EUROPEAN CENTRAL BANK

OECD OCDE

# COMPARISON OF HOUSEHOLD SAVING RATIOS

# EURO AREA/UNITED STATES/JAPAN[1]

More and more analysts tend to compare the three largest economic regions: the euro area, the United States and Japan. One of the occupational hazards for analysts is that international comparisons of statistics are still fraught with some difficulties. Despite the existence of well-developed international standards for national accounts, namely the System of National Accounts 1993 (SNA 93), in practice international comparisons are not as straightforward as they might appear. This study examines the comparability of household saving ratios for the euro area, the United States and Japan.

## 1 What is the household saving ratio and why is it important?

Households play a number of significant roles in the economy, including as consumers of final goods and services, as providers of labour services and recipients of labour income, as proprietors of unincorporated businesses and as a source of savings to fund investment in fixed assets. Their consumption and saving activities are summarised by what is called the "household saving ratio". It is derived as household saving divided by household disposable income (see box "The definition of the household saving ratio" for a more precise definition). Household disposable income comprises the current income of the households sector from production plus property and transfer receipts (such as interest, dividends and social benefits) minus payments (such as interest payments and income tax). Household disposable income may be either used for final consumption or saved. Movements in the household saving ratio over time are also used to explain and forecast the consumption behaviour of households. Analysts are also interested in the reasons for differences in movements in, and levels of, the household saving ratio between various countries.

### Box: The definition of the household saving ratio

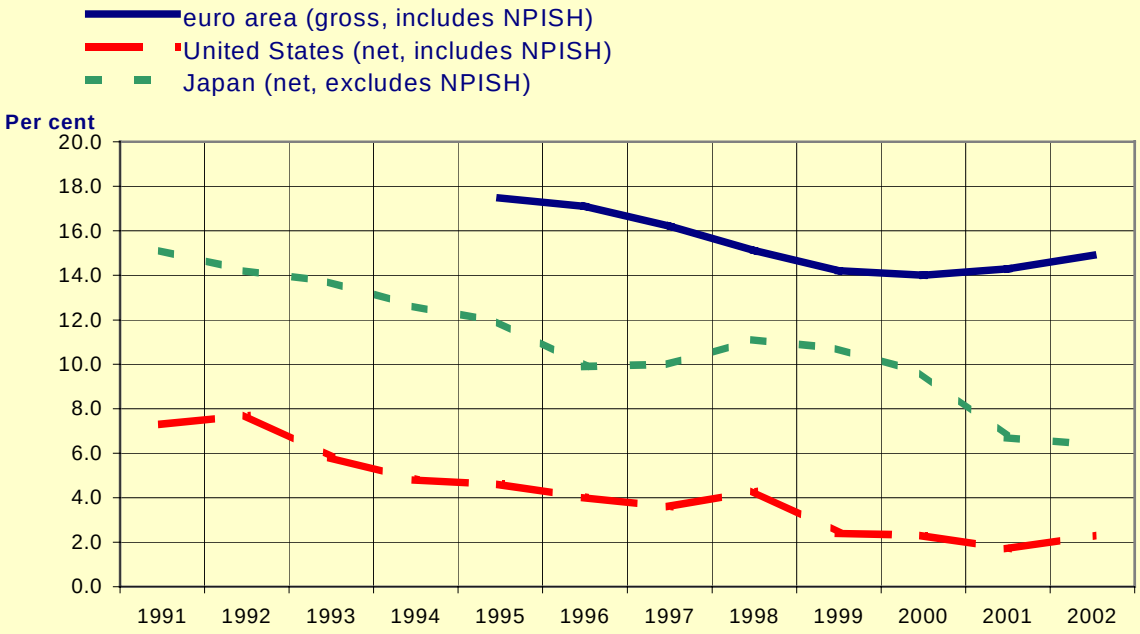
The household saving ratio has traditionally been defined as household saving divided by household disposable income. However, the SNA 93 introduced a special treatment of contributions to, and benefits from, funded pension schemes. Previously these flows were treated as financing transactions and included only in the financial accounts. In the SNA 93, partly in order to achieve greater correspondence with household income measures derived from household surveys, they were also included in the secondary distribution of income account, where the balancing item is disposable income. As this would have resulted in saving via pension funds being excluded from the measure for household saving, a special adjustment item was introduced in a new account entitled "Use of disposable income account" in order to derive household saving. The household saving ratio must therefore be calculated as the ratio of household saving (B.8 - SNA 93 code) divided by household disposable income (B.6) plus the adjustment for the change in net equity of households in pension funds (D.8). The United States has chosen not to follow the SNA 93 treatment regarding the inclusion of contributions and benefits relating to funded pension schemes in the household income accounts. Consequently, the adjustment item is not required and the traditional definition of the household saving ratio still applies.

[1] This study was undertaken as part of a wider project, jointly sponsored by the European Central Bank (ECB) and the Organisation for Economic Co-operation and Development (OECD), to investigate the comparability of analytical ratios derived from national accounts by institutional sector for the euro area, the United States and Japan.

## 2 Published and standardised household saving ratios

Chart 1 shows the annual household saving ratios as published by the ECB and the national statistical agencies in the United States and Japan. A straight comparison of the ratios shown in Chart 1 is misleading because there are differences in how the ratios are defined and compiled in practice. The differences principally relate to whether the saving ratios are gross or net of depreciation (referred to as "consumption of fixed capital" in the SNA 93) and whether non-profit institutions serving households (NPISH) are included or not. For any given country, the gross household saving ratio is always higher than the net household saving ratio. This is because the numerator (saving) is always much less than the denominator (disposable income), so that the resulting ratio is lower as depreciation is deducted from both of them.

**Chart 1: Household saving ratios - as published**




Source: ECB and national statistical agencies.

It is conceptually preferable to use net household saving ratios because the cost of using up capital assets in the process of production should be deducted from both income and saving. Nevertheless, in the context of international comparisons it may be preferable to use gross household saving ratios for all countries if estimates for depreciation[2] are deficient or non-existent for some countries. As not all countries in the euro area currently distinguish NPISH as a separate institutional sector, it is necessary to combine NPISH with the household sector for all countries included in this comparative study. Using the available data for most euro area countries, Chart 2 shows an experimental saving ratio for the euro area as a whole. Moreover, the ratios in Chart 2 have been adjusted so that they are on a net basis, to conform to the SNA 93 definitions, and include NPISH. Putting the ratios on this uniform basis reduces the differences in levels shown in Chart 1, although the gap between the ratios for the euro area and the United States[3] remains significant. Three possible explanations for these differences are analysed in the next section.

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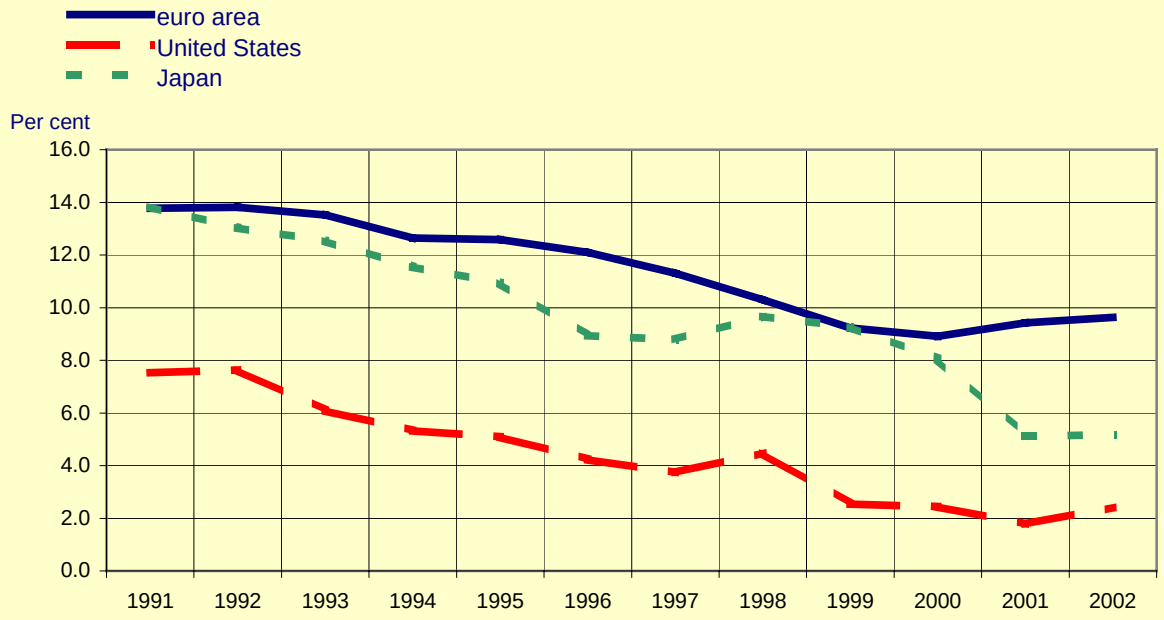
2 Estimates of depreciation in Japan's institutional sector accounts are on a book value basis but the adjustments to a replacement cost basis are shown in the reconciliation accounts. Since replacement cost is the preferred conceptual basis for depreciation, estimates of net saving and net household disposable income for Japan have been recalculated on this basis.

3 Small adjustments were required for the United States because of definitional differences in the National Income and Product Accounts relating to "disposable personal income" and in order to include an accrual adjustment to compensation of employees. The estimates for the household saving ratio for the euro area relate to the euro area excluding Ireland and Luxembourg.

**Chart 2: Net household saving ratios - standard definition**




Sources: OECD, National Accounts of OECD Countries database, 2004 and national statistical agencies.

## 3 Possible causes for differences of the standardised household saving ratio

The differences in legal and administrative arrangements between countries can result in different household saving ratios even if the underlying economic behaviour of households in those countries is equivalent. Therefore it is of interest for the purposes of such a comparative analysis to quantify the impact of those institutional differences. At the outset, however, it should be made clear that the 'hypothetical' adjustments below lead to figures that deviate from the institutional reality in the areas concerned. Besides, they can only provide "first-order" approximation for the effect of institutional differences between countries, because in reality the economic behaviour of households would be affected if the institutional arrangements in a country actually changed. Three factors are discussed below: (1) household consumption of public services; (2) income tax versus taxes on production; and (3) social security schemes versus private pension schemes.

### *3.1 Household consumption of public services*

The extent to which the government or the individual pays for services such as education and health varies considerably between countries. On the assumption that government provision of services used by specific households is financed by income taxes from those households, household saving will not be directly affected by these differences between countries, although household saving ratios will be. This effect may be illustrated by considering two hypothetical situations for the same country. In the first scenario no services are provided by the government to specific households. In the second scenario the government provides free health and education services, and finances these by increasing income taxes from households. Consequently, in the second scenario both household disposable income and household final consumption expenditure will be lower than in the first scenario, while household saving will be unaffected. Therefore, the household saving ratio will be higher in the second scenario because the denominator of the ratio will be lower by the amount of additional income tax that is required to finance the free education and health services.

Fortunately, one of the innovations of the SNA 93 was the disaggregation of government final consumption expenditure into individual (e.g. education and health) and collective (e.g. defence) expenditure. These new aggregates are included in two new accounts in the SNA 93 and enable an alternative household saving ratio

to be calculated using adjusted disposable income (the sum of household disposable income and government individual consumption) rather than disposable income in the denominator.

The differences between the simulated saving ratios and the standardised ratios in Chart 2 are shown in Table 1. The changes tend to reduce the gap between saving ratios in the euro area and the United States. This is due to the fact that a more significant level of services is provided by the government to specific households in the euro area than in the United States, as well as to the initial difference in savings rates. In most years the adjustments for Japan lie roughly midway between those for the euro area and those for the United States.

**Table 1: Changes from standardised household saving ratios: household consumption of public services**

(percentage points)

| | euro area | United States | Japan |
|---|---|---|---|
| **1991** | -2.1 | -0.6 | -1.4 |
| **1992** | -2.1 | -0.6 | -1.4 |
| **1993** | -2.1 | -0.5 | -1.4 |
| **1994** | -2.0 | -0.4 | -1.3 |
| **1995** | -1.9 | -0.4 | -1.3 |
| **1996** | -1.9 | -0.3 | -1.1 |
| **1997** | -1.8 | -0.3 | -1.1 |
| **1998** | -1.6 | -0.3 | -1.2 |
| **1999** | -1.4 | -0.2 | -1.2 |
| **2000** | -1.4 | -0.2 | -1.1 |
| **2001** | -1.5 | -0.1 | -0.7 |
| **2002** | -1.5 | -0.2 | -0.7 |

Sources: OECD, National Accounts of OECD Countries database, 2004 and national statistical agencies.

### *3.2 Income taxes versus taxes on production and imports*

The government raises revenue from households either directly by means of direct taxes (mainly income taxes) or indirectly by means of taxes on production and imports that are reflected in household final consumption expenditure (value added tax, import duties, sales tax, etc.). The value of household saving is not directly affected by the mix of these taxes, since both types effectively enter into current outlays (taxes on production and imports via (higher) household final consumption expenditure, and income taxes directly as a current transfer to the government and (lower) disposable income). However, other things being equal, household saving ratios will be lower the greater the reliance on taxes on production and imports since taxes on income are deducted in deriving household disposable income, but taxes on production are not.[4]

The hypothetical adjustments to the household saving ratios, shown in Table 2, are in the opposite direction to those for household consumption of public services and increase the gap between the ratios for the United

[4] The precise method of making a hypothetical adjustment for this factor is complicated because there are a range of possible approaches and because it is difficult to allocate taxes on production and imports across the categories of final demand. The adjustment used here is based on the notion that net taxes on products could be replaced by additional income taxes on households and hence it involves subtracting net taxes on products (i.e. on goods and services) from household disposable income to derive a modified household saving ratio.

States and the euro area by approximately two percentage points. The adjustments for Japan are higher than those for the United States, but significantly lower than those for the euro area.

**Table 2: Changes from standardised household saving ratios: income taxes versus taxes on production and imports**

(percentage points)

| | euro area | United States | Japan |
|---|---|---|---|
| **1991** | 2.3 | 0.4 | 0.6 |
| **1992** | 2.4 | 0.4 | 0.6 |
| **1993** | 2.3 | 0.3 | 0.6 |
| **1994** | 2.3 | 0.3 | 0.6 |
| **1995** | 2.3 | 0.3 | 0.6 |
| **1996** | 2.2 | 0.2 | 0.5 |
| **1997** | 2.1 | 0.2 | 0.5 |
| **1998** | 2.0 | 0.3 | 0.7 |
| **1999** | 1.9 | 0.1 | 0.6 |
| **2000** | 1.8 | 0.1 | 0.5 |
| **2001** | 1.8 | 0.1 | 0.4 |
| **2002** | 1.9 | 0.1 | 0.4 |

Sources: OECD, National Accounts of OECD Countries database, 2004 and national statistical agencies

### *3.3 Social security schemes versus private pension schemes*

The comparability of household saving across countries may also be affected by the relative importance of social security schemes organised by the government as compared with private pension or life insurance schemes. The reason is that contributions to private pension or life insurance schemes and the income earned by these schemes are both included in household saving, whereas any excess of contributions paid to government to support social security schemes over the benefits received for them is not regarded as household saving. To estimate the impact of different pension arrangements, transactions relating to private pension schemes can be recorded in a similar fashion to those relating to social security schemes. Consequently, hypothetically adjusted household saving ratios can be derived by subtracting the net change in equity of households in pension funds from both household saving and disposable income. The differences between these ratios and the standardised ratios in Chart 2 are shown in Table 3.

The simulated adjustments to the household saving ratios are particularly significant for the United States (ranging from 3.5 to 6.2 percentage points) in view of its extensive use of privately organised pension schemes for the provision of retirement income. A contributing factor to the smaller adjustments for the United States in the latter part of the decade is that employer contributions to defined benefit schemes were reduced because of the extent of property income and capital gains earned by these funds during the stock market boom of the 1990s. For the euro area and Japan, the adjustments have been around one percentage point for most years over the last decade.

**Table 3: Changes from standardised household saving ratios: social security schemes versus private pension schemes**

(percentage points)

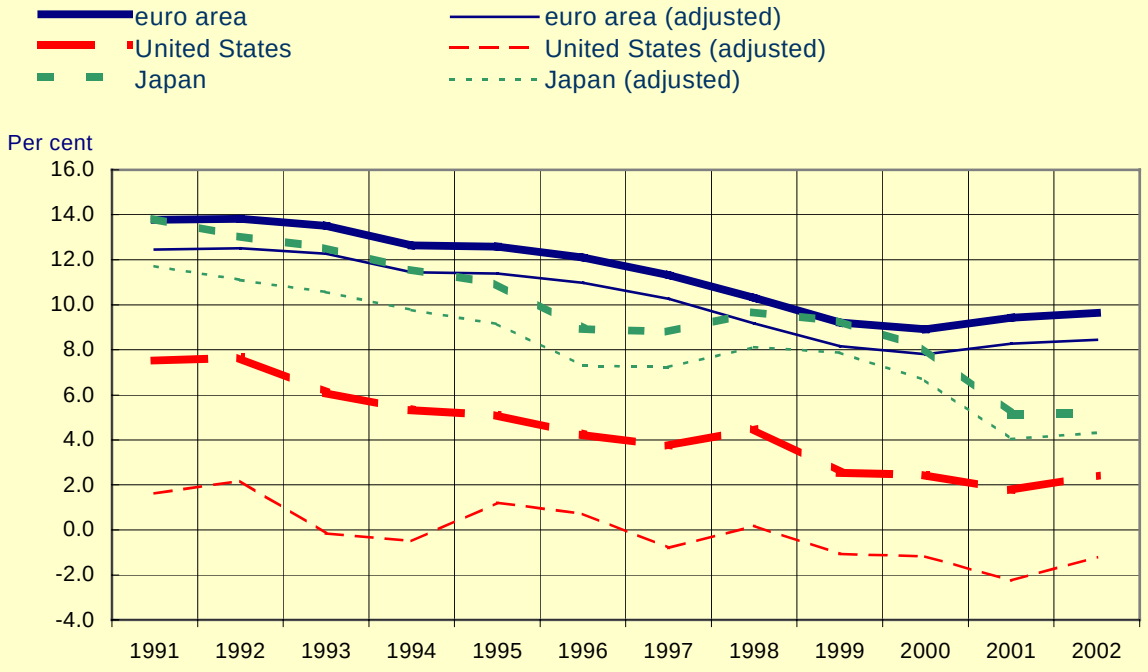
| | euro area | United States | Japan |
|---|---|---|---|
| **1991** | -0.9 | -5.8 | -1.2 |
| **1992** | -0.9 | -5.4 | -1.1 |
| **1993** | -0.8 | -6.2 | -1.1 |
| **1994** | -0.9 | -5.8 | -1.0 |
| **1995** | -0.9 | -3.9 | -1.0 |
| **1996** | -0.8 | -3.5 | -1.0 |
| **1997** | -0.8 | -4.6 | -0.9 |
| **1998** | -0.9 | -4.3 | -1.0 |
| **1999** | -0.9 | -3.6 | -0.8 |
| **2000** | -1.0 | -3.7 | -0.8 |
| **2001** | -0.9 | -4.1 | -0.7 |
| **2002** | -1.0 | -3.7 | -0.4 |

Sources: OECD, National Accounts of OECD Countries database, 2004 and national statistical agencies

### *3.4 Household saving ratios after a hypothetical adjustment for the three institutional factors*

Chart 3 shows the net effect of making the three hypothetical adjustments simultaneously for: (1) household consumption of public services; (2) income taxes versus taxes on production and imports; and (3) social security schemes versus private pension schemes. The net effect of these adjustments is to increase the difference between the euro area household saving ratios and those for Japan (marginally) and for the United States (significantly).

**Chart 3: Comparison of standardised HSRs and adjusted HSRs**




Sources: OECD, National Accounts of OECD Countries database, 2004 and national statistical agencies.

## 4 Other factors affecting the comparability of household saving ratios

In addition to the factors arising from different institutional arrangements, there are a number of other factors that may help to explain differences in household saving ratios between countries: possession of household durables; real net interest payments; potential and realised capital gains and losses; capital gains taxes; and other issues relating to pension schemes. Unfortunately, insufficient comparable data are available to quantify the impact of these factors, except for some estimates regarding possession of household durables in the United States and Japan.

Individual households may regard the purchase of consumer durables (such as cars, furniture and washing machines) not as consumption but as an investment, even though they are not treated as such (for good reasons) in the SNA 93. A hypothetically adjusted saving ratio could then be derived by treating household durables as fixed assets (similar to residential housing) rather than as final consumption expenditure. According to the rental equivalence approach, household final consumption expenditure is adjusted by subtracting purchases of consumer durables and by adding depreciation for consumer durables. This only affects the difference in saving ratios per country to the extent that the proportion of household consumption spent on durables and the growth rate of durables consumption differ. Estimates produced by the OECD for the United States and Japan show household saving ratios adjusted for household durables that are both sometimes more than three percentage points higher than the respective standardised household saving ratios.

## Conclusions

Published household saving ratios are not fully harmonised across countries. Chart 2 in this study presents, for the first time, experimental comparable saving ratios for the euro area, the United States and Japan. Although the ratios for all three economic areas declined in the course of the 1990s, the difference between the ratios in the euro area (9.6% in 2002) and the United States (2.4% in 2002) is significant and has even risen during that period. Japan has had a household saving ratio close to that of the euro area, except for 2001 and 2002 (5.2%).

Part of this difference could potentially be explained by the varying legal and administrative arrangements in the areas concerned. The study analyses for three of these arrangements the possible effects on the household saving ratio: (1) the level of household consumption of public services; (2) the financing of government expenditure through income taxes or taxes on production and imports (like VAT); and (3) the organisation of pension arrangements through social security schemes or private pension schemes. Each of these causes could be behind some of the differences in the household saving ratios, but - when taken together - the divergence among the three areas concerned actually increases. A number of other factors, including households' attitudes towards consumption and saving, and their possession of household durables, must be the cause of the differences between household saving ratios for the euro area, the United States and Japan.

## Glossary

**Consumption of fixed capital:** the reduction in value of fixed assets used in production during the accounting period resulting from physical deterioration, normal obsolescence or normal accidental damage.

**Defined benefit pension plans:** pension plans in which the level of pension benefits promised to participating employees is guaranteed; benefits are related by a formula to a participant's length of service and salary and are not totally dependent on either the participant's contributions or the assets in the fund.

**Euro area:** the area comprising those EU Member States (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain) in which the euro has been adopted as the single currency in accordance with the Treaty on European Union and in which a single monetary policy is conducted by the European Central Bank.

**European System of Accounts 1995 (ESA 95):** the application of the SNA 93 to the European Union and its Member States.

**Non-profit institutions (NPIs):** legal or social entities created for the purpose of producing goods and services whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them.

**Non-profit institutions serving households (NPISH):** NPIs which are not predominantly financed and controlled by government and which provide goods or services to households free or at prices that are not economically significant.

**System of National Accounts 1993 (SNA 93):** a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, classifications and accounting rules.