

# COMPARABILITY OF STATISTICS FOR THE EURO AREA, THE UNITED STATES AND JAPAN

## ARTICLES

Comparability  
of statistics  
for the  
euro area,  
the United States  
and Japan

*The international comparison of key macroeconomic indicators plays an increasingly important role in economic and monetary analysis. The economic situation in the euro area is regularly assessed in comparison with two other large economies: the United States and Japan. However different statistical concepts, data coverage, accounting conventions and compilation practices affect the comparability of statistics. The international harmonisation of statistics has progressed considerably over recent years. While the headline figures for the euro area, the United States and Japan are often not completely comparable, certain adjustments can be performed or alternative statistical indicators compiled which facilitate comparison. However, headline indicators also frequently reflect certain peculiarities of the individual economies and, consequently, full harmonisation of these between the euro area, the United States and Japan might imply a loss of relevant information.*

## I INTRODUCTION

The comparison of macroeconomic indicators for the euro area with those for the United States and Japan is an integral part of monetary, economic and structural analyses. Cross-country comparisons provide a measure of the relative economic situation. Moreover, they allow the impact of different institutional features on macroeconomic developments to be analysed.

A rigorous comparative analysis between the euro area, the United States and Japan is greatly facilitated by comparable statistical data. It is therefore essential to explain the differences between the indicators and to provide additional indicators or estimates that allow international comparisons.

In the past decade, international harmonisation has improved considerably in the area of macroeconomic statistics as a result of the further development and implementation of international standards in various statistical fields. Table 1 presents an overview of the main recent methodological developments. These improvements notwithstanding, international comparisons of economic indicators remain complex. Analysis suggests that differences in concepts, data coverage, accounting conventions and compilation practices are the main factors limiting the comparability of statistics. Furthermore, the application of the same statistical measures to market economies with different institutional settings may

require careful analysis. For example, the household saving ratio measured in line with national accounts concepts may show rather different results depending on the institutional settings for old age pension schemes.<sup>1</sup>

This article focuses on the statistical comparability of a selected set of key indicators for the euro area, the United States and Japan and will not address comparability issues related to institutional settings. The indicators chosen are among those closely monitored by the ECB in the conduct of monetary policy.<sup>2</sup>

The article is organised as follows. Section 2 gives an overview of the factors impairing comparability as well as a summary assessment of key indicators. Section 3 analyses in more detail the comparability of some of these key economic indicators, namely inflation rates, GDP, unit labour costs, bank credit aggregates, indebtedness indicators and government deficit/surplus. These statistics are of particular interest with regard to their international comparability or lack thereof. Wherever possible, euro area indicators have been compared in detail to both the US and Japanese equivalents. Owing to data constraints, a systematic analysis of the comparability of Japanese statistics is not always possible. Section 4 concludes.

1 See "Comparison of household saving ratios: euro area, United States, Japan", ECB/OECD, 9 June 2004.

2 Monetary aggregates are not covered in this article as the definition and measurement of these aggregates depend on institutional characteristics.

**Table I Main recent international methodological developments in statistics**

Statistical fields	Name	Publication date <sup>1)</sup>	Leading international organisation(s)
National accounts	System of National Accounts 1993 (1993 SNA)	1993	United Nations Statistical Division (UNSD), IMF, World Bank, European Commission (Eurostat), OECD
Labour statistics	International Recommendations on Labour Statistics <sup>2)</sup>	1919-2004	International Labour Organization (ILO)
Monetary and financial statistics	Monetary and Financial Statistics Manual	2000	IMF
	Compilation Guide on Financial Soundness Indicators	2003	IMF
Government finance statistics	Government Finance Statistics Manual 2001	2001	IMF
Balance of payments statistics	Balance of Payments Manual	1993	IMF
External debt statistics	External Debt Statistics: Guide for Compilers and Users	2003	IMF, BIS, Eurostat, OECD, World Bank
International reserves	Data Template on International Reserves and Foreign Currency Liquidity	1999	IMF
Trade statistics	International Merchandise Trade Statistics: Compilers Manual	2003	UNSD, World Trade Organisation (WTO), World Customs Organisation (WCO), IMF, OECD, Eurostat
Nomenclature of products	Standard International Trade Classification, Revision 3 (SITC, Rev. 3)	1986	UNSD
Nomenclature of activities	International Standard Industrial Classification of All Economic Activities (ISIC Rev. 3.1)	2002	UNSD
Consumer price index	Consumer Price Index Manual: Theory and Practice	2004	ILO, IMF, OECD, Eurostat, United Nations Economic Commission for Europe (UNECE), World Bank
Producer price index	Producer Price Index Manual: Theory and Practice	2004	ILO, IMF, OECD, UNECE, World Bank
Export and import price index	IMF Export and Import Price Index Manual	2004	IMF, ILO, OECD, UNECE, World Bank

Note: For more methodological work in the field of statistics, see the UNSD website: <http://unstats.un.org/unsd/progwork/>.

1) First release date.

2) Labour statistics are also covered by SNA 93 standards.

## 2 UNDERLYING FACTORS AFFECTING THE COMPARABILITY OF STATISTICS

Four main factors affecting the comparability of statistics can be identified, namely differences in i) statistical concepts and related detailed definitions, ii) data coverage, iii) practices with regard to accounting conventions, and iv) compilation methods.

First, the use of different concepts and related detailed definitions may affect comparability. For example, for several euro area countries, the national headline figures for unemployment frequently follow administrative definitions (e.g. those registered at government labour

offices) that diverge from the standardised definition of unemployment. Comparable unemployment statistics are compiled on the basis of the definitions adopted by the International Labour Organization (ILO). These define the unemployed as persons of working age who, in the reference period, are without work, are available for work and have taken steps to find work. In all three economic regions the comparable headline unemployment data are collected from households in a sample survey<sup>3</sup> using ILO guidelines. Some minor divergences

<sup>3</sup> The collection of unemployment statistics is part of what are known as the labour force surveys.

concerning, for instance, the definition of age limits continue to exist.

Second, the coverage of national data may differ with regard to the territory of the economic area, the population or the sectors of activity. For example, headline US unit labour cost statistics only refer to the non-farm business sector of the economy, while for the euro area the headline indicator covers the whole economy.

Third, differences in practice arise with regard to the accounting conventions used in the source data. In particular, the use of different valuation methods, such as market versus nominal values or different periods of recording, has an influence on data comparability. For government finance statistics different recording periods are used. In the euro area, government finance statistics are published on a calendar year basis, whereas, in the United States and Japan, they are compiled on a fiscal year basis (with these two countries in turn having different fiscal years<sup>4</sup>).

Fourth, comparability can also be limited by the use of different practices to compile aggregated figures. For instance, the euro area presents consolidated general government debt data, whereas the United States and Japan adopt a non-consolidated presentation of the general government debt data.

Table 2 provides an overview of the comparability of selected statistics. Headline figures for GDP, consumption, investment and balance of payments for the euro area and Japan are deemed generally comparable. Slight differences in US indicators can be traced back to deviations in the SNA 93 concept for the components of GDP and differences in compilation practices. Unemployment indicators for the three economic areas are almost comparable, in spite of the small divergences mentioned above.

For most of the other key indicators, differences in concepts and detailed definitions can be partly overcome by either introducing adjustments or by using alternative indicators compiled and published by the statistical authorities. In some cases, these alternative indicators also require adjustments to allow meaningful comparisons with euro area indicators (e.g. employment or inflation rates). In others, adjustments of headline figures can be performed in order to make comparisons possible (e.g. unit labour costs, indebtedness or government statistics). In the case of credit statistics, a comparable indicator for the United States could be constructed by adjusting the coverage of the banking sector. So far, this has not been possible for Japan. Finally, for a number of indicators used in the euro area, such as the whole economy hourly labour cost index, MFI interest rates to households for house purchases and debt security issuance, no equivalent exists.

<sup>4</sup> The fiscal year is defined in the United States as the period between October and the following September, while in Japan it runs from April to March.

**Table 2 Overview of the comparability of selected indicators**

Euro area headline indicators	To be compared with	Assessment	
		United States	Japan
HICP	CPI excluding imputed rents	Comparable (product coverage similar to HICP definition)	Comparable (product coverage similar to HICP definition)
GDP	Headline	Almost comparable (nominal GDP: slight deviations for the treatment of software expenditure, shadow economy, military expenditure, FISIM; GDP volume change: slight deviations for the treatment of quality changes, non-market sectors output and the choice of index number)	Comparable
Consumption	Headline	Comparable	Comparable
Investment	Headline adjusted (US)	More comparable (after adjustment for the treatment of military weapons but no adjustment for the treatment of software capitalisation)	Comparable
Unit labour costs	Headline adjusted (US)	Comparable (after adjustments for volume changes of GDP; expansion of the non-farm business to the whole economy and use of persons employed instead of number of hours worked for employment definition)	Information not available
Labour cost index	None	Not comparable (different definition: euro area indicator refers to changes in costs of labour per hour using recent industry and country weights whereas US indicator describes changes in employer costs for a fixed basket of labour eliminating compositional changes)	Information not available
Unemployment	Headline	Almost comparable (unemployment statistics derived from a household survey in line with ILO guidelines but differences in the sample period, target population, treatment of temporary lay-offs and age limit definition)	Almost comparable (unemployment statistics derived from a household survey in line with ILO guidelines but differences in the sample period, target population and age limit definition)
Employment	Labour force survey employment (US) Headline (Japan)	More comparable (employment definition based on persons employed but no adjustment for the treatment of the shadow economy)	Almost comparable (but no adjustment for the treatment of the shadow economy)
Bank credit	Headline adjusted (US)	Comparable (after adjustment for the banking sector coverage)	Not comparable (no possible adjustment)
Debt security	None	Not comparable (different valuation, sector and instrument coverage)	Information not available
MFI interest rates to households for house purchases	None	Not comparable (different definition, banking sector coverage and calculation methods)	Not comparable (different definition).
Households' indebtedness	Headline adjusted (US) Headline (Japan)	More comparable (after adjustment of the households' gross disposable income but no adjustment for the exclusion in households of sole proprietorships and most partnerships without independent legal status)	Comparable

### 3 COMPARABILITY OF SELECTED STATISTICAL INDICATORS

#### CONSUMER PRICE INDICATORS

The ECB's main objective is to maintain price stability in the euro area. The harmonised index of consumer prices (HICP) published by Eurostat is the headline reference indicator for the euro area to measure consumer price

developments. The US indicator that is most comparable to the HICP is the national consumer price index (CPI), which is one of the price indices used by the Federal Reserve System in its analysis. In addition, the US CPI is used for indexation purposes as an approximation of the change in the cost of living. However, the Federal Reserve System uses a number of alternative measures of

Table 2 Overview of the comparability of selected indicators (cont<sup>1</sup>)

Euro area headline indicators	To be compared with	Assessment	
		United States	Japan
Non-financial corporations' indebtedness	Headline (US) Headline adjusted (Japan)	Almost comparable (no adjustment for the inclusion of sole proprietorships and most partnerships without independent legal status and for the different valuation of debt securities (nominal value adjusted for accrued interest instead of market prices as in the euro area))	Comparable (after subtraction of inter-company loans)
Government surplus/deficit	Headline adjusted	More comparable after adjustments to the calendar year and general government sectoral coverage but difference in time of recording not adjusted (cash basis for some transactions instead of accrual basis as in the euro area)	More comparable after adjustments to the calendar year but difference in time of recording not adjusted (cash basis for some transactions instead of accrual basis as in the euro area)
Government debt	Headline adjusted	More comparable (after adjustments to calendar year and general government sectoral coverage but valuation (nominal value including accrued interest instead of nominal value as in the euro area), and instrument coverage differences not adjusted)	More comparable (after adjustments to calendar year but valuation (market value instead of nominal value as in the euro area) and instrument coverage differences not adjusted)
Balance of payments	Headline	Almost comparable albeit a more traditional presentation; high coverage of reinvested earnings, especially related to indirect relationships of foreign affiliates; portfolio investment (assets and liabilities) vis-à-vis transactor (may differ from the issuer of the security, or the end-investor); some money market instruments recorded as other investment	Comparable in general; portfolio investment liabilities vis-à-vis transactor

Notes: Differences for US and Japanese indicators are assessed vis-à-vis the definition used for euro area indicators. "Almost comparable" refers to the existence of some small caveats which cannot be adjusted, whereas "more comparable" indicates some enhancement of comparability after adjustments.

consumer price inflation of which the most prominent is the "core" Personal Consumption Expenditure (PCE) deflator that excludes food and energy. For Japan, the indicator most comparable to the euro area HICP is the national CPI, while the Bank of Japan focuses its analysis and projections on the overall CPI excluding fresh food. The different product coverage of the euro area HICP and US and Japanese CPIs is the most significant factor restricting the comparability of the indicators.

While the euro area HICP and Japanese CPI aim to measure the pure price changes in the same consumption basket between the current period and the base period (cost-of-goods index), the US CPI is an approximation of a cost-of-living index measuring the minimum cost of maintaining a constant utility over time. Although these two approaches differ in theory, their application shares many common features.

The main statistical difference affecting the comparability of the indicators relates to the treatment of owner-occupied housing. While this component is not yet covered by the HICP, it is accounted for in the CPI for both the United States and Japan by assuming that these prices move in line with rents (imputed rents).<sup>5</sup> The impact of this inclusion in the overall inflation rate for the US CPI is estimated to amount to 0.2 percentage point for the annual average growth rate in the period from 1999 to 2004. In addition, there are several other differences which are more difficult to quantify. The difference in the practice of updating expenditure weights hardly plays a role at the aggregate level. The impact of the differences

5 The inclusion of owner-occupied housing in the HICP is currently being considered by Eurostat. A decision has been made to use the net acquisition approach (instead of imputed rents), i.e. to reflect the changes in actual prices of dwellings acquired by households from other sectors of the economy.

in sampling practices and population coverage<sup>6</sup> is hard to assess. Furthermore, the methods used for adjusting for changes in quality of the goods and services covered differ to some extent. In particular, the US CPI makes extensive use of so-called hedonic methods<sup>7</sup> for quality adjustment, which are only rarely used in the euro area HICP. These differences cannot easily be adjusted.

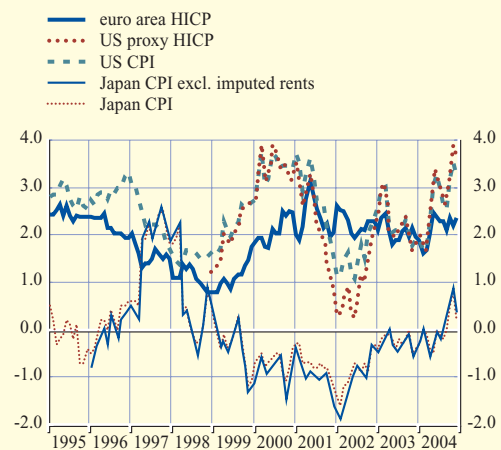
As the headline inflation figures for the euro area, the United States and Japan are not directly comparable, alternative indicators should be used for international comparisons. For the United States, a rough proxy of the euro area HICP is available, which the Bureau of Labor Statistics (BLS) has constructed by recompiling the available US CPI data excluding imputed rents and aggregating them following the HICP methodology. For Japan, the CPI excluding imputed rents can be used as an approximation (see Chart 1).

For Japan, the difference between headline inflation figures and the alternative indicator remained fairly constant in the period under review. However, for the United States it fluctuated, with a peak occurring in 2001 and 2002 in connection with a significant increase in the owner-occupied housing component during that period.

The lack of comparability between the euro area HICP and the US PCE deflator is due to a difference in concepts. The PCE deflator is a national accounts deflator reflecting the average increase in prices for all personal consumption of residents. The HICP measures the average change in prices for a representative basket of goods and services. Changes in the PCE deflator tend to be lower than changes in consumer price indices on account of the construction methods used<sup>8</sup>. Furthermore, monthly PCE deflator figures are regularly revised and finalised only after a substantial delay, with the release of the annual figures. Since last year, a so-called market based PCE deflator has been published that has

Chart 1 Key inflation indicators

(annual percentage changes)



Sources: Eurostat, BLS and Japanese Statistics Bureau.

a coverage similar to the CPI, but uses the aggregation formula of the PCE deflator.

## GROSS DOMESTIC PRODUCT

GDP and its components are used intensively in monitoring economic performance. Owing to the application of international standards such as SNA 93, there appear to be only limited differences in concepts and definitions for (nominal) GDP and few compilation issues regarding GDP volume growth (i.e. real GDP growth).

When comparing GDP data, it can be observed that the euro area and Japan follow very similar

- 6 All household expenditure within the territory of the euro area (including visitors' expenditure) are covered by the HICP, whereas only resident households (including expenditure abroad) are covered by the US and Japanese CPIs. Moreover, the US CPI includes only the urban population, which represents 87% of the total population.
- 7 Hedonic methods are deflation techniques based on a regression of the prices of a basket of goods on a set of qualities or characteristics of those goods.
- 8 The PCE deflator is constructed as a Fisher index, i.e. the geometric mean of a Laspeyres and a Paasche index referring to the consumption patterns of two adjacent periods. By contrast, the HICP is a Laspeyres-type index, i.e. it is a measure of average changes in prices for a representative basket of consumer goods and services which are kept constant within a calendar year and updated at the beginning of each reporting year.

concepts and definitions, while the US framework diverges in some respects. The euro area complies with the European System of Accounts 1995 (ESA 95), the fully compatible EU's version of the SNA 93, while the SNA 93 framework is adhered to by Japan. US data are based on the National Income and Product Accounts (NIPA) methodology.

The main differences between the SNA 93 and the NIPA – in terms of the comparability of GDP – relate to the statistical treatment of software expenditure, the shadow (non-observed) economy, military expenditure and financial services indirectly measured (FISIM).

As regards the treatment of expenditure on software, it should be noted that the ratio of capitalised software to total software expenditure (investment ratio) is larger in the United States than in the euro area. Japan does not record any own account investment in software. According to simulations by the Organisation for Economic Co-operation and Development (OECD)<sup>9</sup>, the inclusion of a higher investment ratio in the euro area could have led to an increased euro area annual GDP volume growth of up to 0.3 percentage point over the second half of the 1990s. The impact on growth rates is likely to be smaller after 1999/2000, as software expenditure stabilised around that time.

In addition, there are differences in the way adjustments are made for the shadow economy. In particular, no adjustments are made in the US national accounts; hence, these may be somewhat less comprehensive. However, the OECD estimates that the effect of the adjustment for the shadow economy on GDP growth rates is likely to be quite small.<sup>10</sup>

There are also differences in the measurement of military expenditure, in that more military expenditure is recorded as investment in the US national accounts. While the SNA 93 and the ESA 95 specify that military expenditure should be capitalised only if the items can also be used for civilian purposes, the United States

includes all defence equipment as investment. The OECD estimates that this had a very small impact of -0.03 percentage point on annual US GDP growth in the 1990s, mainly because military expenditure decreased over that period.<sup>9</sup>

As regards FISIM, the US national accounts split FISIM between intermediate consumption of the business sector and final consumption of the household sector, whereas the euro area and Japanese national accounts currently record all FISIM as intermediate consumption. While this may lead to a higher GDP level in the US accounts (around 1% of GDP), simulations have shown that the effect on GDP growth rates is minor (less than 0.1 percentage point per year, with the sign varying over time)<sup>9</sup>. These differences vis-à-vis the United States will largely disappear for both Japan and the euro area, in the latter case because of revisions to the European national accounts data in 2005<sup>11</sup>.

With regard to GDP volume change, there are three additional key issues related to its comparability across economies. These factors can result in upward as well as downward divergence. Moreover, they primarily affect the comparability of the distribution of economic growth across different expenditure categories and across different activities, and have a lesser impact on the comparability of total GDP volume growth.

The first difference relates to the adjustment for quality changes by means of hedonic methods, in particular for information and communication technology (ICT) products. The rapid technological improvements and price development of these products may be better captured by such methods than by more traditional quality adjustment methods. The

9 See "Comparing labour productivity growth in the OECD area: the role of measurement", OECD Statistics Directorate Working Paper 2003/5.

10 See "Measuring the non-observed economy", OECD, Statistics Brief No 5, November 2002.

11 According to European Commission (EC) Regulation No 1889/2002, all EU Member States should treat FISIM in accordance with the SNA 93 from 1 January 2005 onwards.

effect of this adjustment is particularly strong at times when ICT investment accelerates. Hedonics are widely used in US national accounts but their use is not so widespread in euro area and Japanese accounts.

A second issue relates to differences in measuring volume change in many services, in particular in non-market services. For these activities, there is no market price and thus no deflator, other than costs. For instance, volume changes for health and education services are conventionally measured as the sum of deflated costs (known as the input-based method). As a consequence, the quantity and quality of the output for these services is not correctly reflected. Efforts are currently being undertaken in the EU to improve these estimates through the use of direct volume measures.<sup>12</sup> While this aims to improve the accuracy of the European estimates, it may hinder international comparability with the United States, which continues to use the input-based method.

The final challenge concerns the choice of index formulae to calculate GDP volume growth. The existing formulae use different relative price structures to aggregate GDP components. At present, the euro area countries mainly use a fixed-weight basis which is updated at five-year intervals, while the United States – and recently also Japan – apply annually changing weights in their annual national accounts. Recent experience has shown that the use of frequently changing weights tends to result in lower GDP volume growth rates. This is because prices are likely to increase less than average or to decline in fast-growing product groups. Hence, when GDP volume growth is calculated using more recent weights, the product groups with strong output growth receive a lower weight, resulting in a lower GDP volume growth. This applies in particular to ICT products. Available simulations<sup>13</sup> show that the introduction of chain-weighting in 2005 and 2006 may reduce annual euro area GDP volume growth by around 0.1 percentage point,

although the impact may be more pronounced for individual GDP components.

Overall, the analysis suggests that, when comparing euro area, Japanese and US GDP data, a few measurement issues can be observed that have, on balance, a slight upward effect on measured US GDP volume growth. In total, this may amount to a few tenths of a percentage point per year. Furthermore, it should be stressed that steps are planned to address several of the current measurement issues. Efforts are under way to harmonise the recording of software and investment. As of 2005 chain-type indices for deflation will be used by all EU countries and the United States, and the treatment of financial services will be more comparable between the EU and the United States. These forthcoming improvements would therefore increase the international comparability of GDP data.

#### **UNIT LABOUR COSTS**

Changes in labour costs are an important input into the analysis of inflation and labour market developments in the euro area and the United States. By contrast, no official unit labour costs (ULC) estimate is available for Japan.<sup>14</sup> The quarterly headline indicator for the euro area is ULC for the whole economy (on the basis of ESA 95 national accounts data), while in the US the focus is on the non-farm business ULC published by the BLS. The ECB and BLS publications employ similar definitions for aggregate ULC statistics. However, the comparability of the statistics is affected by several methodological differences in the components of ULC.

The ECB uses ULC defined as the ratio of compensation per employee to GDP at constant

<sup>12</sup> Commission Decision of 17 December 2002 further clarifying Annex A to Council Regulation (EC) No 2223/96 as concerns the principles for measuring prices and volumes in national accounts (notified under document number C(2002) 5054) (text with EEA relevance) (2002/990/EC).

<sup>13</sup> See “Comparing labour productivity growth in the OECD area: the role of measurement”, OECD Statistics Directorate Working Paper 2003/5.

<sup>14</sup> For Japan, only manufacturing ULC data are available.



prices per person employed<sup>15</sup>. Compensation of employees is defined in broadly the same way for the United States and the euro area in accordance with the SNA 93 and the ESA 95 frameworks. One divergence between the US and euro area indicators is the treatment of employee stock options. These are included in the US data, while they are mainly excluded for the euro area.

The degree of comparability of nominal GDP and real GDP growth measures has been discussed above and has to be borne in mind when assessing ULC.

The preferred measure for labour input is the number of hours worked. This is the measure used in the United States, whereas the euro area figures are based on the number of persons employed, as timely and higher frequency data on hours worked are not yet available. This has an impact on ULC levels, but the effect on ULC growth rates is very small as long as the development of the average working time of self-employed persons and employees is broadly similar.<sup>16</sup>

As a result, international comparative analysis of the short term ULC indicators for the euro area and the United States are currently performed using US adjusted data. The approximate adjustment involves i) correcting real GDP growth for estimated measurement differences as discussed in the previous chapter, ii) using persons employed instead of hours worked as the measure of labour input, and iii) extending the coverage of US data to the whole economy (see Chart 2).

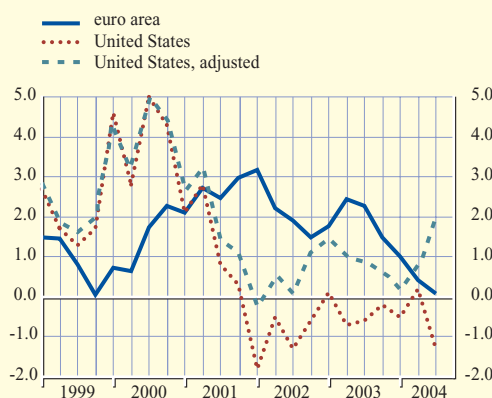
Chart 2 shows that, in recent years, these adjustments have tended to increase the rate of growth in US ULC.

### BANK CREDIT AGGREGATES

MFI credit to euro area non-MFIs is monitored by the ECB in the context of monetary analysis as a counterpart of M3 and because of its information content regarding the state of the economy. In its regular monetary analysis, the ECB puts particular emphasis on developments

Chart 2 Euro area and US unit labour costs

(annual percentage changes)



Sources: Eurostat, ECB calculations and BLS.

in loans to the private sector (which account for around 90% of credit to the private sector).<sup>17</sup> The Federal Reserve System and the Bank of Japan instead focus on the link between credit and economic activity. When comparing euro area MFI credit to the private sector and the government sector with the equivalent statistics for the United States and Japan, the main statistical difference relates to the definition of the financing sector.

Bank credit data, which are released on a weekly basis in the United States, refer to commercial banks only, and account for around 70% of credit by all MFIs (following the ECB definition). Assets of the Federal Reserve System (also published weekly, but separately) and thrift institutions (savings banks, savings and loan associations and credit unions) are excluded. Moreover, US credit figures are derived from the results of a survey addressed to the largest domestic banks and a limited

$$15 \text{ ULC} = \frac{\text{Compensation per employee}}{\text{Labour productivity}} = \frac{\text{Compensation/Number of employees}}{\text{GDP at constant prices/Total employment}}$$

16 The different developments over time of the number of employees and the number of hours worked have no major impact on UCL growth rates as the effects largely cancel out in the formula.

17 See the article entitled "Framework and tools of monetary analysis" in the May 2001 issue of the ECB's Monthly Bulletin.

sample of small domestic branches and branches of foreign banks. By comparison, the euro area figures are obtained by a census survey of all categories of MFI. In Japan, the Bank of Japan publishes figures on credit from two different sources. Preliminary monthly figures are derived from a survey covering only a limited range of assets and liabilities and a limited sample of banks. Final figures are obtained from a second survey. The figures are released as stocks and annual growth rates in the context of an aggregated balance sheet of financial institutions including loans, discounts<sup>18</sup> and securities.

To obtain flow statistics on bank credit, the ECB and, in the case of the preliminary figures, the Bank of Japan perform reclassifications, revaluations and exchange rate adjustments, while the US data are only adjusted for mergers and reclassifications of financial instruments.

In order to compare bank credit aggregates in a meaningful way, US series are adjusted (see Chart 3) by including domestic government securities held by the Federal Reserve System and credit granted by thrift institutions. Owing to information constraints, it is not possible to calculate comparable credit aggregates for Japan.

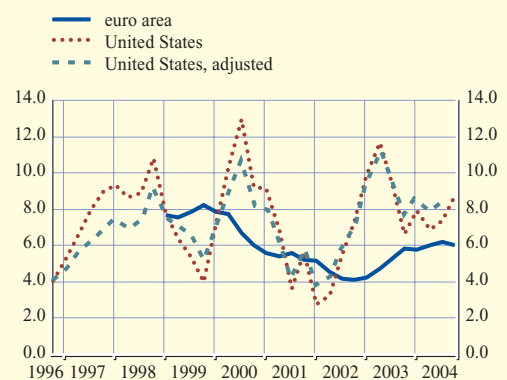
The growth of the adjusted bank credit figures for the United States is somewhat smoother than that of the original series but the adjustment does not affect the overall development of US credit.

#### INDEBTEDNESS INDICATORS

The ECB, the Federal Reserve System and the Bank of Japan closely monitor indebtedness indicators for households and non-financial corporations as part of their monetary, economic and financial stability analysis. The key indicators for the euro area are the ratio of households' debt to gross disposable income (GDI) and the ratio of non-financial corporations' debt to GDP. The main factor limiting comparability is the sector

**Chart 3 Euro area and US total credit**

(annual percentage changes)



Sources: ECB, Federal Reserve System and ECB calculations.

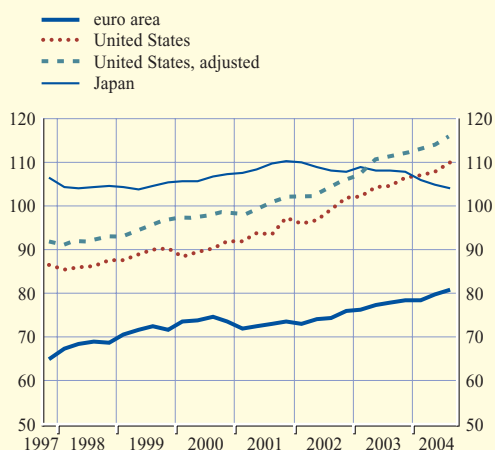
delimitation of households and non-financial corporations.

In accordance with the SNA 93 and the ESA 95, the household sector in the euro area and Japan includes sole proprietorships and most partnerships without independent legal status. By contrast, the US definition excludes all productive activities, with or without independent legal status, from the household sector and includes them in the non-corporate business sector. This also applies to individuals in their capacity as receivers of rental income. It is impossible to correct the resulting difference in the debt liabilities of US households and non-financial corporations and align them with international standards, as individual data for sole proprietorships and most partnerships without independent legal status are not available. The exclusion of these units from the US household sector has no impact on the income of households because the income generated by these units is attributed to the household sector. An additional peculiarity affecting the comparability of income data is the

<sup>18</sup> The Bank of Japan defines "discount" as "a type of loan for which banks provide money to borrowers with drafts (or bills) as collateral. Since the amount of lending is determined by discounting the face value of drafts by lending rates, such money lending is called discount."

**Chart 4 Debt-to-GDI ratio of households  
(including non-profit institutions serving  
households)**

(in percentages)



Sources: ECB, Federal Reserve System, US Bureau of Economic Analysis, Bank of Japan, Japanese Economic and Social Research Institute and ECB calculations.

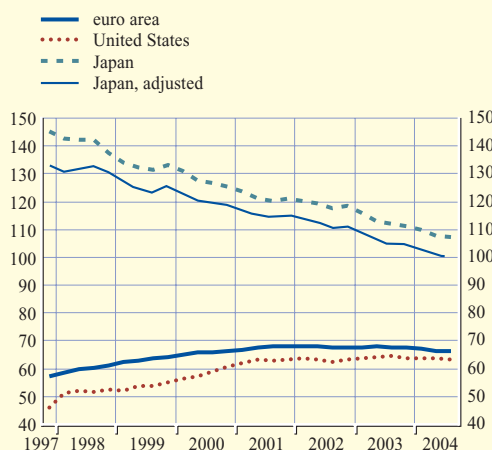
fact that, in the official US data, contrary to international standards, the GDI of households includes interests payable and current transfers payable. This methodological difference reduces the official US household debt-to-GDI ratio by approximately 5% (see Chart 4).

In order to improve the comparability of the indebtedness of non-financial corporations, the debt indicators would need to be adjusted for differences in the valuation of debt securities (at market prices for the euro area and Japan and at nominal value adjusted for accrued interest for the United States). In addition, inter-company loans are frequently not included in the euro area and US quarterly debt figures and quarterly euro area data do not cover loans granted by non-euro area residents.

Chart 5 shows adjusted and partly comparable data for the three economic areas. As domestic inter-company loans cannot be estimated for the euro area and the United States, Japanese debt figures without inter-company loans are estimated by deducting loans granted by non-financial corporations. Loans granted by non-residents are estimated for the euro area debt

**Chart 5 Debt-to-GDP ratio of non-financial  
corporations**

(in percentages)



Sources: ECB, Federal Reserve System, US Bureau of Economic Analysis, Bank of Japan, Japanese Economic and Social Research Institute and ECB calculations.

figure on the basis of balance of payments statistics. There is no adjustment for the difference in the valuation of US debt securities.

Although the adjustment of the series leads to a substantial reduction of corporate debt-to-GDP in Japan (by around 7%), the differences between the three areas in terms of debt level and development remain.

### GOVERNMENT SURPLUS/DEFICIT

Government surplus/deficit data play a prominent role in fiscal policy analysis. Data for the euro area are compiled on the basis of the SNA 93 and ESA 95 methodology. The comparability of fiscal indicators is affected by differences in statistical concepts, coverage, accounting methods and compilation practices.

As mentioned above, the US headline data, as analysed by the Federal Reserve System, are based on the NIPA methodology, which deviates slightly from the SNA 93 standards. Indicators for Japan are compiled in accordance with the SNA 93 (with some deviations for specific transactions). Consequently, some transactions in the US and

Japanese statistics may be recorded on a cash basis instead of on an accrual basis as is the practice in the euro area.

The government surplus/deficit data for the euro area and Japan cover all sub-sectors of general government, while the US headline indicator of the Federal Reserve System refers to the federal government (central government according to the SNA 93 concept). In addition, while euro area data refer to the calendar year, government surplus/deficit data for the United States and Japan are shown on a fiscal year basis, which somewhat complicates the calculation of the ratios vis-à-vis GDP.

Chart 6 shows more comparable statistics which have been adjusted for the differences with regard to the fiscal year and calendar year for the United States and Japan as well as for the different sector delimitation of the US series.

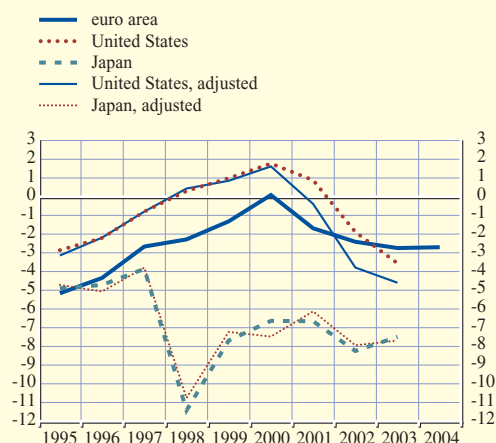
From 2001 onwards the adjusted series for the United States shows a higher government deficit than the headline data. The adjusted figures for Japan remain close to the national headline data.

#### 4 CONCLUSION

The ECB regularly monitors selected indicators for the euro area in comparison with two other large economies: the United States and Japan. Although international harmonisation has advanced significantly in the area of statistics owing to the ongoing implementation of international standards, most euro area headline figures cannot be directly compared with those of the United States and Japan. The main reasons are differences in statistical concepts, data coverage, practices with regard to accounting conventions and compilation methods. For the ECB's purposes, these differences can partly be overcome by adjusting headline figures in line with European standards. Another possibility is to use alternative indicators based

**Chart 6 Government surplus/deficit**

(in percentages of GDP)



Source: ECB, Federal Reserve System, Japanese Economic and Social Research Institute and ECB calculations.

on definitions and compilation methods similar to those used in the euro area. As different institutional settings also need to be taken into account in the economic analysis, sound knowledge of macroeconomic statistics is required when assessing the relative economic performance of different regions of the world.