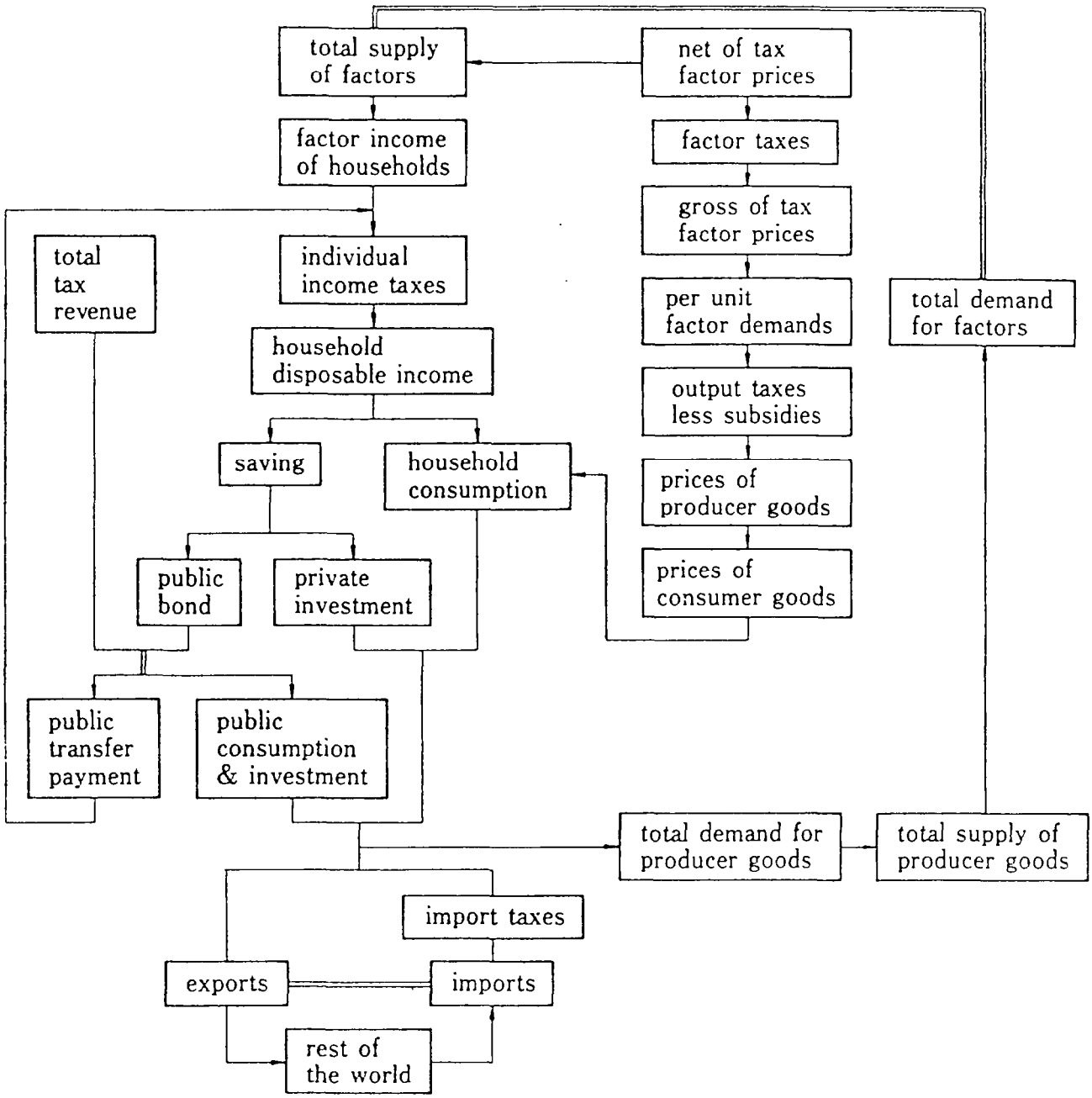
We use a medium-sized general equilibrium tax model to tackle the above issues. The model was developed originally by Ichioka (1986) and Ichioka (1988), and extended further by Ichioka and Tachibanaki, by including the foreign trade sector and a flexible exchange rate system. Figure 1 shows a flow diagram of the model. The model does not allow for international capital mobility. Thus, the effect on capital outflows from Japan cannot be evaluated. The model, however, can examine effects on the income distribution because the number of income classes is large (i.e., 18). Additionally, the model is capable of analyzing government budget deficits and social security. The price of labor without taxation is equal to unity. In other words, labor is numeraire in this paper. Thus, prices are measured by relative prices. The whole calculation is presented through the nominal term because it is intuitively appealing. It is, nevertheless, possible to evaluate on the basis of the real term. To avoid confusions it was not made. All of the technical details of the model are not explained here. The Appendix presents producers' goods (industries), consumer goods, income classes, and tax items. For more information see Ichioka and Tachibanaki (1988a, 1988b).

2. A broad-based consumption tax in Japan

A broad-based consumption tax in Japan is explained briefly. Within general consumption taxes, there are single-stage taxes such as: (1) manufacturing sales tax; (2) wholesale tax; (3) retail sales tax; and (4) cascade tax. Some of them do not exist, in reality, in the world. Japan introduced a "broad-based consumption tax" which is a multistage tax, and similar to VAT.

There are, however, several concessions in the current consumption tax in order to weaken the public opposition to the introduction of the tax. First, a simple method, namely, self-assessment, rather than the invoice method as in the EC, is used to calculate tax liability. Second, the starting tax rate is only 3 percent. Some argue that the compliance and administrative costs may exceed tax revenue at that rate.

Figure 1 Flow Diagram of the Japanese AGE Model



Note: Competitive equilibrium is attained when 1) demands equal supplies for all goods and factors, 2) each industry earns zero after-tax profits, 3) revenues from taxation and public borrowing exactly finance public expenditures, and 4) total imports and exports are equalized. Merrill algorithm is used to find the net-of-tax prices of labor and capital, total tax revenue, and the exchange rate to balance the parts connected with a double line in the diagram.

With respect to the first point, some fear that a new "consumption tax" may become a new source of tax evasion because small businesses may pay lower taxes. With respect to the second point, some predict that the rate may be increased gradually, as was seen in Europe. This paper attempts to evaluate the reform by using a key indicator word, namely, the "ratio of indirect tax to total tax revenue." The introduction of a new consumption tax apparently changes the "ratio" significantly, and the "ratio" becomes a good indicator to indicate the structure of tax revenue, especially when simulations are performed under revenue neutrality.

There is one small difference in the definition of direct and indirect taxes between the national income statistics (also the Input-Output Table) used in this paper and the popular statistics released by the Ministry of Finance. Thus, the "ratio" adopted in this paper is somewhat higher than the "ratio" released by the Ministry of Finance. The main components of direct taxes are corporate tax, personal income tax, inhabitance tax (a local tax), while those of indirect taxes are enterprise tax (a local tax), property tax, various taxes on automobiles, and indirect land taxes which are supposed to pay for the usage of capital in production. Table 1 represents the calculated rates of direct and indirect capital tax by industries.

a. Changes in the rates of current indirect taxes

The first simulation performs a hypothetical policy of no new indirect tax; assuming revenue neutrality, the rate of current indirect tax is increased, and the rate of direct tax is decreased proportionally. This simulation was presented only for the purpose of a comparison with a positive new indirect tax rate. It is emphasized that both changes are proportional. Column (A) in Tables 2 and 3 shows the empirical result. A reduction in the rate of direct capital tax necessarily raises indirect capital tax burdens. The overall effects are different from industry to industry. A large number of industries (except for six industries, namely, mining, chemical, electrical machinery and appliances, precision instruments, wholesale and retail trade, and finance and insurance) have to accept higher capital tax burdens due to changes in the "indirect ratio," and after-tax equilibrium prices of capital are lowered. On the other hand, before-tax prices of capital in many industries (except for the above six industries), namely, cost of capital, which includes both direct and indirect capital taxes, are raised. Capital-saving techniques are adopted in these industries and thus the capital labor ratios are decreased. In addition to those effects, an increase in output taxes raises the prices of intermediary products, and thus the equilibrium prices of producer goods, except for mining, finance, and insurance, are raised. Combining the above effects, the prices of consumer goods are also raised. Changes in the relative prices of consumer goods to output prices have an impact on the relative share of consumer demand. A net increase in the aggregate consumer demand also raises total net domestic production in value terms.

Table 1. Direct and Indirect Tax Rates by Industries

	t_{DK}	t_{IK}	t_K
1.	0.06594	0.81295	0.87888
2.	3.47667	0.35674	3.83341
3.	0.66056	0.46798	1.12854
4.	0.38386	0.17309	0.55695
5.	0.49278	0.43745	0.93024
6.	0.83950	0.37119	1.21069
7.	0.86149	1.08531	1.94680
8.	0.61176	0.31604	0.92780
9.	0.56828	0.42728	0.99556
10.	0.39567	0.22763	0.62330
11.	0.71838	0.45016	1.16855
12.	0.90425	0.26442	1.16867
13.	1.08587	0.97245	2.05832
14.	0.72119	0.23805	0.95923
15.	0.40914	0.30191	0.71105
16.	0.47417	0.32928	0.80345
17.	0.40135	0.43588	0.83723
18.	0.54930	0.20300	0.75230
19.	0.66173	0.11453	0.77626
20.	0.04014	0.15507	0.19520
21.	0.28467	0.46755	0.75222
22.	0.27449	0.13743	0.41192
23.	0.00000	0.01392	0.01392
24.	0.00000	0.01547	0.01547
	(0.35196)	(0.23235)	(0.58431)

Notes: t_{DK} = direct capital tax rate
t_{IK} = indirect capital tax rate
$t_K = t_{DK} + t_{IK}$.

The numbers in parentheses are averages.

Table 2. Effects of Various Tax Reforms

	(A)	(B)	(C)
Sum of equivalent variations (in billions of yen)	107.7	87.0	170.1
per household (in yens)	2,990	2,417	4,724
Change in labor supply (in percent)	0.59	0.20	0.72
Change in nominal savings by households (in percent)	6.53	3.30	11.93
Change in nominal consumption by households (in percent)	3.95		7.02
Change in nominal private net investment (in percent)	8.14		17.82
Change in NDP (in percent)	3.78	0.20	0.57
Price of capital (after-tax)	-1.42	2.20	8.34
Laspeyres Price Index	4.03	2.80	10.28
Change in Gini coefficient (in percent)	5.58	2.60	8.72
Change in indirect tax rate (in percent)	60.0	21.0	
Change in direct tax rate (in percent)	-27.2	-10.9	-38.0
Ratio of indirect tax	0.63	0.48	0.70

Notes: Policy (A) denotes an increase in the current indirect tax rate.
Policy (B) denotes the introduction of a new consumption tax (3 percent), and a decrease in direct tax.
Policy (C) denotes the highest welfare gain by introducing a new consumption tax (11 percent).

Table 3. Welfare Change by Income Class

(In ten thousands of yen)

Income Class	Policies (A)	(B)	(C)
(1)	-9.93	-5.84	-20.05
(2)	-8.31	4.69	-16.25
(3)	-7.31	-4.10	-14.29
(4)	-7.17	-4.67	-16.32
(5)	-6.92	-4.43	-15.57
(6)	-6.75	-4.19	-14.75
(7)	-6.48	-4.01	-14.19
(8)	-6.49	-3.98	-14.13
(9)	-5.39	-2.80	-10.09
(10)	-3.57	-2.38	-8.81
(11)	-3.29	-0.93	-3.78
(12)	-0.47	0.36	0.56
(13)	2.65	0.48	0.62
(14)	4.75	2.03	5.91
(15)	8.16	6.42	21.25
(16)	13.58	8.20	27.06
(17)	21.06	14.08	47.34
(18)	183.59	112.47	390.27

Note: Policies (A), (B), and (C) are the same as those in Table 2.

A proportional change in the rate of personal income tax gives a stronger effect on households of higher-income classes than on those of lower-income classes. Thus, households of lower-income classes increase their labor supplies since a reduction in real incomes caused by an increase in the prices of consumer goods causes lower welfare levels for these households. Table 3 shows that households of lower-income classes lose welfare while those of higher-income classes gain. The aggregate effect on all households, however, is positive. This illustrates a tradeoff between efficiency versus equity. Incidentally, as is obvious from the above, an increase in aggregate savings is observed mainly due to a reduction in personal income taxes, although savings of households of lower-income classes are lowered. Consequently, in the absence of capital flows, an increase in the total savings rate raises private investment activity.

By changing the rate of direct tax rates which are not reported in the Table, we confirm the tradeoff between efficiency (measured by a total welfare gain) and equity (measured by a change in income distribution in terms of the Gini coefficient). A reduction in the "indirect tax ratio" gives a lower aggregate welfare level, while it gives a higher benefit for households of lower-income classes in comparison with those of higher-income classes. At the same time, net domestic production is lowered.

b. Introduction of a value-added tax which replaces direct taxes

This simulation investigates what happens if a new broad-based consumption tax (the rate is 3 percent) is introduced under revenue neutrality. This tax is very similar to a new tax introduced in Japan. It is a multistage tax, with a uniform rate and no exemptions with respect to sales amounts and items of goods. The introduction of this indirect tax in this simulation replaces current direct taxes and keeps total tax revenue constant. See Column (B) in Tables 2 and 3. The reason why the indirect ratio at Column (B) is lower than that at Column (A), namely, 0.48 versus 0.63, is that Column (A) increases the revenue from the increased current indirect tax more than Column (B) if a new indirect tax increases the revenue.

The most important difference from the previous simulation is that after-tax prices of capital are raised. With the constant rate of indirect capital tax, a reduction in the rate of direct capital tax as one of direct taxes makes the tax burden for capital lighter, and thus raises after-tax prices of capital.

Strong regressivity caused by a new indirect tax exceeds the sum of the increase in labor incomes and the amount of income tax reductions for lower-income class households. Thus, the welfare gain of these households is negative, as shown by Table 3. As for households of higher-income classes, an increase in prices of capital and the amount of income tax reductions have a stronger effect. Thus, the welfare gain

of those households is strongly positive. By combining the two classes, namely, households of higher-income earners and those of lower-income earners, the total welfare gain is positive.

Let us consider the case in which the rate of a new consumption tax is 3 percent. This is the current rate held by the Government, as noted previously. Direct tax rates are lowered by 10.9 percent and a reduction in corporate tax revenue is ¥ 906.1 billion a year. The "indirect tax ratio" is increased by 20 percent and the new "ratio" is equal to 0.48. It is noted that the previous ratio, which did not include any new consumption tax, is 0.40. The increase in the after-tax prices of capital is 2.2 percent, and the increase in the general price level is 2.8 percent. Increases in labor supply and savings are 0.2 percent and 3.3 percent, respectively. The increase in production is 0.2 percent. The increase in income inequality, given by a change in the Gini coefficient, is 2.6 percent. This result shows again a tradeoff between efficiency and equity.

A simulation which seeks the highest welfare gain was attempted under the new broad-based indirect tax which is given in Column (B). The result is given in Column (C) in Tables 2 and 3. According to this simulation, the highest welfare gain, ¥ 170 billion, is achieved by the broad-based indirect tax rate of 11.0 percent. In this case, the new "indirect tax ratio" is equal to 0.70, which leads to a considerable shift of the share of indirect taxes. Beyond this rate, namely, 11 percent, the total welfare gain of all households starts to decline because a welfare loss of households of lower-income classes becomes larger and larger.

With the 11 percent rate of indirect tax, the direct tax rate is lowered by 38 percent. The after-tax price of capital is raised by 8 percent, and the increase in the price level is over 10 percent. An increase in saving by households of higher-income classes is fairly strong, and then it increases private investment considerably. This is the main merit on efficiency grounds, which is evaluated by nominal terms. The contrast, however, between the welfare loss of the lowest income class and the welfare gain of the highest income class is enormous.

In comparison with the previous simulation, it is concluded that the introduction of a broad-based consumption tax is preferable to the increase in the current rate of the existing indirect taxes on efficiency grounds. However, a new indirect tax is more harmful than an increase in the current indirect tax rate on equity grounds. One of the principal reasons for obtaining the above conclusion is the change in the factor price ratio, namely, the relative price of capital over wage. This change alters the allocation of capital and labor significantly in various industries, and thus the production level in each industry. It was true that the existing indirect taxes distorted the allocation of capital across industries more significantly. It was found that the new indirect tax distorted less, and this was beneficial on efficiency

grounds. At the same time, the change in factor prices alters incomes of households significantly. Since the price of capital is raised, the welfare gain of higher income classes is more apparent than that of lower income classes.

3. The aging trend and government budget

It is anticipated that the proportion of retired people in the total population will increase drastically in Japan. Hence, expenditures on public pensions and medical care will be increasing significantly. The Government estimated the expenditure on public pensions and medical care in 2010 given the current estimated population growth rate. For example, the ratio of public pension payments to national income will be about 11.5 percent compared to the present level. Currently, it is about 5.1 percent. We transformed these estimated total payments into per capita basis (i.e., per resident) in public pensions and medical care. We find that the public pension payments must be increased by 2.92 times higher than the current level, and medical care payments and other social security benefits, including social assistance grants, must be increased by 1.60 times compared to the current level. The simulation attempts to estimate the required rate of various taxes (the rate of social security contributions, value-added tax rates, and other tax rates) in order to finance these increased payments in social security.

Three alternatives are possible when we consider the government budget system together with the social security system. First, the sum of revenues from the tax system and the social security system is considered as the total government revenue. This may be called the integrated budget system. Second, the social security system holds its own budget (or account) and financial transfers are not made from the general tax system. Third, although the social security system holds its own account, some financial transfers are made from the general tax system. Currently, Japan operates the third alternative in the budget system. We consider, basically, these three alternatives. The Government at the integrated budget system regards the sum of general tax revenues and social security contributions as its total revenue from the private sector, and pays it on public expenditures and social security payments. In other words, only one budget system exists at the first alternative. At the second alternative, the budget system for tax and public expenditure, and the social security account operate independently of each other. Therefore, it is important to recognize the following difference: while the stock of total public debt affects the budget at the first alternative, and thus on the working of the social security system, it does not affect the budget of the social security system at the second alternative. The most detailed discussions are given to the first alternative in view of the fact that a huge deficit anticipated for the social security system due to the aging trend may lead the Government to adopt the first alternative in order to relieve the deficit. One example is a specific tax (namely, a value-added tax) for social security. The second and third alternatives are only briefly

discussed. Finally, it is noted that the social security system in this paper does not necessarily assume that social security contributions are directly linked to social security benefits, as they would be a private insurance scheme. The system allows for a transfer from the general budget account, or revenues from public debt, if necessary.

The first alternative is discussed initially. It is noted that revenue neutrality is assumed in this case. Alternatively speaking, the Government does not reduce the current level of the deficit.

We perform, basically, three simulations differentiated by the financial tools for covering the increase in social security payments for each alternative: (1) an increase in the rate of social security contribution; (2) an increase in public debt, which raises the amount of public bonds in spite of the existing public debt; and (3) the introduction of a value-added tax for social security as a specific tax. Since the proposal of an increase in the rate of personal income tax, or corporate income tax, and even an increase in the rate of social security contributions, receives a strong objection from the public, the Government sometimes conceives a specific tax which should be used exclusively for the payment of social security. The justification for a specific tax is given by a speculation that there would be less objection if a tax was used specifically for social security. In this case, the easiest tax base, probably, is value-added.

Table 4 presents a summary of the three simulations under the first alternative, namely, the integrated budget system. It is found that the three policies suggest considerably heavy burdens on the Jspanese people should the Government's goal (or projection) with respect to the social security payment be achieved. When social security contributions are used, the rate must be increased by 166 percent by 2010. If debt financing is used, the amount of public debt is enormous (i.e., the rate of increase is 235 percent by 2010). The introduction of a value-added tax as a specific tax for social security requires an extremely high rate, about 23.5 percent. In sum, all financing methods are somewhat unrealistic for actual implementation.

If we rank these methods by the degree of net welfare loss, social security contributions are the best because the loss is relatively small (i.e., ¥ 2.02 trillion). It is noted that net welfare loss also takes account of future tax burdens associated with public debt. The next is public debt. The worst is the introduction of a value-added tax, namely, the loss is about ¥ 15.0 trillion. This amount may not be socially acceptable. Since the social security contribution is used for expenditures on pension benefit and medical care, everybody is happy to contribute to his expenditure. In other words, if social security payments were covered fully by social security contributions, the economy would be the least distortive on efficiency grounds because allocation of resources is affected only marginally. Pay by himself for own expenditure is the best. The introduction of a value-added tax is the most distortive because it is more distortive on the allocation of

Table 4. Effect of Various Financial Polices for Social Security in the Case Where Tax System and Social Security System are in One Government Budget

	Social Security Contribution	Debt Finance	VAT (for Social Security)
Change in TTR (billion yen)	27808 (46.2)	-3183 (-5.29)	24250 (40.3)
Change in Public Debt issued (billion yen)	0.0	27523 (235)	0.0
Sum of Equivalent Variations (billion yen)	-2015 (-0.66)	22639 (7.46)	-15036 (-4.96)
Net Welfare Change (biliion yen)	-2015 (-0.66)	-4884 (-1.61)	-15036 (-4.96)
Change in Labor Supply (%)	-6.75	-7.98	-4.12
Change in Nominal Saving by Households (%)	6.13	5.33	4.12
Change in Nominal Private Net Investment (%)	8.82	-97.3	5.80
Change in NDP (%)	9.80	-7.66	-4.46
Price of Capital	1.090	0.956	0.947
Laspeyres Price Index	1.148	0.987	1.216
Change in Gini Coefficient (%)	-7.25	-8.71	-8.81
Change in Tax Rates	166% (Change in Social Security Contributions)	Current Tax Rates	23.6% (VAT Rate)

Note: TTR denotes Total Tax Revenue. Figures in parentheses of Change in TTR and Change in Public Debt are percent of the total tax revenue and the total amount of public debt issued for 1980 while those of Sum of Equivalent Variations and Net Welfare Change are percent of the total expanded disposable income of households.

capital and labor than the other in dealing with an increase in social security payments. One of the principal reasons why public debt is better than VAT is that public debt raises savings more than the introduction of VAT.

The influence on net domestic products is diversified. The only positive growth rate is obtained by social security contributions. The influence on inequality measured by expanded incomes is desirable because all the methods generate a more equal distribution of expanded income.

In summarizing the above, it may be concluded that although the three alternative tools induce, in principle, distortions, the least harmful method is the increase in social security contributions. "An increase in social security payments caused by the aging trend in Japan must be financed by an increase in the rate of social security contributions," is the tentative conclusion. In other words, the payments in social security must be financed by its own contributions without using a specific tax for social security or public debt.

Next, the second and third alternatives with respect to the governmental budget are discussed. A summary which presents both cases is given in Table 5. In this Table, "no transfer from the tax system" corresponds to the second alternative, while "20 percent transfer from the tax system" corresponds to the third alternative. Although it is not exactly the same as the current rate of transfer, the 20 percent transfer from the total tax revenue is roughly equal to the current transfer rate. About 20 percent of the social security payment is paid by the general tax revenue in contemporary Japan.

We consider again, three financing tools: (1) An increase in the rate of social security contributions (both employees and self-employed persons). This is the same as the first column in Table 4. (2) An increase in both the payroll tax rate (payroll tax here signifies "working persons") and social security contributions for nonworking persons, such as married females, who do not work. (3) The introduction of a value-added tax for social security as a specific tax. This is the same as the third column in Table 4. The only difference is seen in (2) because it also takes account of nonworking persons.

Since most of the results in this simulation are similar to those in Table 4, only some of the key results are presented in Table 5. The most interesting difference appears in the case of the 20 percent transfer from the tax system and of the consideration of nonworking people in the social security system. More concretely speaking, the difference between the sum of equivalent variations and the net welfare change is striking when these aspects are considered. It is noted that net welfare change takes account of future tax burdens, while equivalent variations do not. With respect to an increase in the rate of social security contributions, the sum of equivalent variations shows a huge loss in the case of "no transfer," while the net welfare change shows a

Table 5. Effects of Various Financial Policies for Social Security in the Case Where Social Security System has its Own Account and Should be Balanced.

	Social Security Contribution for Working People		Payroll Tax for Working People and Contribution Rate for Non-working People		VAT(for Social Security)	
	No transfer from tax system	20% transfer from tax system	No transfer from tax system	20% transfer from tax system	No transfer from tax system	20% transfer from tax system
Sum of Equivalent Variations (billion yen)	-7802 (-2.57)	363 (0.12)	-7661 (-2.53)	531 (0.18)	-25819 (-8.51)	-10941 (-3.61)
Net Welfare Change (billion yen)	-194 (-0.064)	-2624 (-0.865)	207 (0.068)	-2281 (-0.752)	-18067 (-5.96)	-13899 (-4.58)
Change in Tax Rates	212%	148%	188%	132%	31.9% (VAT rate)	20.6% (VAT rate)

Note: Figures in parentheses are percent of the total expanded disposable income of households.

very small loss. Contrary to the case of "no transfer," a "20 percent transfer" gives the opposite result. Namely, while the sum of equivalent variations shows a minor positive gain, the net welfare change shows a big loss. This difference arises from the fact that the net welfare change also takes account of future tax burdens. Obviously, "transfer" implies generally a higher future tax burden because part of general tax revenue is used for transfer. It is concluded that "no transfer from the tax system" is preferable when we consider only an increase in the rate of social security contributions. A similar conclusion is also derived in the case of an increase in payroll tax rates and contribution rates for nonworking people.

The difference between an increase only in the rate of social security contributions and an increase in both payroll tax rates for working people and contribution rates for nonworking people is discussed. The issue is, simply speaking, whether only the payroll tax rates for working people, or both the payroll tax rates for working people and the social security contribution rates for nonworking people, should be raised. The difference appears in Tables 4 and 5. It is found that raising only the payroll tax rate for working people gives a higher welfare loss than raising both rates. In other words, if the Government has to raise the contribution rate in the social security system, it would be preferable to increase the rate for all participants, namely, both employees and self-employed persons (by payroll tax), and nonworking people.

Next, the difference in the budgeting systems is discussed, namely, the integrated government budget (i.e., tax and social security together) or the social security system alone. This is examined by comparing Tables 4 and 5, although these tables are not comparable in a rigorous sense because the former assumes revenue neutrality in the integrated budget and the latter assumes a balanced budget in the social security system. It is found that a higher contribution rate is obtained in the separate account of social security than that in the integrated budget, namely, 211 percent versus 166 percent. The value-added tax rate is lower in the integrated budget than that in the separate account of social security, namely, 23.6 percent versus 31.9 percent. The net welfare loss is higher in the integrated budget than in the separate account of social security, namely, ¥ 2,015 billion versus ¥ 194 billion when the payroll tax rate is increased. When a value-added tax is introduced, the net welfare loss is ¥ 15,036 billion for the integrated budget and ¥ 18,067 billion for the separate account of social security. Under the current rate of a transfer from the general tax revenue, it is ¥ 13,899 billion. Therefore, the net welfare loss of the separate account of social security is lower than that of the integrated budget, even with the introduction of a value-added tax. The reason is that welfare loss is smaller when a person contributes only to social security system of the separated account from the general government account rather than paying to both the social security system and the tax system.

In summarizing the whole argument with respect to the relationship between the aging trend and financing, it is possible to propose that the least detrimental financing tool would be to increase the rate of social security contributions of both working and nonworking people, while abolishing the transfer revenues from the tax system to the social security account.

IV. Concluding Remarks

The paper examined various aspects of tax reform in Japan. One important tax reform already effective as of April 1988 is the abolition of tax-free savings accounts. The other is the introduction of a broad-based consumption tax as of April 1989. Changes in both personal income tax and corporate tax are additional elements of tax reform.

We paid attention to the effect of the reform on labor supply and savings which influences efficiency and equity. The effect on capital outflows from Japan to the United States was examined as well. The first part of this paper examined these issues without utilizing any models, while the second part explored the effects on the basis of a general equilibrium tax model. Finally, the aging problem in Japan in relation to tax reform was discussed.

Several noteworthy findings may be summarized as follows: The effects on labor supply for the aggregate of males and females will be very small, or almost negligible, in spite of some claims that taxes have major disincentive effects on labor supply. It is noted, however, that the effect for females is not negligible. The effect on aggregate saving will also be very minor. However, it is likely that a change in the composition of domestic financial assets and a small effect on capital outflows will be observed. Combining the above effects, the efficiency gain due to tax reform will be minor. It is likely that the current tax reform will be beneficial for households in higher-income classes and harmful for lower-income classes. Finally, it is suggested that the least detrimental financing tool for the period of aging society would be to increase the rate of social security contributions of both working and nonworking people and to abolish the transfer revenues from the general tax system to the social security account.

Classification of Producer Goods (Industries) and Consumer Goods

Producer Good

1. Agriculture, forestry and Fishery
2. Mining
3. Food, Beverages and Tobacco
4. Textiles
5. Pulp, Paper
6. Chemicals
7. Petroleum and Coal Products
8. Non-metallic Mineral Products
9. Basic Metal
10. Metal Products
11. Machinery
12. Electrical Machinery and Appliances
13. Transport Equipment
14. Precision Instrument
15. Other Manufacturing
16. Construction
17. Electricity, Gas and Water Supply
18. Wholesale and Retail Trade
19. Finance and Insurance
20. Real Estate
21. Transportation and Communication
22. Services
23. Government Services
24. Private Non-Profit Services to Households.

Consumer Good

1. Food
2. Non-Alcoholic Beverages
3. Alcoholic Beverages
4. Tobacco
5. Clothing
6. Footwear
7. House Rent
8. Furniture and Furnishings
9. Furniture and Furnishings
10. Household Durable Goods
11. Bedding and Domestic Non-Durable Goods
12. Medical Care
13. Transportation
14. Communication
15. Recreation
16. Education
17. Others

Classification of Household Groups by Income

(10 thousand yen)

(1)	- 100
(2)	100 - 150
(3)	150 - 200
(4)	200 - 250
(5)	250 - 300
(6)	300 - 350
(7)	350 - 400
(8)	400 - 450
(9)	450 - 500
(10)	500 - 550
(11)	550 - 600
(12)	600 - 650
(13)	650 - 700
(14)	700 - 750
(15)	750 - 800
(16)	800 - 900
(17)	900 -1000
(18)	1000 -

Classification of Taxes

(A) Factor Tax
  1) Capital Tax
    Direct Capital Tax
    Indirect Capital Tax
  2) Labor Tax
(B) Output Tax (including subsidy to industry as a negative output tax)
(C) Import tax
(D) Direct Tax on Households
  1) Personal Income Tax
  2) Other Direct Taxes

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