



OECD Economics Department Working Papers No. 73

The Saving Behaviour of Japanese Households

Kenichi Kawasaki

<https://dx.doi.org/10.1787/185775871353>

OECD
DEPARTMENT
OF ECONOMICS AND STATISTICS

WORKING PAPERS

No. 73 THE SAVING BEHAVIOUR OF JAPANESE HOUSEHOLDS

by

Kenichi Kawasaki

(General Economics Division)

January 1990



GENERAL DISTRIBUTION

ECONOMICS AND STATISTICS DEPARTMENT

WORKING PAPERS

This series of Working Papers is designed to make available, to a wider readership, selected studies which the Department has prepared for use within OECD. Authorship is generally collective, but main individual authors are named.

Comment on the Papers is invited, and may be sent to OECD, Department of Economics and Statistics, 2 rue André Pascal, 75775 Paris Cedex 16, France. Additional copies of the Papers on a limited basis can be forwarded on request.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Copyright OECD, 1990

24990

This paper surveys Japanese saving behaviour, whose rate is one of the highest among OECD countries. Macroeconomic factors such as rates of economic growth and inflation may have been important in explaining the high saving rate in the past and the more recent downward trend. Even though growth is now rather lower than in the past, there remain important structural factors which explain the high rate of saving. The most important of these relates to demographic factors. Government policies and cultural and institutional factors seem to have played a relatively less important role. In the coming years, rapid ageing of the population is likely to have an important effect on the rate of saving. The Japanese saving rate is expected to show a substantial decline beyond the year 2000 according to life-cycle model simulations. The implications of this for domestic investment and international saving/investment balances may be important.

* * * * *

Ce document étudie l'attitude des Japonais face à l'épargne, épargne dont le taux est l'un des plus élevés parmi les pays de l'OCDE. Des facteurs macroéconomiques tels que le taux de croissance économique et le taux d'inflation peuvent avoir joué un rôle important et expliquer ce niveau élevé atteint par le passé et la tendance plus récente à la baisse. Bien que la croissance soit à présent relativement plus faible que par le passé, d'importants facteurs structurels subsistent qui expliquent le taux d'épargne élevé. Parmi ceux-ci le plus important est d'ordre démographique. Les politiques gouvernementales, les facteurs culturels et institutionnels semblent avoir joué un moindre rôle. Dans les années à venir, un vieillissement rapide de la population risque d'avoir des répercussions importantes sur le taux d'épargne. D'après les simulations fondées sur le modèle du cycle de vie, le taux d'épargne japonais devrait connaître un déclin substantiel au-delà de l'an 2000, ce qui pourrait avoir des implications importantes pour l'investissement domestique et les balances épargne/investissement au niveau international.

No. 73 THE SAVING BEHAVIOUR OF JAPANESE HOUSEHOLDS

by

Kenichi Kawasaki

(General Economics Division)

January 1990

The author would like to thank Andrew Dean, John Fallon, Peter Hoeller, Yukinobu Kitamura, Peter Sturm, Kenji Umetani, Naohiro Yashiro and other colleagues for helpful comments and suggestions.

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND SUMMARY	5
II. TRENDS IN SAVING	6
a) Historical developments in saving	6
b) Is the Japanese saving rate really high?	8
III. HOUSEHOLD SAVING MOTIVES	10
a) Educational expenses	10
b) Land and housing purchase	11
c) Saving for precautionary purposes and for retirement	13
IV. GOVERNMENT POLICY AND STRUCTURAL FACTORS	15
a) Government policy	16
b) Institutional factors	18
c) Cultural factors	19
V. THE OUTLOOK	20
a) Influence of the ageing of society	21
b) Implications for domestic investment and international balances	22
VI. SUGGESTIONS FOR FUTURE RESEARCH	24
Notes	25
References	29
Table 1 Gross private saving rates	31
Table 2 Household saving-rate adjustments	32
Table 3 Alternative definitions of the Japanese household saving rate	33
Table 4 Saving motives -- Japan	34
Table 5 Factors affecting saving	35
Table 6 Determinants of saving	36
Table 7 Outlook for private saving rates	37
Chart 1 Household saving-rate developments	38

THE SAVING BEHAVIOUR OF JAPANESE HOUSEHOLDS

I. INTRODUCTION AND SUMMARY

1. In the 1980s, the Japanese economy has experienced faster economic growth and lower inflation rates than most OECD countries and a widening current-account surplus. As a result, the Japanese role in the world economy and as a supplier of capital has increased. It is worth considering the durability of these features. In this context, this paper examines Japanese saving, which is characterised by one of the highest rates among Member countries. The purpose of this paper is: first, to summarise the factors that contribute to the high saving rate relative to other countries, especially the high household saving rate; secondly, to assess the relative importance of the various factors that have been identified as possible causes of the high saving rate; and finally, to provide some outlook for saving trends and their implications for the domestic and international economy.

2. There are many studies dealing with Japanese saving although few have provided comprehensive analysis and strong empirical support. Sturm (1983) provided a survey of the determinants of saving and also the empirical findings for numerous countries, while Horioka (forthcoming) surveys the vast literature on Japanese saving from the social and demographic as well as the economic viewpoint. This paper follows up on the latter paper and attempts to incorporate more recent empirical studies than the former and to try to provide some complementary considerations.

3. The Japanese household saving rate increased in the 1960s and up to the mid-1970s; since then it has shown a moderate downward trend but it is still high by international standards. The factors underlying this high saving rate may have varied through time, although some factors have made a consistent contribution throughout. It is therefore important to distinguish between factors which explain historical changes in the Japanese saving-rate trends and factors which explain the generally high level itself compared with that in other countries. Concerning trends in the saving rate, macroeconomic factors such as rates of economic growth and inflation may have been important

ones in explaining the observed high saving rate in the past and the more recent downward trend, although quantitative evidence is not always convincing because the causality is not clear-cut and there are measurement problems which are not negligible. Even in the period of relatively stable growth, there remain important structural factors which explain the high rate of saving, in particular the age structure of the population. It is thought that high land and housing prices, government policies and cultural and institutional factors have played a relatively less important role in the determination of the saving rate.

4. In the coming years, ageing of the population is likely to have an important effect on the rate of saving. The effect on private saving of the especially rapid ageing of the Japanese population in the period up to 2000 is however likely to be largely offset by the decline in the ratio of youth dependency. But, according to life-cycle model simulations, the Japanese saving rate is expected to show a substantial decline beyond the year 2000. The implications of this for domestic investment and international saving/investment balances may be important.

II. TRENDS IN SAVING

5. This section first surveys trends in the Japanese saving rate and looks at some of the key macroeconomic factors such as rapid economic growth during the 1950s and through to the early 1970s. In addition, measurement problems are examined before moving on to consider other factors.

a) Historical developments in saving

6. Japan has one of the highest household and private saving rates among OECD countries (Table 1) (1). As in most OECD countries, the Japanese net household saving rate increased during the 1960s and reached a peak in the mid-1970s at about 23 per cent of disposable income; since then, it has shown a moderate downward trend, falling to 16 to 17 per cent in 1985-86 (Chart 1) (2). However, this level is still high by OECD standards, the average in 1985-86 being around 11 per cent. High saving rates are a rather

common feature in a number of developing and newly-industrialising economies. The net household saving rate in 1986 was 18.5 per cent in Korea and 27.7 per cent in Taiwan according to the "Comparative Economic and Financial Statistics 1989" of the Bank of Japan.

7. From the 1950s to the early 1970s, Japan experienced rapid economic growth. The average growth rate in the 1960s was 10.5 per cent, compared with the OECD average (including Japan) of 4.9 per cent. There are a number of factors which contributed to persistent rapid growth. One of the most important was the high level of household saving which was a major source of funds in those days for corporate investment to expand productive capacity. Although in an open economy it is possible for capital inflow to finance domestic investment, in that period international capital flows were smaller and more constrained. High domestic saving facilitated growth which in turn enabled saving to be ample.

8. On the other hand, the rapid increase in household income which was associated with rapid economic growth may have contributed to raising the household saving rate. Although the empirical evidence is not robust, because simultaneity makes estimation methods difficult, there are several possible arguments which concern the causality from economic growth to the saving rate. For example, the permanent-income hypothesis, which implies a higher propensity to save out of transitory income than permanent income, argues for a positive influence of income growth on the household saving rate if the income growth is faster than expected or believed to be temporary. Although it seems doubtful that households continued to believe that increases in income were transitory, some institutional factors, such as the bonus system, might have had some effect (see below).

9. A life-cycle model developed by Shibuya (1987) shows that the general upward trend of the Japanese saving rate until 1974 was mainly due to the rapidly rising level of real disposable income (3). The effect of inflation in leading to a decline in real wealth also led to a rise in the rate of saving (see below). Shibuya estimated the effect of these factors on the household saving rate and concluded that the rise in real disposable income over the period 1965-83 may have raised the rate significantly. After the

mid-1970s the substantial decline in inflation and to a lesser extent the improvements of public pension schemes contributed to the decline in the saving rate. Life-cycle considerations can be expected to lead to further declines since the aged dependency ratio will continue to rise. The Economic Planning Agency (1988a) has estimated a function for the average propensity to consume over the period 1967-87 which incorporates effects from both inflation and income growth (4). According to this analysis, the stability of prices and the slowdown in the growth rate of real disposable income contributed significantly to the increase in the propensity to consume after the mid-1970s.

10. The Economic Planning Agency (1985) compares the actual saving rate with an "optimal saving rate" based on the neo-classical closed-economy model and concludes that the Japanese current saving rate is not necessarily much higher than this optimal level (5). They calculate that the actual net national saving rate for the fiscal year 1983 is 11 to 16 percentage points after adjustments are made for the services provided by consumer durables and government tangible assets. This compares with an optimal saving rate of 9 to 13 percentage points which is based on an assumed 3 to 4 per cent rate of Harrod-neutral technical progress. However, the estimation of an "optimal saving rate" is highly conditional on the assumptions adopted. To take a perhaps extreme example, some argue that for inter-generational comparison of utility, the discount rate used should be zero, in which case the optimal saving rate (if there is technical progress) would be negative.

b) Is the Japanese saving rate really high?

11. The measurement of household saving rates differs between countries for various conceptual reasons, even in the standardised national income accounts. There are, for example, three major differences between Japan and the United States. Firstly, depreciation is valued at historical cost in Japan but at replacement cost in the United States. Secondly, capital transfers are excluded from both saving and disposable income in Japan but included in the United States. Thirdly, interest paid by households to business or foreigners is excluded from personal disposable income in Japan but included in the United States (6). According to Hayashi (1986), adjustment for the first factor lowers the Japanese household saving rate by 2 to 3 percentage points

and that of the second factor lowers it by close to 1 percentage point. However, the quantitative effect of the third factor is negligible. In addition to these, the treatment of medical expenditure and social security benefits in the statistics in each country needs to be carefully examined.

12. Further adjustments to the standard definition of household saving in the System of National Accounts (SNA) are discussed in the literature. Blades (1988) shows adjustments of the saving rate series for several countries treating: 1) expenditure on consumer durable goods as capital investment by households with the flow of services from such durables being counted as consumption; 2) the change in private pension and life insurance funds as saving by financial institutions rather than households; and 3) saving of social security funds as household saving (Table 2). When comparing the saving rates in Japan and the United States, the most important adjustment, in terms of narrowing the gap between Japan and the United States, concerns the adjustment for consumer durables. While the gross household saving rates (7) as defined in SNA for Japan and the United States are 23.0 per cent and 14.3 per cent (average for the years 1970-86), figures adjusted for the different treatment of consumer durables are 26.1 per cent and 23.6 per cent respectively. Japan happens to be the country that is least affected by this adjustment. On the other hand, adjustments for pensions and life insurance, and for social security widen the disparity in saving rates between Japan and the United States.

13. The Japanese household saving rate is also considerably reduced when other adjustments are made to the standard concepts of income and consumption. Takayama *et al.* (1988) examine three main factors: 1) re-estimation of imputed rent incorporating the land price explicitly, 2) inclusion of medical benefits in kind both in income and consumption, and 3) taking into account depreciation of consumer durables and housing. According to their results using the data of the "National Survey of Family Income and Expenditures" (8) and the "Family Income and Expenditure Survey", both prepared by the Statistics Bureau of the Management and Coordination Agency, the Japanese household saving rate in 1984 is reduced from 26.2 per cent to 9.3 per cent after the above three and other adjustments (Table 3) (9). But comparable adjustments are expected to lower rates for other countries so that the disparities will remain, although the

Economic Planning Agency (1989) suggests that the speed of depreciation of the housing stock is faster in Japan compared with that in other major OECD countries.

14. Even after all such adjustments are made, the Japanese household saving rate seems to remain relatively high when comparisons are made with other countries where similar adjustments have been made. In addition, it should be noted that when these adjustments to household saving are made, there are counterpart adjustments that need to be made elsewhere in the system, so that national saving may not change as much. Conceptual differences and their adjustments cannot entirely explain the disparities between countries.

III. HOUSEHOLD SAVING MOTIVES

15. According to the "Public Opinion Survey on Saving" carried out by the Central Council for Saving Promotion, an organisation associated with the Bank of Japan, there are three major motives for Japanese households to save. The first is for future consumption expenditures on children's education and marriage expenses and on travel and other leisure expenses. The second is for purchases of real assets such as land/housing and consumer durables. The third is precautionary saving for illness, other unexpected disasters and old age (Table 4). In this section these motives are considered. On balance, it is found that they do not provide a strong enough explanation for the high Japanese saving rate. While all three motives may be important from the point of view of individual household behaviour, from the point of view of the household sector as a whole, they may be relatively unimportant because the considerable gross saving associated with these motives in certain households is offset by a comparable dissaving for the same motives in others. The various saving motives lead to a positive aggregate household saving only in a growing economy.

a) Educational expenses

16. During the post-war period, the proportion of Japanese children entering college or university has increased sharply (from 10.3 per cent in 1960 to

37.8 per cent in 1975 and remained around the same level afterward according to the "Basic School Survey" by the Ministry of Education) and this ratio has been one of the highest in OECD countries (Table 5). In a stationary economy, the saving for specific motives will be offset by the dissaving for the same motive. However, in Japan, because of the rapid increase in higher education and, more importantly, because of rapid economic growth in the 1960s to the mid-1970s, saving for education (10) has probably been positive (see Horioka, forthcoming). Since the college entrance ratio has stabilised in recent years, education-related saving may now contribute less (11). The Economic Planning Agency (1988b) suggests that the expansion in the availability of scholarships has contributed to stabilising the proportion of workers' educational expenditure to their income after the mid-1970s.

b) Land and housing purchase

17. It is often asserted that, because of the high price of land and housing, the strong preference for home ownership, high down-payment requirements and the relative unavailability of housing loans, saving for housing purchase is particularly important in Japan. In fact, household land assets amounted to Y 627 billion at the end of 1984, compared with Y 248 billion in the case of the United States (12) (see also Table 5). The price of owner-occupied houses (including land) amounted to five to thirteen times average household annual disposable income in 1987 depending on the region, according to the Economic Planning Agency (1988b), and has recently been increasing faster than income.

18. Sato (1988) argues that the high saving rate of the households until the mid-1970s can be traced mainly to the strong housing demand pressure associated with the concentration of the population in the major metropolitan areas. During the rapid growth period, industrialisation induced many families to move from the countryside to urban areas, especially the three metropolitan areas. New arrivals lived in rented apartments while they saved enough money for a down-payment, but eventually moved into houses they purchased. More than 60 per cent of households are now homeowners. The Economic Planning Agency (1987) shows that this ratio is slightly lower than that of the United States but considerably higher than that of larger European

countries except the United Kingdom (Table 5), although the per capita residential asset (excluding land) is much lower than those of the United States and the United Kingdom.

19. Compared with other countries, the Japanese are required to save more due to higher down-payment requirements (13). This induces postponement of consumption early in the life cycle. However, Hayashi, Ito and Slemrod (1988) suggest that the contribution of the induced early saving due to the down-payment requirement would be too small to explain much of the differential in the saving rate of Japan and the United States. Their simulations suggest that an increase of 10 percentage points in the down-payment ratio increases the saving rate by less than 1 percentage point in each country; the difference in the stylised values of the down-payment ratio is 10 percentage points between the two countries. This could be partly because there are two offsetting impacts from a higher down-payment ratio. First, higher saving is required for a given size of home. Second, a higher down-payment ratio causes a smaller house to be purchased given the tenure choice pattern. However, their results should be conditional as they do not take into account changes in the housing tenure choice pattern. The authors admit that a large enough decline in the required down-payment ratio in Japan might induce a saving rate and life-cycle tenure pattern similar to those of the United States. In addition, some evidence suggests that the down-payment ratio was higher in the 1950s and 1960s in Japan, so that it could have been a more important factor in explaining the high saving rate in the past.

20. On the other hand, Horioka (1988) raises the importance of looking not only at the saving behaviour of pre-purchase households but also at that of post-purchase households. Analysing the data of the "National Survey of Family Income and Expenditure" (NSFIE), he argues first that renter households with plans to purchase land/housing are engaged in strenuous efforts to save for the down-payment. Secondly, homeowner households with land/housing purchase experience show higher saving rates than homeowner households without such experience because they must engage in housing-related saving in the form of housing loan repayments. The latter finding needs to be qualified however since most of the repayments are initially interest payments and so they are not saving (14), though there may be a large repayment of principal

(i.e. saving) by the household sector as a whole. As far as there are important saving, both of the pre-purchase households and the post-purchase households, a higher Japanese saving rate would be more likely to be attributable to the high level of land/housing prices than to the unavailability of housing loans (15). In addition, he points out that although the housing-related saving in the form of saving for the down-payment and housing loan repayments is considerable (ranging from 3.8 per cent to 7.3 per cent of household disposable income), it is roughly offset by dissaving in the form of depreciation of the housing stock (ranging from 5.9 per cent to 9.6 per cent of household disposable income) (16). Thus, he concludes that the contribution of housing-related saving to the net aggregate household saving rate is negligible or even negative (17). As mentioned earlier, in a stationary economy the saving for a specific motive will be offset by dissaving for the same motive. However, the housing-related saving might be influenced by other factors, such as a bequest motive (discussed below) which could be important given the differences in the structure of age distribution.

c) Saving for precautionary purposes and for retirement

21. An analysis by Sato (1988) of the "Households' Financial Saving Target", (a sample survey by the Central Council for Savings Promotion, an organisation associated with the Bank of Japan), shows that precautionary saving increases when households feel greater economic uncertainty. In addition, inflation, especially the double-digit inflation following the first oil shock, exerted a strong positive effect on the saving rate. Though theoretically inflation can have either a positive or negative impact on saving, it is suggested that the positive effects outweigh the negative ones. This could be either because inflation induces households to increase their saving in order to maintain the real value of their financial assets (18) or because inflation increases the amount of uncertainty about the future and hence the perceived need for precautionary saving. Recent econometric studies support the proposition inflation-induced wealth effects have a positive impact on private saving (19). In addition to these, the treatment of interest payments in the standard national accounts could contribute to increases in measured saving. In times of inflation, part of interest payments represents compensation for capital depreciation and should therefore be deducted from

both current income and current saving. Such an adjustment is not made in the national accounts. Hence, when inflation rises there will be an increase in the measured saving rate if households do not alter their real consumption behaviour, since both saving and income will increase by the same absolute amount (20).

22. According to the life-cycle hypothesis, the primary motive for saving is to provide for retirement. Thus, individuals save during their working years and dissave during their retirement years. The saving rate of the Japanese household sector has been going through a "life cycle" of its own. Immediately after the War, life expectancy was short and most disposable income was consumed. As the young working population grew rapidly and the life expectancy of its population increased, households saved more. Since the mid-1970s an increasing proportion of the Japanese population has reached formal retirement age and the average public pension benefits have rapidly improved, thereby reducing the average need to save for retirement. In fact, the ratio of public pension benefits to the average worker's salary has jumped from a ratio of 10 to 20 per cent in the 1960s through to the mid-1970s to 40 per cent at the beginning of the 1980s (Economic Planning Agency, 1982), a ratio which is similar to that in other developed countries (Table 5) (21). However, the likely effect of public pension schemes or social security on household saving is said to be theoretically uncertain. Public pensions represent an alternative source of funds for financing living expenses during retirement; hence they would tend to reduce private saving. However, to the extent that such pensions induced workers to retire earlier, thereby necessitating more saving for retirement, such pensions would tend to increase private saving. Horioka (1986) argues that these two effects would offset one another, so that their net impact on private saving cannot be determined a priori.

23. On the other hand, the insufficient provisions at the incipient stage of the public pension system in Japan may have forced the Japanese in the past to continue to work and to save more. In fact, the substantial improvement in terms of both the coverage and the level of benefit of the pension system since the mid-1970s is associated with a continued decline in the labour force participation ratio of the elderly -- the ratio in the case of male labourers

aged 65 and over declined from 56.9 per cent in 1960 to 41.0 per cent in 1980, which is still high by international standards (22). However, it does not seem to have affected their saving behaviour; the average propensity to save of employee households whose head is aged 65 or above is 13.6 per cent according to the 1980 "Family Income and Expenditure Survey" (23). Although this is 10 percentage points lower than the peak average propensity to save shown by households with heads aged 40-44, it is still far from the textbook characterisation of the dissaving elderly.

24. There are several articles which deal with saving behaviour of the elderly. Hayashi, Ando and Ferris (1988) investigate cross-section micro-data of the 1984 "National Survey of Family Income and Expenditures" and point out that the elderly continue to save and that there appear to be significant signs of a large wealth transfer between generations. Ishikawa (1988) analyses the impact of the elderly on the overall saving rate of Japanese households, dividing the elderly population into those who maintain an economically active status and those who depend on their children and have become economically inactive. He finds that for the former category of individuals, their propensity to save is 13 percentage points higher than that of the latter because of employment, and this difference supplies the leverage by which the internationally high labour force participation ratio of elderly Japanese (Table 5) can be translated into high household saving, assuming similar relations hold between old age groups abroad (24). He suggests that, for the second category of aged individuals, the presence of parents neither increases nor decreases the young generation's household saving rate. The reason for such behaviour may relate to cultural factors such as a preference for extended families (see below); however, other important motives for bequest should also be taken into account.

IV. GOVERNMENT POLICY AND STRUCTURAL FACTORS

25. There are many structural factors which affect private saving behaviour. In this section factors not mentioned above such as government policy and institutional and cultural factors are surveyed (25). These factors do not generally provide a strong explanation of the high Japanese saving rate.

a) Government policy

26. The Japanese Government has engaged in a variety of policies designed to promote saving since the 1870s. Horioka (forthcoming) points out some of these activities. In 1875, the government established the postal saving system in order to encourage individual saving. During the post-war period, the government has continued to engage in saving promotion, through the establishment of the "Saving Promotion Department of the Bank of Japan (1946)", the "Council for Saving Promotion (1952)" and the "Saving Promotion Centre of the Ministry of Finance (1957)". In recent years, in response to criticism from abroad, saving promotion has been de-emphasised. The impact of saving promotion activities on household saving is difficult to measure, but it appears that such policies have been much more widespread in Japan than in other countries.

27. There are many different tax instruments which influence saving. Dean et al. (1989) survey the current taxation of housing and consumer purchases in the OECD countries and conclude that the differential treatment of different forms of private saving or investment can lead to a misallocation of resources, although the extent of such misallocation is not quantitatively clear. Most of the interest income from consumer savings had been tax exempt and interest payments on consumer mortgage and other debts are not tax deductible in Japan. Many economists have therefore suggested that differences in tax systems may explain the gap in the private saving rate between Japan and countries like the United States where the reverse has been the case. However, empirical evidence does not support this proposition. Shibuya (1987) estimates the contribution of the tax exemption on interest income to the saving rate has been only about 1 percentage point in recent years. Although, Hayashi, Ito and Slemrod (1988), analysing the effects of the abolition of the so-called "maru-yu" accounts in April 1988 (the tax exemption system for interest income from small savings), predicted that it would cause a drop in the steady-state private saving rate of 3 to 4 percentage points, the estimates may be biased upward as they seem to assume no substitution effects among financial assets. In addition, the introduction of tax deductibility of mortgage interest payments is predicted to change the aggregate saving rate very slightly

although this result is heavily conditional on the imposition of liquidity constraints (26).

28. In order to reduce the Japanese external surplus, one of the policy options might be the expansion of domestic demand through increased public investment. From the viewpoint of government balance, however, it is necessary to consider how to finance such investment. Tachibanaki and Ichioka (1988) show that among various financing methods, an increase in direct taxes such as personal income tax brings about a considerable reduction in the nominal saving level, while the reduction is smaller in the case of the introduction of a value-added tax. This is because the general price level increases when a value-added tax is introduced. In addition, different impacts on saving would occur because direct taxes are not part of disposable income, while indirect taxes paid are part of disposable income. Therefore measured saving rates will differ between countries with identical real income and household tax payments, depending on whether the latter are levied directly or indirectly.

29. In any event, there are likely to be important interactions between government policy and private saving. One view argues that the private sector anticipates the future tax burden associated with the government debt service and adjusts its saving behaviour accordingly. Nicoletti (1988) summarises earlier work on this topic and suggests that; 1) the government's inflation tax is in part anticipated by consumers, and 2) expectations of future policy correction depress private consumption quite noticeably when public debt is explosive. However, he found little empirical support for the strict "debt neutrality hypothesis". Among the eight countries studied (the United States, Japan, Germany, France, the United Kingdom, Italy, Canada and Belgium), Italy and Belgium, two countries with high debt/GNP ratios were the only exceptions which showed a complete offset. In the case of Japan, several authors have tested the extent of public debt neutrality. Muto *et al.* (1987) point out that although fiscal neutrality is not consistent with Japanese data for the whole post-war period, especially after the mid-1960s when national debt was increasing, it is not entirely rejected either. General rejection of this hypothesis does not imply that fiscal action through taxation has no influence on private saving since partial offsetting is still likely.

b) Institutional factors

30. The institutions and policies of the financial system may have had a positive impact on the level of household savings in Japan. Horioka (forthcoming) points out the following relevant characteristics of the system: 1) the large number of offices of banks and various kinds of financial institutions including labour and agricultural co-operatives; 2) the existence of the postal saving system whereby deposits can be made at any post office; 3) direct promotion of saving by banks through various form of non-price competition; and 4) corporate promotion of saving through payroll saving plans at rates substantially above the controlled rates paid by banks.

31. The bonus system is one of the most frequently cited causes of the high Japanese saving rate. The ratio of bonus income to total compensation is relatively high (about one-third of annual income is paid in the form of a twice-yearly lump-sum bonus payment). If bonuses were viewed as "transitory income", the permanent-income hypothesis would suggest that bonuses would be saved and the system would contribute to a high household saving rate. However, this argument is weakened by the fact that the bonus system has existed for a long time and bonuses have become an integral and anticipated component of workers' compensation. Although the Economic Planning Agency (1982) shows the close correspondence between movements of the household saving rate and the ratio of bonus income to total employee compensation, it should be noted that those developments could be explained by other explanatory variables such as higher-than-expected growth. An overall assessment is difficult because of the high degree of multicollinearity that arises because bonuses depend heavily on general economic conditions and on the profitability of the firm or industry.

32. As leisure time and consumption are normally complements, long working hours may have a significant influence on the level of the household saving rate. In fact the average number of hours worked in Japan is the highest among OECD countries (Table 5). The Japanese Government has set a target to reduce annual working hours from the current 2 150 hours to 1 800 hours by the fiscal year 1992 in the latest Medium-term Economic Plan. However, it is not clear to what extent the target will be reached. Moreover, taking into

consideration that the female labour force participation ratio has increased recently, average national hours worked might even increase (27).

33. In Japan the "formal" retirement age has ranged between 55 and 60, which is low by international standards (Table 5) (28). This might induce individuals to save more for retirement. But it should be noted that most people who had "formally" retired typically worked some years at reduced wages or entered another occupation. In fact, as noted earlier, the labour force participation ratio of the aged is one of the highest among the Member countries. The "actual" average retirement age, therefore, may reasonably be assumed to have been 65. However, the reduction in workers' wages after "formal" retirement is substantial so that a high saving ratio might still be necessary if individuals wish to maintain the same standard of living after "formal" retirement.

c) Cultural factors

34. Many authors have cited "tradition", "culture", or "national character" as one explanation of the high Japanese household saving rate. The common argument is that the proclivity of Japanese people to work hard and save more is due in large part to their Confucian heritage, which regards diligence and frugality as virtues. Horioka (forthcoming) mentions "the high degree of risk aversion" and "the weakness of the demonstration effect in consumption". Although a student of Summers (1986) found that the saving rate of Japanese-Americans is 5 percentage points higher than that of other ethnic groups in the United States, supporting the argument that national character is one explanation of the high Japanese saving rate, it would not be wise to place too much emphasis on this result since it is not clear to what extent the differences in income, education and other factors were taken into account. Another argument concerns a "vintage effect", with signs of change in the consumer behaviour of the young generation in Japan today. However, evidence which suggests that younger generations save less than earlier generations did at a corresponding age, has also been observed in other countries.

35. It is still common in Japan for young adults between the age of 18 and the time of marriage to live with their parents if they live in the same town.

Even after their marriage, children often continue to live with their parents. Moreover, it is common that when parents become very old, or especially when one of them dies, they are "looked after" by their children. According to the "International Comparison Research on the Life and Concerns of the Aged People, 1980" by the Prime Minister's Office, the ratio of aged people who live with their married children was 50.2 per cent in Japan, a ratio that is substantially higher than that found in Europe and North America (Table 5). A country that is similar to Japan in this respect is Thailand, where the relevant ratio is 63.1 per cent. The existence of elderly people within the young generation's household could reduce the latter's saving although, as mentioned above, the negative effects may be offset when the aged parents greatly assist the young in acquiring home-ownership. In "return" for taking care of parents, the child usually inherits the parents' real and financial assets (including their home). One of the reasons for this arrangement is that the Japanese inheritance tax is low for real estate since the assessed value for the inheritance tax is usually well below market prices.

36. In line with the number of extended families, the prevalence of bequests and transfers between generations is marked. As noted above, the elderly continue to save so that wealth transfer between generations is significant. This partly reflects the process of Japanese economic development. Having started out with a low level of wealth, Japanese households have wanted to raise their level of wealth in order to allow their children to enjoy a higher standard of living. On the other hand, recent spectacular increases in land and housing prices have made it very difficult for Japanese people to purchase homes, such real assets more often being obtainable as a bequest.

V. THE OUTLOOK

37. The various factors concerning saving behaviour which have been raised in the preceding sections are compared in Table 5, together with the demographic factors which are the most important ones for the future. In this section, the relative importance of these factors is considered. In the coming years ageing of the population should reduce the Japanese saving rate substantially, with important implications for the economy.

a) Influence of the ageing of society

38. The relative importance of certain key variables in explaining the relatively high level of the Japanese private saving rate has been investigated by Horioka (1986) using an empirically-estimated model, largely based on the life-cycle hypothesis, for the period 1976-82. He points out that the high Japanese saving rate is primarily due to the lower share of the elderly in the total population. Less important factors included higher land prices, an earlier formal retirement age, a lower ratio of young dependents (with respect to the productive population), and the lower level of per capita income. In contrast, the higher labour force participation ratio of the elderly (29) and, to a lesser extent, the lower inflation rate, have acted to bring the country's private saving rate down closer to that of the United States (Table 6). According to his estimates, these factors can explain virtually all of the difference between the Japanese saving rate and that of the United States and this suggests that omitted variables such as cultural difference, tax incentives, the limited availability of consumer credit, the ratio of bonus income to total worker compensation, the distribution of income, household wealth holdings, etc., explain little of the difference. However, it should be noted that the data used in the study covered the period 1976-82 when Japanese per capita income growth was moderate. Including the data for the 1960s and 1970s might suggest the relative importance of income growth and including data after financial liberalisation in the United States might also suggest the importance of credit availability.

39. Taking account of Horioka's findings, the dominant factor determining future saving seems likely be the forthcoming change in the age structure of the population. The Japanese dependency ratio of the aged population (defined as ratio of the population aged 65 and over to that aged between 15 and 64), which was 15 per cent in 1985, is predicted to reach more than 30 per cent by the year 2010 (30). Horioka (1986) points out that the decline in the ratio of young dependents will cause the private saving rate to increase slightly until 1995 while a rapid increase in the ratio of the aged will lead to a precipitous decline in the rate thereafter. According to the projections by Shibuya (1987), the household saving rate is likely to decline from 17 per cent in 1985, reach a low of 9 per cent in 2020 and then recover slightly thereafter.

In addition, Heller (1989) shows that by 2025 the gross private saving rate would decline in all of the major seven industrialised countries as a result of the ageing of populations, even though initial pressure on saving will be felt at different times among the countries. He points out that, in the case of Japan, this effect should be felt earlier than in the other countries with the largest declines in the saving rate being related to the most rapid ageing of the population (Table 7). On such mechanical calculations, Japan might thus have a lower private saving rate than the other major industrialised countries by 2010 though there might then be some closing of the gap by 2025.

40. In addition, population ageing might reduce the national saving rate through lower government saving. During the process of ageing, the role of government in transferring resources from those of working age to the elderly could be increased, although this is conditional on whether the elderly keep working or retire. It is expected that the share of GNP devoted to public expenditure on social programmes in general, and public pensions in particular, will increase. A study by Auerbach *et al.* (1989), using an overlapping generations model, looked at possible effects on national saving rates. A baseline simulation, which abstracted from policy changes, indicated the Japanese national saving rate declining rather sharply and continuously from now through to 2025 and then recovering somewhat in the following 25 years. The study also showed longer-term but much gentler declines for the United States and Germany. But compared with other countries, the profile of the changes in Japanese saving seemed likely to be far more pronounced, underlining the important differences in underlying demographic trends.

b) Implications for domestic investment and international balances

41. It is often argued that despite Japan's relatively high per capita income, which has been brought about partly by the yen's recent appreciation, Japanese capital formation, especially in social capital, has not proceeded well and the Japanese are not satisfied with their standards of living. In contrast to the era of high economic growth, the further household saving is reduced the less it will provide funds for private and public investment. If the ageing of the population causes downward pressure on private saving, it might be necessary from the long-term point of view to promote domestic

capital formation in an efficient way both in the private and the public sectors rather than the current trend of foreign asset accumulation. The choice between domestic and foreign investment of domestic saving should of course be based on relative rates of return, with risks in foreign investment being taken in consideration. In addition, although the implication of the public pension system on private saving is ambiguous, as is pointed out by Hagemann and Nicoletti (1989), given the long-run nature of the individual retirement decision, future changes to public retirement schemes need to be adopted early so that they may be phased-in gradually and avoid disruptive adjustments later.

42. Japanese policy-makers may therefore need to act with caution in attempting to reduce the Japanese current-account surplus through policy changes aimed at reducing private saving apart from eliminating distortions which bias domestic saving and hence the external surplus upward. Firstly, the predicted decline in the private saving rate in the coming couple of decades might itself be sufficient to eliminate the Japanese current-account surplus. Secondly, it should be noted that in Japan and Germany, where there is excess national saving over investment, the excess has largely emerged because of a decline in investment, rather than a rise in saving. On the contrary, in the United States, the United Kingdom and Canada, where national saving is not sufficient to finance investment, there has been a fall in saving.

43. More fundamentally, it may be questioned whether the gaps in national saving and investment are matters of concern. Dean *et al.* (1989) point out that the influence of international financial liberalisation in the 1980s has facilitated the large capital flows necessary to sustain recent saving/investment gaps in many countries. In addition, the latest OECD survey of the Japanese economy (OECD, 1989) considers the macroeconomic nature of external imbalances. In the absence of other market distortions, it is in principle possible that differences in rates of time preference among the people in the countries concerned make persistent external imbalances optimal from a global welfare point of view. Moreover, the Economic Planning Agency (1984), have predicted that Japanese saving might still exceed domestic investment in the future, even after taking account of the factors mentioned above that might lead to a declining trend in saving and a possible expansion

in investment. Japan's role as a supplier of capital in the world has been stressed from the point of view of the efficient allocation of capital.

VI. SUGGESTIONS FOR FUTURE RESEARCH

44. This paper has surveyed the voluminous literature on Japanese saving behaviour. A summary of the main conclusions has already been given in Section I. Although there are many areas of agreement, with the demographic structure being identified as a key factor, there are still many areas where there is not yet agreement and where further investigation is needed. Future work needs to take account of the following considerations:

- 1) Measurement issues are important. Where adjustments are made to household saving rates these need to be made on a common basis. Some studies make adjustments to gross saving rates as defined in standard national accounts, while others discuss adjustments to net saving rates. In addition, there are other studies which consider "effective" saving rates whose concepts are very different from those in the SNA. Those studies are not comparable and do not help much for international comparisons of saving rates.
- 2) Saving motives are not important in explaining the saving rate of the household sector as a whole under a stationary economy. However, the assumption is not satisfied in the real world where growth has typically been important, especially so in the case of Japan, and where the population distribution varies significantly across countries. With the ageing of the population becoming a key feature of economic developments in Japan and elsewhere, it would be useful to have further study of saving behaviour by each cohort with the implications for the aggregate saving rate being assessed.
- 3) There have been many attempts to explain differences in saving rates. However, many of the studies are limited by a partial approach with the empirical evidence not being robust. This suggests that it is important that future assessments of the relative importance of different factors should be investigated in a more integrated framework.

NOTES

1. The relative position of different countries and the volatility of saving behaviour depend to some extent on the sectors considered and on the method of measurement (for example, gross or net). See Dean et al. (1989) for some discussion of these points and detailed data.
2. The inflation-adjusted saving rates show a different story about ups and downs, but do not suggest much change in the relative position among the countries. See Annex III in Dean et al. (1989).
3. Shibuya explains that higher income led to a decision to retire earlier and to save more. However, it is questioned whether this mechanism worked in Japan. An increase in the expected length of the retirement period would be important because of expansion in life expectancy. Retirement decision would have been made institutionally rather than by economic incentives.
4. The estimated function, which is based on a modified version of the permanent-income hypothesis, is as follows,

$$\begin{aligned}
 CP = & 67.189 + 1.179/YD - 0.564*GYD + 3.766*FA(-1)/YD - 0.446*GP \\
 & (25.03) \quad (7.96) \quad (4.55) \quad (4.18) \quad (7.01) \\
 & + 5.179*JO \\
 & (4.67)
 \end{aligned}$$

$$R^2 = 0.8994 \quad D.W. = 1.41 \quad SEE = 0.830 \quad \text{Estimation period: 1967-87.}$$

CP : average propensity to consume
 YD : real disposable income (divided by 100000)
 GYD : annual growth rate of real disposable income
 FA : household financial assets
 GP : annual growth rate of private consumption deflator
 JO : ratio of job offers to job seekers

5. The calculation is cited as based on the model of Mirrlees (1967) and Boskin (1981). The "optimal saving rate" is derived as a saving rate which maximises the discounted value of welfare generated by a consumption stream in the future under a constant rate of increase in population and technical progress.
6. This is true for the definition of household saving used by the U.S. Department of Commerce. However, in the standard OECD definition, households' interest payments are excluded from U.S. disposable income.
7. Gross saving is defined as net saving plus consumption of fixed capital.
8. The "National Survey of Family Income and Expenditures" surveys household incomes, expenditures, assets and liabilities of about 50,000 households and is considered as one of the most comprehensive sources of consumption data in Japan. It has been conducted every five years since 1959 by the Statistics Bureau of the Management and Coordination Agency.

9. The studies by Blades (1988) and Tatayame et al. (1988) are not comparable. The former made adjustments to gross saving rates while the latter considers net saving rates. The depreciation of consumer durables is dealt with differently.
10. Expenditure on children's education is not really consumption but would be better considered as investment, although much of it is replacement investment from society's point of view.
11. It is possible that expenses on "informal" private schools are increasing. However, such education-related saving would represent only a small percentage of aggregate household saving.
12. These figures come from the "Annual Report on National Accounts" by the Economic Planning Agency and "Balance Sheets for the U.S. Economy" by the Federal Reserve Board. The high Japanese figure is strongly influenced by the high land price in the Tokyo area. According to the "International Land Price Census 1984" by the Japanese Real Estate Appraisal Association, the land price per square metre in residential areas is \$1 562 in Tokyo, \$68 in Los Angeles and \$88 to \$102 in Frankfurt. The gap might now be even wider as the yen has appreciated since 1985 and Tokyo land prices (in yen) doubled from 1985 to 1988.
13. "Down-payment" in the Japanese survey is literally defined as "the portion of self financing" including the owner's savings, gifts to the owner and sales of other real assets. If an owner borrows without collateral some amount of money from his parents, in this case it would be in fact a gift from the parents, and applies it toward the "down-payment" to the developer, the amounts of money would still be counted as "loans" instead of "down-payment". The down-payment ratio could therefore be biased downward.
14. The figures on the NSFIE basis would overvalue the saving since they include both interest repayments and the principal.
15. Horioka points out that, firstly, if the saving for the down-payment decreases due to the increasing availability of housing loans, there will be increased saving in the form of housing loan repayments and thus the total amount of housing-related saving will not necessarily decline. Secondly, the high level of land/house prices in Japan appears to have raised the level of housing-related saving of both pre-purchase and post-purchase households. On the other hand, based on the life-cycle hypothesis, Shibuya (1987) points out the possibility that an increase in land prices reduces the saving rate through wealth effects.
16. The figures on depreciation are biased upwards because they include depreciation not only on housing but also on equipment and structure for business use, but his rough adjustments for this do not suggest significant differences.
17. It is quite possible that the amount of net housing-related saving was much higher and even positive during the rapid growth era of the 1950s and 1960s. Unfortunately this analysis is restricted to the period since the 1970s.

18. It should be noted that Japanese households hold most of their financial savings in fixed price assets such as currency, deposits and long-term bonds. Commercial stocks are a small portion of their total financial assets. Consequently, inflation directly reduces the real value of household financial savings.
19. See Richardson (1987) for the results of the OECD INTERLINK model and Yoshitomi et al. (1985) for the results of the EPA world economic model.
20. See OECD (1988b) and Dean et al. (1989) for further discussions.
21. The ratio of social security benefits in general to national income is lower in Japan than in other countries even when the lower ratio of aged people to the total population is taken into consideration.
22. This information comes from the "Labour Force Census" by the Statistics Bureau of the Management and Coordination Agency. High labour force participation of the elderly is closely related to the high ratio of the self-employed. For example, as far as the structure of the female labour force is concerned, many of the elderly have been absorbed in farming families. Changes in the structure of industries could be another important factor.
23. Because of the Statistics Bureau's criterion of identifying the household head as the principal earner of the household, many aged persons that are living with their children become hidden in the children's households. There is therefore a tendency for high income or large wealth-holding individuals, who can afford to save more, to form independent core families.
24. On the contrary, Ishikawa argues that the decline in the ratio of employed persons has tended to generate an offsetting increase in household saving. He explains that because precautionary and/or bequest motives are strong in aged households this makes them prefer employment opportunities so as to continue to have an income and to increase saving to be left to succeeding generations. When employment is inadvertently cut back, the overall saving propensity may rise to compensate for the loss from employment income. However, testing such an interpretation is left for a future study.
25. The survey in this section owes particularly to Horioka (forthcoming). For details concerning institutional and cultural factors see his article.
26. Their simulation results suggest very slight increases in aggregate saving rates. This is mainly because they imposed liquidity constraints and so tax incentives for borrowing did not increase consumption. They admit the possibility that the introduction of tax deductibility of mortgage interest payments could reduce the saving rate.
27. Contrary to the view that Japanese enjoy less leisure time than others, the ratio of expenditures for cultural services and entertainment to the total final household consumption expenditure is higher than in other countries. In 1987, this ratio amounted to 10.1 per cent in

Japan, compared with 9.7 per cent in Germany, 9.1 per cent in the United States and the United Kingdom and 7.2 per cent in France (according to "Comparative Economic and Financial Statistics 1989"). This is partly caused by relatively high prices for entertainments and transportation facilities because of their high utilisation in the limited leisure time. In addition, since 1985 expenditure for tourism has increased rapidly, reflecting the rise in the number of people who travel abroad following the appreciation of the yen.

28. The retirement age has continued to decline in many OECD countries since the 1960s. However the average is still higher than in Japan. See OECD (1988c).
29. The higher labour force participation ratio of the elderly would be expected to increase the saving rate. See also the evidence concerning the behaviour of the elderly, reviewed earlier in the paper.
30. Figures based on the 1985 "Population Census" by the Statistics Bureau of the Management and Coordination Agency and the 1986 "Estimates of the Future Population of Japan" by the Research Institute of Population Problems, Ministry of Welfare.

REFERENCES

- Auerbach, A.J., L.J. Kotlikoff, R.P. Hagemann and G. Nicoletti (1989), "The economic dynamics of an ageing population: the case of four OECD countries", OECD Economic Studies No.12, (Spring).
- Blades, D. (1988), "Households saving ratio for Japan and other OECD countries", paper presented at the EPA International Symposium.
- Boskin, M.J. (1981), "Some issues in 'supply-side' economies", Carnegie-Rochester Conference Series on Public Policy, 14.
- Dean, A., M. Durand, J. Fallon and P. Hoeller (1989), "Saving trends and behaviour in OECD countries", OECD Working Papers No.67.
- Economic Planning Agency (1982), "Annual Report on the Economy (fiscal 1982)".
- Economic Planning Agency (1984), "Annual Report on the Economy (fiscal 1984)".
- Economic Planning Agency (1985), "Keizai Seisaku Kenkyukai Houkokusho (Report by the Economic Policy Research Meetings)" (in Japanese).
- Economic Planning Agency (1987), "Annual Report on the National Life (fiscal 1987)".
- Economic Planning Agency (1988a), "Annual Report on the Economy (fiscal 1988)".
- Economic Planning Agency (1988b), "Annual Report on the National Life (fiscal 1988)".
- Economic Planning Agency (1989), "Annual Report on the Economy (fiscal 1989)".
- Hagemann, R.P. and G. Nicoletti (1989), "Population ageing: economic effects and some policy implications for financing public pensions", OECD Economic Studies No.12, (Spring).
- Hayashi, F. (1986), "Why is Japan's saving rate so apparently high?" in S. Fisher (1986), NBER Macroeconomics Annual 1986, The MIT Press.
- Hayashi, F., T. Ito and J. Slemrod (1988), "Housing finance imperfections, taxation, and private saving: a comparative simulation analysis of the United States and Japan", Journal of the Japanese and international economies 2.
- Hayashi, F., A. Ando and R. Ferris (1988), "Life cycle and bequest savings", Journal of the Japanese and international economies 2.
- Heller, P. (1989), "Ageing, savings, pensions in the G7 countries: 1980-2025", IMF Working Paper, (January).
- Horioka, C.Y. (1986), "Why is Japan's private savings rate so high?", IMF, mimeo.

- Horioka, C.Y. (1988), "Saving for housing purchase in Japan", Journal of the Japanese and international economies 2.
- Horioka, C.Y. (forthcoming), "Why is Japan's household saving rate so high? a literature survey", Journal of the Japanese and international economies.
- Ishikawa, T. (1988), "Saving and labour supply behaviour of aged households in Japan", Journal of the Japanese and international economies 2.
- Ministry of Welfare (1987), "Annual Report on the Welfare (1986)".
- Mirrlees, J. (1967), "Optimum growth when technology is changing", Review of Economic Studies 34.
- Muto, T. et al. (1987), "Kousai no chuuritsu meidai : riron to sono jisshou bunseki (Bond neutrality: theory and its empirical studies)", Keizai bunseki 106 (Economic analysis) (in Japanese).
- Nicoletti, G. (1988), "A cross-country analysis of private consumption, inflation and the 'debt neutrality hypothesis'", OECD Economic Studies No.11, (Autumn).
- OECD (1988a), Ageing Populations. The Social Policy Implications.
- OECD (1988b), Economic Outlook 44.
- OECD (1988c), Reforming Public Pensions.
- OECD (1989), OECD Economic Survey, Japan.
- Richardson, P. (1987), "Recent developments in OECD's international macroeconomic model", OECD Working Papers No.46.
- Sato, K. (1988), "The role of the IS balance and its macroeconomic implications: the case of Japan", Journal of the Japanese and international economies 2.
- Shibuya, H. (1987), "Japan's household saving rate: an application of the life cycle hypothesis", IMF Working Paper No.87/15.
- Sturm, P.H. (1983), "Determinants of saving: theory and evidence", OECD Economic Studies No.1 (Autumn).
- Summers, L. (1986), in S. Fisher (1986), NBER Macroeconomics Annual 1986, The MIT Press.
- Tachibanaki, T. and O. Ichioka (1988), "Public investment, ageing trend and financing: general equilibrium evaluations", Papers and proceedings of the fourth EPA International Symposium.
- Takayama, N. et al. (1988), "Household asset holdings and saving rate in Japan", paper presented at the EPA International Symposium.
- Yoshitomi, M. et al. (1985), "Sekai keizai moderu no kouzou to dougaku tokusei, [The structure and property of the EPA World Economic Model (Vol. Feb. 1984)], Keizai bunseki 97 (Economic analysis) (in Japanese).

Table 1. Gross private saving rates
(per cent of gross national product)

	1960-70	1971-80	1981-87	1986	1987
	Annual Average				
Japan	28.7	29.9	26.8	27.1	25.8
United States	17.7	19.2	18.7	18.1	16.7
Germany	21.1	20.2	20.0	21.5	21.7
France	--	22.0	18.8	19.3	18.5
United Kingdom	13.1	16.4	17.7	16.8	16.3
Italy	19.7	22.9	21.7	--	--
Canada	18.1	20.7	22.5	21.3	21.3
Austria	20.8	21.7	21.1	21.6	23.0
Belgium	21.2	22.5	21.8	23.2	22.0
Denmark	--	14.8	15.2	10.9	11.4
Finland	18.2	19.3	20.0	18.0	19.7
Netherlands	--	20.8	22.8	23.7	22.3
Norway	19.4	18.8	19.2	14.5	17.1
Sweden	--	14.2	15.5	15.0	12.7
Australia	--	21.1	18.4	18.1	18.9
Average of above	--	21.0	20.4	20.2	19.4

Note: Figures are averages for the periods indicated. In the case of 1981-1987, the terminal year is 1985 for Italy.

Source: Annual National Accounts, OECD.

Table 2. Household saving-rate adjustments
 (average for 1970-1986 as per cent of household disposable income)

	Japan	United States	France	United Kingdom	Canada	Sweden
SNA	23.0	14.3	17.7	10.4	16.5	7.8
ADJ 1	26.1	23.6	24.6	19.0	27.3	16.8
ADJ 2	20.6	9.4	-	-	12.1	6.2
ADJ 3	25.8	13.9	18.4	10.8	17.9	13.1

Note: Figures are household gross saving rates for the following;

- SNA : as defined in SNA
- ADJ 1 : adjusted for consumer durables expenditure
- ADJ 2 : adjusted to exclude net equity of households in life insurance and pension funds
- ADJ 3 : adjusted to include saving in social security funds

Source: Blades (1988).

Table 3. Alternative definitions of the Japanese household saving rate

Case	Household saving rate for 1984 (per cent)
1	26.2
2	25.5
3	23.7
4	21.7
5	21.4
6	21.7
7	20.2
8	13.1
9	9.3

Note: Disposable income and consumption expenditure in the different cases is defined as follows (modifications are cumulative):

Case	<u>Disposable income</u>	<u>Consumption expenditure</u>
1	reported on the NSFIE and the FIES	reported on the NSFIE and the FIES
2	+ interest and dividend estimated from monetary asset holdings - interest and dividend reported in the NSFIE - interest payments for loans - remittance to relatives	- remittance to relatives
3	+ imputed rents for owner occupied housing reported in the NSFIE	+ imputed rents for owner occupied housing reported in the NSFIE
4	+ imputed rents by own estimates	+ imputed rents by own estimates
5	+ differential imputed rents for employer-provided housing, etc	+ differential imputed rents for employer-provided housing, etc
6	+ services from consumer durables	+ services from consumer durables - amount of consumer durables purchased
7	+ medical benefits in kind	+ medical benefits in kind
8	+ depreciation of consumer durables	Same as Case 7
9	+ depreciation of owner occupied housing	Same as Case 7

Source: Takayama *et al.* (1988).

Table 4. Saving motives -- Japan

(per cent of those giving each item as a major saving motive) (a)

For future consumption expenditure	
Children's educational expenses	42.0
Children's marriage expenses	15.5
Travel and other leisure expenses	6.1
For purchase of real assets	
Land/housing related	20.4
Purchase of consumer durables	9.4
Precautionary saving	
Illness and other unexpected disaster	76.4
Living expenses during old age	46.1

- a) Figures are the percentages of persons interviewed in 1987 for whom each motive is one of their top three motives for saving. A number of less important other motives are not shown, therefore figures do not add up to 100.

Source: "Public Opinion Survey on Saving", Central Council for Saving Promotion (1987).

Table 5. Factors affecting saving (a)

	Japan	United States	Germany	France	United Kingdom	Italy	Sweden
Household net saving rate (b)	17.5	8.7	12.2	12.5	6.5	19.6	4.3
Economic (c)							
Economic growth rate	6.6	3.2	3.1	3.7	2.4	3.8	2.9
Inflation rate	5.1	5.0	4.0	7.1	8.3	10.2	7.2
Saving motives							
University entrance ratio (d)	36.1	48.6	25.0	27.1	21.6	--	--
Land asset per household (e)	16.3	2.9	--	--	1.2	--	--
Dwelling ownership ratio (f)	62.4	64.7	40.7	50.7	60.9	--	--
Public pension ratio (g)	40.5	43.4	39.2	--	43.8	--	47.7
Aged participation ratio (h)	45.6	21.3	12.8	14.9	15.6	11.8	22.3
Institutional and cultural							
Annual working hours (i)	2 150	1 924	1 655	1 643	1 938	--	--
Retirement age (j)	62.3	63.6	62.0	62.4	65.4	--	--
Expanded families ratio (k)	50.2	3.4	--	9.1	2.4	--	--
Demographic (l)							
Young dependency ratio (m)	34.7	39.1	31.1	36.9	34.8	30.9	30.9
Aged dependency ratio (n)	12.1	16.6	21.7	20.8	22.0	17.6	23.5

- a) Figures are in per cent or percentage points in the average of following intervals or the year. Figures in other units are explained below.
- b) Average 1960 to 1987 for Japan, the United States and Germany, 1960 to 1985 for France and Italy, and 1960 to 1986 for the United Kingdom and Sweden.
- c) Average for 1961 to 1988.
- d) Proportion of the people who go to university or equivalents in their cohort. 1984 for Japan, 1982 for the United States and 1981 for the others.
- e) Million yen (1 dollar = 251.10 yen = 0.8647 pound) at the end of 1984.
- f) Proportion of the households who live in their own home or apartment. 1983 for Japan and the United States, 1982 for Germany and the United Kingdom and 1984 for France.
- g) Ratio of pension benefits to average wages in the manufacturing sector in 1983.
- h) Male labour force participation rate for persons aged 65 and over. Average for 1965 to 1985 for male.
- i) Hours per year including overtime working except for France in 1987.
- j) Average retirement age in Old-Age Schemes. 1983 to 1984 for male workers.
- k) Proportion of old people who live with their married son or daughter in 1980.
- l) Average for 1966 to 1985 for Germany, 1966 to 1971 and 1977 to 1986 for Italy and 1966 to 1986 for the others.
- m) Ratio of population aged 0-14 to those aged 15-64
- n) Ratio of population aged 65 and over to those aged 15-64

Sources: b), c) "Annual National Accounts", OECD
d) "International comparisons in Educational Indicators", Ministry of Education
e), f) Economic Planning Agency (1987)
g) Ministry of welfare (1987)
h) OECD (1988a)
i) Ministry of Labour
j) OECD (1988c)
k) "International Comparison Research on the Life and Concerns of the Aged People", Prime Minister's Office (1980).

Table 6. Determinants of saving
 (contributions to the excess of Japan's private saving rate
 over that of the United States)

Factor	Coefficient	Contribution (a)	
		Variant 1	Variant 2
Economic			
Income growth	+/-	1.6	-0.2
Inflation rate	+	-1.7	-1.4
Demographic			
Aged/working population (b)	-	11.5	8.1
Young/working population (c)	-	3.2	3.5
Aged participation ratio	-	-11.1	-7.7
Retirement age	+	N/A	3.7
Other			
Land price	+	5.0	3.6
Per capita income	-	3.9	2.6
Residual		0.1	0.0
Total		12.3	12.3

a) All figures are expressed in term of percentage points of the private saving rate. Variant 1 and Variant 2 correspond to alternative estimation results.

b) Ratio of population aged 65 and over to aged 20-64.

c) Ratio of population aged 0-19 to aged 20-64.

Source: Horioka (1986).

Table 7. Outlook for private saving rates

		Japan	United States	Germany	France	United Kingdom	Italy	Canada
<u>Dependency ratio</u>								
Young (a)	1980	50.7	56.1	46.1	54.3	52.6	53.3	57.1
	2000	37.9	47.0	36.4	50.5	43.0	40.8	44.4
	2010	42.4	43.0	34.4	46.5	43.2	41.9	41.3
	2025	42.8	45.4	33.1	40.6	43.5	39.5	44.0
Aged (b)	1980	15.1	19.6	26.9	25.1	26.6	24.0	16.5
	2000	24.1	22.1	28.7	24.5	25.8	26.1	18.5
	2010	31.6	22.9	35.2	23.1	25.9	28.4	20.6
	2025	38.5	34.9	41.3	26.4	32.1	32.8	34.6
<u>Private saving (c)</u>								
Young	1980-2000	11.8	8.4	8.9	3.5	8.8	11.5	11.7
	2000-2010	-4.1	3.6	1.9	3.7	-0.2	-1.0	2.9
	2010-2025	-0.3	-2.2	1.2	5.4	-0.3	2.3	-2.5
	1980-2025	7.3	9.8	12.0	12.6	8.3	12.7	12.1
Aged	1980-2000	-14.6	-3.9	-3.0	0.9	1.3	-3.5	-3.3
	2000-2010	-12.0	-1.4	-10.4	2.3	-0.1	-3.7	-3.4
	2010-2025	-11.2	-19.3	-9.9	-5.4	-10.1	-7.1	-22.5
	1980-2025	-37.8	-24.6	-23.3	-2.1	-8.9	-14.3	-29.2
Total	1980-2000	-2.9	4.5	5.9	4.4	10.0	8.0	8.4
	2000-2010	-16.1	2.2	-8.5	6.0	-0.3	-4.7	-0.5
	2010-2025	-11.5	-21.5	-8.7	0.1	-10.3	-4.8	-25.0
	1980-2025	-30.5	-14.8	-11.3	10.5	-0.6	-1.5	-17.0

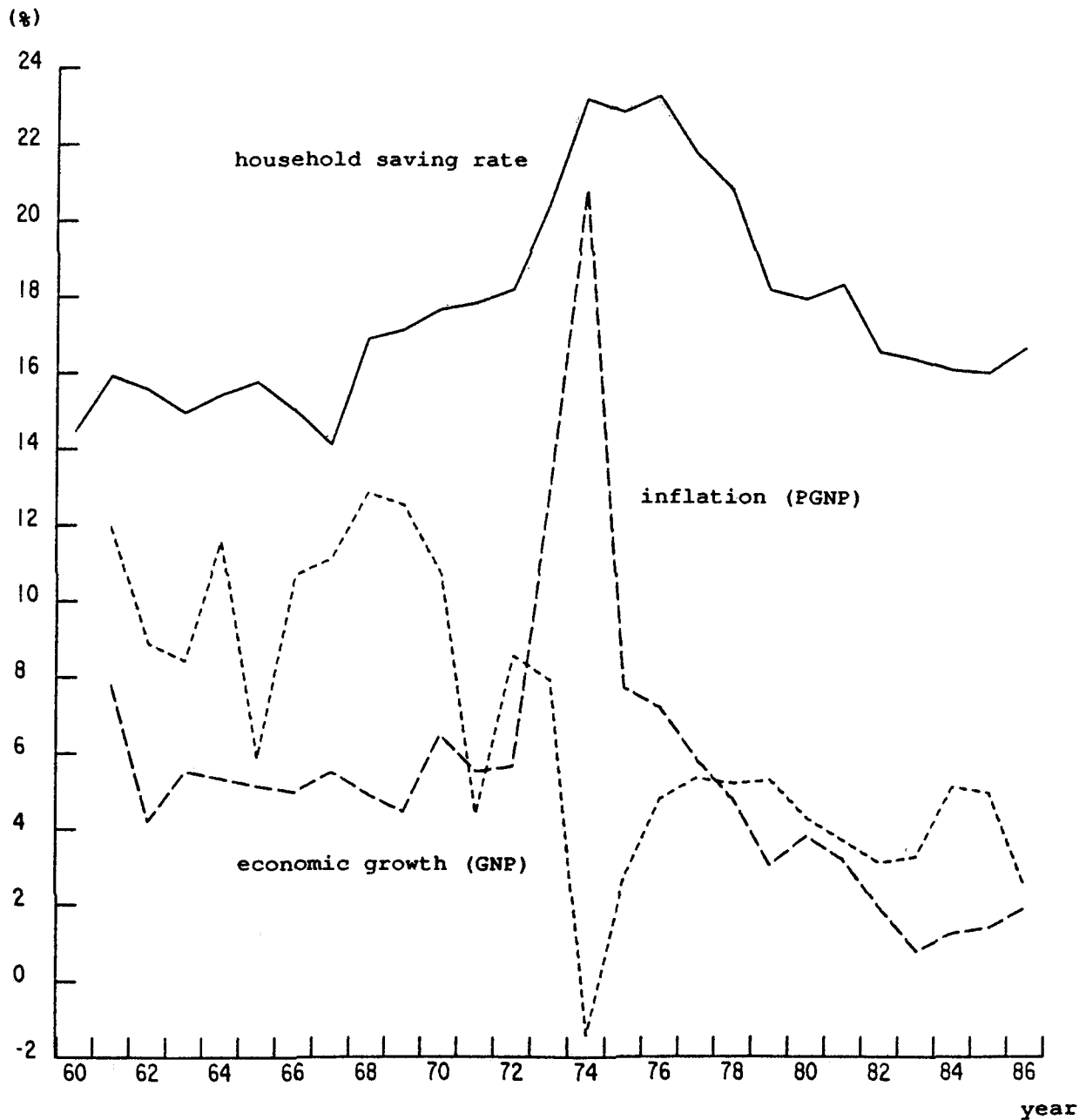
a) Ratio of population aged 0-19 to to aged 20-64.

b) Ratio of population aged 65 and over to aged 20-64.

c) Estimated change in percentage points in the ratio of private saving as a per cent of private national income during each period due to the change in each dependency ratio and total of them.

Sources: P. Heller (1989).

Chart 1. Household saving-rate developments



Source : "Annual Report on National Accounts (1988)", Economic Planning Agency.

31/1/90

ECONOMIC AND STATISTICS DEPARTMENT

WORKING PAPERS

In April 1983, the Economics and Statistics Department initiated a new series of economic studies entitled ESD Working Papers.

The following titles have been circulated:

1. Use of Demand Elasticities in Estimating Energy Demand (out of print)
Utilisation des élasticités de la demande dans l'estimation de la demande de l'énergie

Axel Mittelstädt

2. Capital, Energy and Labour Substitution: The Supply Block in OECD Medium-Term Models
Substitution du capital, de l'énergie et du travail : le bloc de l'offre dans les modèles à moyen terme de l'OCDE (épuisé)

Patrick Artus

3. Wage Formation in France: Sectoral Aspects (out of print)
Formation des salaires en France : aspects sectoriels (épuisé)

Patrick Artus

4. Service Lives of Fixed Assets (out of print)
Durée de vie utile des actifs fixes (épuisé)

Derek Blades

5. Resource Prices and Macroeconomic Policies: Lessons from Two Oil Price Shocks
Prix des ressources naturelles et politique macro-économique : les enseignements de deux chocs pétroliers (épuisé)

John Llewellyn

6. Output Responsiveness and Inflation: An Aggregate Study
Souplesse de la production et inflation : étude globale

David T. Coe and Gerald Holtham

7. The Determinants of Exchange Rate Movements (out of print)
Les déterminants des mouvements des taux de change (épuisé)

Graham Hacche

8. Simulated Macroeconomic Effects of a Large Fall in Oil Prices (out of print)
Simulation des effets macro-économiques d'une forte baisse des prix pétroliers

Flemming Larsen and John Llewellyn

9. Medium-Term Financial Strategy: The Co-ordination of Fiscal Monetary Policy (out of print)
Stratégie financière à moyen terme : la coordination des politiques monétaire et budgétaire (épuisé)

Jean-Claude Chouraqui and Robert Price

10. Price Dynamics and Industrial Structure: A Theoretical and Econometric Analysis (out of print)
Dynamique des prix et structure industrielle : une analyse théorique économétrique (épuisé)

David Encaoua (with collaboration from Paul Geroski and Riel Miller)

11. Evidence on Income Distribution by Governments (out of print)
L'Action exercée par l'Etat sur la redistribution du revenu

Peter Saunders

12. Labour Force Participation: An Analysis with Projections
Taux d'activité : analyse et projections

James H. Chan-Lee

13. The Demand for Money and Velocity in Major OECD Countries (out of print)
La demande de monnaie et la vitesse de circulation dans les grands pays de l'OCDE

A. Blundell-Wignall, M. Rondoni and H. Ziegelschmidt

14. The Conduct of Monetary Policy in the Current Recovery
La conduite de la politique monétaire dans la phase actuelle de reprise économique

Paul Atkinson and Jean-Claude Chouraqui

15. Structural Budget Deficits and Fiscal Stance (out of print)
Déficits budgétaires structurels et orientation de la politique
budgétaire (épuisé)

Patrice Muller and Robert W.R. Price

16. Monetary Policy in the OECD INTERLINK Model
La politique monétaire dans le modèle INTERLINK

A. Blundell-Wignall, M. Rondoni, H. Ziegelschmidt and J. Morgan

17. Real Gross Product in OECD Countries and Associated Purchasing Power
Parities (out of print)
Produit brut réel et parités de pouvoir d'achat dans les pays de
l'OCDE (épuisé)

Peter Hill

18. The OECD Compatible Trade and Production Data Base (out of print)
Base de données compatibles sur le commerce et la production de
l'OCDE

Derek Blades and Wendy Simpson

19. Nominal Wage Determination in Ten OECD Economies
Détermination des salaires nominaux dans dix économies de l'OCDE

David T. Coe and Francesco Gagliardi

20. Profits and Rates of Return in OECD Countries
Profits et taux de rendement dans les pays Membres de l'OCDE

James H. Chan-Lee and Helen Sutch

21. Real Interest Rates and the Prospects for Durable Growth
Taux d'intérêt réels et perspectives de croissance durable

Paul Atkinson and Jean-Claude Chouraqui

22. Energy Prices: Trends and Prospects
Les prix de l'énergie : évolution et perspectives

Axel Mittelstädt

23. Changes in the Composition of Output and Employment
Changements dans la composition de la production et de l'emploi
Axel Mittelstädt and Françoise Correia
24. Labour Market Flexibility and External Price Shocks
Flexibilité du marché du travail et chocs extérieurs sur les prix
F. Klau and A. Mittelstädt
25. Discrepancies Between Imports and Exports in OECD Foreign Trade
Statistics (out of print)
Ecart entre les importations et les exportations dans les
statistiques du commerce extérieur de l'OCDE
Derek Blades and Marina Ivanov
26. Aggregate Supply in INTERLINK: Model Specification and Empirical
Results
John Helliwell, Peter Sturm, Peter Jarrett and Gérard Salou
27. Commodity Prices in INTERLINK
Gerry Holtham, Tapio Saavalainen, Paul Saunders and Helen Sutch
28. Exchange Rates and Real Long-Term Interest Rate Differentials:
Evidence for Eighteen OECD Countries
David T. Coe and Stephen S. Golub
29. Method of Calculating Effective Exchange Rates and Indicators of
Competitiveness (out of print)
Martine Durand
30. Public Debt in a Medium-Term Context and its Implications for Fiscal
Policy
Jean-Claude Chouraqui, Brian Jones and Robert Bruce Montador
31. The OECD Compatible Trade and Production Data Base 1970-1983
Anders Brodin and Derek Blades

32. The Formulation of Monetary Policy: A Reassessment in the Light of Recent Experience
Paul Atkinson and Jean-Claude Chouraqui

33. Mécanismes de transmission et effets macro-économiques de la politique monétaire en France : les principaux enseignements économétriques
Marc-Olivier Strauss-Kahn

34. Pure Profit Rates and Tobin's q in Nine OECD Countries
James H. Chan-Lee

35. Wealth and Inflation Effects in the Aggregate Consumption Function
G.H. Holtham and H. Kato

36. The Government Household Transfer Data Base
Rita Varley

37. Internationalisation of Financial Markets: Some Implications for Macroeconomic Policy and for the Allocation of Capital
Mitsuhiro Fukao and Masaharu Hanazaki

38. Tracking the US External Deficit, 1980-1985: Experience with the OECD INTERLINK Model
Pete Richardson

39. Monetary Policy in the Second Half of the 1980s: How Much Room For Manoeuvre?
Kevin Clinton and Jean-Claude Chouraqui

40. Tax Reform in OECD Countries: Economic Rationale and Consequences
Bob Hagemann, Brian Jones and Bruce Montador

41. A Revised Supply Block for the Major Seven Countries in INTERLINK
Peter Jarrett and Raymond Torres

42. OECD Economic Activity and Non-Oil Commodity Prices: Reduced-Form Equations for INTERLINK
Gerald Holtham and Martine Durand
43. Import and Export Price Equations for Manufactures
Richard Herd
44. Price Determination in the Major Seven Country Models in INTERLINK
Ulrich Stiehler
45. International Investment-Income Determination in INTERLINK: Models for 23 OECD Countries and Six Non-OECD Regions
David T. Coe, Richard Herd and Marie-Christine Bonnefous
46. Recent Developments in OECD's International Macroeconomic Model
Pete Richardson
47. A Review of the Simulation Properties of OECD's INTERLINK Model
Pete Richardson
48. The Medium-Term Macroeconomic Strategy Revisited
Jean-Claude Chouraqui, Kevin Clinton and Robert Bruce Montador
49. Are Commodity Prices Leading Indicators of OECD Prices?
Martine Durand, Sveinbjörn Blöndal
50. Private Consumption, Inflation and the "Debt Neutrality Hypothesis" The case of Eight OECD Countries
Giuseppe Nicoletti
51. The Effects of Monetary Policy on the Real Sector: An overview of Empirical Evidence for Selected OECD Economies
Jean-Claude Chouraqui, Michael Driscoll and Marc Olivier Strauss-Kahn

52. The So-Called "Non-Economic" Objectives of Agricultural Policy
L. Alan Winters
53. Alternative Solution Methods in Applied General Equilibrium Analysis
Richard G. Harris
54. Tests of Total Factor Productivity Measurement
A. Steven Englander
55. Quantifying the Economy-Wide Effects of Agricultural Policies: A General Equilibrium Approach
Jean-Marc Burniaux, François Delorme, Ian Lienert, John P. Martin and Peter Hoeller
56. On Aggregation Methods of Purchasing Power Parities
J.R. and M. Cuthbert
57. An International Sectoral Data Base for Thirteen OECD Countries
F.J.M. Meyer-zu-Schlochtern
58. Empirical Research on Trade Liberalisation with Imperfect Competition: A Survey
J. David Richardson
59. Eliminating the US Federal Budget Deficit by 1993: the Interaction of Monetary and Fiscal Policy
R. Herd and B. Ballis
60. Compatible Trade and Production Data Base: 1970-1985
Claude Berthet-Bondet, Derek Blades and Annie Pin
61. Ageing Populations: Implications for Public Finances
Robert P. Hagemann, Giuseppe Nicoletti

62. The Economic Dynamics of an Ageing Population: the Case of Four OECD Economies
Alan J. Auerbach, Laurence J. Kotlikoff, Robert P. Hagemann, Giuseppe Nicoletti
63. Modelling Housing Investment for Seven Major OECD Countries
Thomas Egebo and Ian Lienert
64. Revised Groupings for non-OECD Countries in OECD's macroeconomic model ENTERLINK
Paul O'Brien, Laure Meuro, Arthur Camilleri
65. A Post Mortem on OECD Short-Term Projections from 1982 to 1987
Byron Ballis
66. Potential Output in the Seven Major OECD Countries
Raymond Torres and John P. Martin
67. Saving Trends and Behaviour in OECD Countries
Andrew Dean, Martine Durand, John Fallon and Peter Hoeller
68. The Impact of Increased Government Saving on the Economy
Richard Herd
69. The Information Content of the Terms Structure of Interest Rates: Theory and Practice
Frank Browne and Paolo Manasse
70. On the Sequencing of Structural Reforms
Sebastian Edwards
71. Modelling Business Sector Supply for the Smaller OECD Countries.
Raymond Torres, Peter Jarrett and Wim Suyker
72. The Role of Indicators in Structural Surveillance