



NATIONAL ACCOUNTS MEETING

21-24 September 1999

REPORT

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REPORT OF 1999 ANNUAL OECD NATIONAL ACCOUNTS MEETING

Introduction

1. Mr. Kincannon opened the meeting and welcomed all the delegates. He mentioned there would be a special session held on Friday afternoon for non-OECD ECE countries and he hoped it would be as successful as a similar session held last year for the first time. He indicated that a joint OECD/Eurostat/ECE national accounts meeting is scheduled for next April in Geneva.
2. This year's agenda mainly consisted of topics that were requested by countries at the end of last year's meeting. Most OECD countries have introduced SNA93 into their national accounts since last year's meeting so the next few days would present a good opportunity to discuss SNA93 issues based on practical experience.
3. The meeting had three main themes - theoretical issues, satellite accounts and practical issues:
 - theoretical issues (e.g. financial sector, non-market sector output, consumer subsidies, constant price estimates);
 - satellite accounts (e.g. household accounts);
 - practical issues (e.g. capital formation estimates, employment measures, backcasting, some feedback on SNA93 implementation).
4. There were also two short information sessions - one on an OECD meeting (PUMA) last March on measuring productivity in the government sector and one on statistical developments in the OECD's Directorate of Science, Technology and Industry (DSTI), particularly related to measuring e-commerce, productivity measurement and analysis, and setting up analytical databases.
5. One of the suggestions noted in the feedback from last year was the need for shorter papers or brief summaries of papers. A room document has been prepared providing summaries of each paper, plus issues for discussion provided by individual authors. Other administrative matters were discussed, including the provision of a final report by OECD towards the end of the October.

Agenda

6. The meeting adopted the draft agenda.

Agenda item 1: Satellite accounts

Presentation: STD/NA(99)17 - *Proposal for a satellite account of household production (Finland)*

7. A recent Eurostat project aimed to develop a harmonised satellite system of household production and to evaluate the quality and applicability of data from the Eurostat Time Use Pilot Survey. The report of the project was published by Eurostat as a Working Paper in June 1999. Valuations by 12 OECD countries of the time spent on housework and volunteer work indicates that women spend between 25 and 38 hours completing these duties (average of 32 hours), while men spend between 3 and 21 hours per week (average of 16 to 17 hours per week).
8. The Eurostat project was proposed because of the absence of international agreement on the methods to value household production. The proposed satellite account comprises all production for own use, in addition to volunteer work. Activity categories were based on Eurostat's Time Use Survey classification. In borderline cases the distinction between productive activities and non-productive activities is based on the "third-party" criterion. Output of household services was divided into the following principal functions: provision of housing, provision of nutrition, provision of clothing, provision of care, and volunteer work.
9. The value of household production can be derived using two methods - output-based and input-based. In most studies the value of household production has been estimated on the basis of imputed input costs because inputs of labour into household work are readily identified by time use surveys and survey results are already available in many countries. However, there is no direct basis for valuing time spent on household work and the wage rates applied to time worked have a major influence on the value of production recorded. The inability of this method to measure productivity changes is also a problem. The advantage of the output method is that it measures real products. However, the identification of products and data collection are expensive and time consuming. The output method could be used more in the future as data availability improves.
10. There are two methods used in valuing time spent: opportunity cost and replacement cost. There are three options for the replacement cost method: one uses wages of specialist workers in market enterprises, the second is based on the wages of specialist workers, and the other uses wages of general-purpose domestic servants ("generalists"). The replacement cost method with a generalist's wage seems to be the most appropriate basis for valuing household labour in most circumstances.
11. In household satellite accounts, some items of household final consumption expenditure need to be reclassified as intermediate consumption (e.g. food items) and gross fixed capital formation (e.g. washing machines, fridges). The consumption of fixed capital constitutes a cost of production and can be calculated using the Perpetual Inventory Method (PIM). Taxes on production and subsidies linked to household production are to be treated in the same way in household production as they are in other parts of the national accounts. Gross wages, which include income taxes and any social security contributions paid on behalf of the employees, appear to be most appropriate for valuing labour inputs because gross wages are used to value labour inputs in the core accounts.

Discussion: STD/NA(99)17

12. The following issues were raised during the discussion:
 - There was some discussion about the household production boundary; in particular, do "talking to children", "gardening" and "taking care of pets" meet the third-person criteria?

- Two conflicting views were that travel should be excluded because it is not work and that all transport activities should be included because there is a market alternative to driving yourself.
- The satellite accounts should measure both the hours of work and the value of household work.
- If the market replacement method is used, it was felt that for activities that would not usually be undertaken by a “generalist” housekeeper, it may be better to use the wages of a “specialist” worker. These activities include car repairs, plumbing and electrical installations.
- Should all capital goods of households be included in the capital stock, even if they are used in providing recreation or rest? Participants who addressed this question answered in the affirmative.
- The importance of the availability of data on paid and unpaid labour was noted, although time use surveys are very expensive and statistical offices are reluctant to conduct them too often.
- Reservations were expressed by one delegate about trying to value household production because one of the main reasons for such valuations is to compare contributions of paid and unpaid activities. It is not necessary to assign values for this purpose because the best indicator for comparing their relative contributions is hours worked. In addition, pay rates and taxes would change if (currently) unpaid work became paid.
- The number of hours worked in unpaid work cannot be compared directly with hours worked in paid employment because of the different factors influencing the work being done.
- There are three types of input-output tables used in Germany (based on values, physical units and time units); it is useful to integrate all types of household activities particularly into the last one.
- The output-based method is clearly conceptually superior but it is obviously difficult to put into practice.
- Some participants thought that a return to capital should not be included in value added by household production because no return to capital is included for the government and NPISH sectors. Others thought that a such returns should be included, as they would be included in any "market" rental price for the assets. There is a school of thought that views the exclusion of amounts to cover the return to capital in the valuation of government and NPISH output in the "core" accounts as being inappropriate.
- Both gross and net wages have been used to calculate household production in different studies. The choice of a gross or net wage for valuation depends on the method used. If the opportunity cost method is used then it would be appropriate to use a net wage for valuation but a gross wage would be appropriate for other methods. Using the gross wage is a valuation method consistent with the core accounts; however, in the core accounts it is actual, and not imputed, wages that are being measured.
- Unpaid and paid work can both be measured based on market wages but the assumptions made must be set out explicitly.
- Data should be presented in ranges, not because of uncertainties involved in valuation, but because one has to make assumptions between different types of wages (generalist, specialist). This could also be considered in the case of coverage of household production (e.g. for ranges of activities included).

Issues arising

- There is still disagreement on what should be (and should not be) included in unpaid work.
- It is clear that users want values attached to activities and so it is necessary to strive to improve valuation techniques.
- Germany volunteered to produce a paper for next year's meeting on the ways in which the household activities can be integrated into an input-output framework.

Presentation: STD/NA(99)18 - *The compilation of household accounts in Korea (Korea)*

13. Household sector accounts and human resource accounts for Korea (KORHRA) have been compiled for the years from 1990 to 1995. Economic data on the household sector are available to analyse the impact of household and individual behaviour, and government policies affecting socio-demographic dimensions of the population. The KORHA is designed for socio-economic studies of education so that its further development would allow policymakers to complete more efficient analyses of the economic and socio-demographic impact of educational investment. This orientation can always be extended to other issues such as employment and poverty.
14. The KORHA is consistent with SNA93 as it relates to the household sector but it also includes a satellite section on education. KOHRA includes all household sector accounts from production through income and use of income accounts. The production and generation of income accounts cover the output, intermediate cost and value added data for small-scale enterprises and agricultural units managed by the household sector. The scope of household production units is those with four or fewer employers. This definition is not ideal but it may come as close as possible to identifying production units that are fully integrated with the households in their income and financial management. The income generated for the household sector is obtained from value added after deducting the compensation paid to workers employed by the household production units.
15. The distribution of income and use of income accounts include current revenues and expenditures of households. They cover the compensation of employees received, mixed income from their own production units, property income, social security and other current transfers received from government and NPISHs. Households pay property income and current transfers mostly in the form of premiums for social security schemes. The KORHA includes two consumption items: final consumption expenditure and actual final consumption.
16. The data for separate industries are based on various surveys such as establishment surveys. Combinations of surveys are used to identify the household production units. The general approach to compiling output for the household sector is to multiply gross regional domestic product by the share of household establishments to total output or sales/revenues depending upon data availability. For agriculture, forestry and fishery and construction industries, the residual approach is applied because production activities of household establishments for those industries are difficult to identify in Korea.

Discussion: STD/NA(99)18

17. The following issues were raised during the discussion:
 - Household accounts of the kind developed in Korea require a wide range of socio-economic statistics. This information is available in Korea but not in all other OECD countries.

- In response to a question, the Korean delegate said this work was started off by the UNSD to develop a joint account for economic and social activities. The accounts described in the paper focus on education but may be extended to other social areas including health and welfare.

Presentation: STD/NA(99)19 - Satellite accounts in the UK - new developments (UK)

18. In recent years, the UK government has considered social and environmental issues alongside economic issues and provided a greater focus on cross-sector analysis of issues. Greater consideration of policy uses can be seen in the context of environmental accounts with the inclusion of assessments of the way economic instruments can encourage energy efficiency, tax on aggregates and waste strategy for the UK. Household accounts have provided a more complete picture of economic developments, enabling movements between unpaid domestic work and paid labour to be tracked and assessments to be made of the gender impact of policies.
19. The output approach has been used to provide a cross-check of valuation based on alternative market wage rates. Developing measures for the output of the household production focuses on care of children, which is calculated by deducting hours of paid care from total “child hours”; care of adults, data for which are largely derived from survey results; and other outputs using proxies and survey data (e.g. cleaning, shopping, “do-it-yourself”). Input measures are based on time use surveys. Within the framework of full satellite accounts, household accounts are completed using items that are considered by households as intermediate or capital consumption. In this process, value of labour can be considered as a residual input after deducting other costs, thus providing a cross-check on the value of labour.
20. UK environmental accounts have expanded to include atmospheric emissions, the stock and depletion of oil and gas, environmental protection expenditure, water resources and pollution, trade in material resources, an environmental input-output table, revenues from environmental taxes, energy consumption and stocks, and disposals of radioactive waste.
21. Regarding the difficult area of valuation of environmental accounts, some major products, such as oil and gas, can be estimated from actual market prices. Difficulties arise where market valuations do not exist although economists still need to value environmental effects. “Objective” valuations are based on estimates of market valuations relating to physical damage caused, whereas “subjective” valuations are based on individual utility functions (e.g. hedonic prices). The issue of applying values to environmental accounts has been endorsed by the government and has received strong external support. Some Government estimates of values already exist in the public domain.
22. Linking satellite accounts is a useful measure that could be achieved by relating output measures in national accounts to outcomes (e.g. health accounts). Social accounting matrices and the creation of a common database and processing team are crucial to ensure successful linking of satellite accounts. A series of Occasional Papers on satellite accounts is also planned.

Discussion: STD/NA(99)19

23. The following issues were raised during the discussion:
 - John Hopkins University in the USA in close collaboration with UNSD is conducting research on non-profit institutions (NPIs) and they plan to publish a handbook on NPIs at the end of 2001.
 - There is interest in a fully-articulated set of satellite accounts so that the linkages between different issues can be examined.

- Within the National Accounts Department, a Research Unit exists in the Netherlands with the aim of developing an integrated framework for national accounts and health and welfare data on other aspects of well-being, and to derive macro-indicators on each aspect of well-being, mainly measured in non-monetary units. At present, satellite accounts are compiled annually for the environment; a SAM shows annual household data in 15 categories; a pilot compilation of social demographic data in the national accounts provides information on labour market characteristics; and a satellite account on knowledge has just been completed.
- Germany has some environmental accounts and a satellite account of private households. Work on human capital and education accounts is being undertaken.
- In Norway, integrated economic accounts are stored in a database. An environmental account has been set up using supply/use tables. Tourism accounts have also been set up. There is a direct link from the satellite accounts to the national accounts via a supply/use table. Statistics Norway has no firm plans to produce satellite accounts for transport, but it is one of several possible satellite accounts that are under consideration.
- Finland is very interested in environmental and household satellite accounts but, at present, there is no systematic compilation of household satellite accounts; rather, there are occasional projects. Environmental accounts are compiled on a regular basis by a special unit.
- In Australia, a research and development unit within the National Accounts Branch of the Australian Bureau of Statistics has a lead role in satellite account work. A tourism satellite account will be published in mid-2000. Consideration is being given to the development of comprehensive household and environmental satellite accounts. The Australian Institute of Health and Welfare is developing a health satellite accounts, with ABS technical assistance.

Issues arising

- Canada is investigating satellite accounts for unpaid (volunteer) work in NPISHs and should be able to provide a report for next year's national accounts meeting.
- Future meetings should focus on results from particular types of satellite accounts.
- The UK would be interested in hosting a meeting next year on satellite accounts.

Agenda item 2: Financial sector

Presentation: STD/NA(99)20 - *The measurement of non-life insurance output in the Australian national accounts (Australia)*

24. In conjunction with the implementation of SNA93, a new approach was adopted to measuring non-life insurance claims. Estimates of the actual claims incurred have been replaced by "expected" claims in calculating the non-life insurance service charge.
25. SNA93 defines the output of non-life insurance as total premiums or contributions earned plus premium supplements less claims due (incurred) less change in actuarial reserves for with-profits insurance. The main problem with the SNA93 definition of non-life insurance output is the volatility of the output measure due to the lumpiness of claims caused by natural disasters and other chance events. When claims are unusually low the service charge is high and when they are unusually high the service charge is low and may even become negative. This does not make economic sense. Therefore, the ABS has replaced claims incurred by a measure of "expected claims". Expected claims are calculated as a centred five-year moving average of actual claims incurred.

26. Any impact on GDP from this modified measure will depend on how the differences between claims incurred and expected claims are attributed to final consumption and intermediate consumption. It will affect secondary income flows for the non-life insurance sector and other sectors but it has no effect on net saving by institutional sector.
27. The sectoral allocation of non-life insurance service charges is proportional to actual premiums payable by institutional sector as recommended by SNA93 (Annex IV, paragraph 25). Sectoral estimates can be built up by calculating service charges for each class of business or at an aggregate level. The ABS chose to allocate by class of business as it allows for different levels of profitability for different classes of business and for changes in the mix over time. Administrative costs are also likely to vary as a proportion of premium income for different types of insurance.
28. The ABS has adopted a further degree of smoothing when compiling chain volume measures of non-life insurance output and service charges. Only premiums and premium supplements are taken into account as indicators of movements in output because including claims in the calculation gave implausible results for some classes of business. Output volume growth is assumed to be equal to the growth in premiums earned plus premium supplements. Volume estimates of premiums and premium supplements are derived by deflating the current price estimates using relevant price indicators. Volume indicators are combined as annually reweighted chain Laspeyres measures.

Discussion: STD/NA(99)20

29. The following issues were raised during the discussion:
 - If there is a problem with lumpiness in insurance claims (e.g. when natural disasters strike) then perhaps non-life insurance should be divided into two parts with the transactions related to exceptional events treated as capital transfers.
 - The proposed treatment would create distortions elsewhere in the accounts and it would be necessary to handle this issue consistently in the balance of payments.
 - The economic effects of disasters need to be recorded when they occur and in the appropriate sector (households, businesses etc.). It is important to ensure consistency of treatment for insured and uninsured losses. There is also an issue of deflation because a direct quantity measure can lead to huge implied price fluctuations. Perhaps a satellite account for natural disasters is required to fully record the transactions involved.
 - The only way of estimating the value of output of insurance is an indirect one. Insurance companies must fix their premiums on the basis of a longer-term view of likely claims matched against their income from premiums and investments. As a result, actual premiums are based on some notion of averaging. Therefore, the ABS approach has some justification. This issue has a number of elements associated with defining and measuring capital gains and losses and identifying the price and quantity elements of each.
 - The ABS said that because its treatment made an equal adjustment to insurance services shown in the production account and net premiums shown in the secondary distribution of income account, it did not create distortions elsewhere in the accounts. Also, a consistent treatment was adopted in balance of payments statistics. It thought that the proposal to treat large one-off claims as capital transfers had merit, but that it would not solve the problem of having negative output for the insurance industry. Different methodologies are used elsewhere in the accounts to derive unobservable values of output and so the ABS approach is not a divergence from SNA principles. Perhaps a non-centred moving average would be more conceptually correct, as insurance companies would not know the actual amount of future claims when setting premiums. Also, it would be a more practical approach as there would be less need for revisions.

Issues arising

- The idea of dividing claims between normal and exceptional risks appealed to several participants and the implications could be explored further at a future meeting.

Presentation: STD/NA(99)21 - A volume index for the output of the Dutch banking industry based on quantity indicators: A pilot for the period 1987-1995 (Netherlands)

30. The method formerly used to derive banking estimates in the Netherlands used the input method, with its well-known deficiencies. The new method used to calculate output of bank services consists of two parts: FISIM and commissions. FISIM was broken down according to its main activities (credit granting, savings, mortgages, etc.) followed by a further breakdown of each of the major components underlying these. Volume indicators were selected for each detailed activity. The main problem with this method is the subjectivity of the weighting scheme. A sensitivity analysis was carried out on the effects of the weighting patterns for the main activities.
31. Results for the years 1988 to 1997 show that the output and input methods give very different estimates of labour productivity. The output-based results were judged the more plausible.
32. The new method outlined is methodologically superior and meets with the standards prescribed by Eurostat. It was implemented during the "1995 revision". Efficient use needs to be made of all kinds of available data on the banking sector. Future research should look to the improvement of the weighting scheme and closer consultation with the banking sector regarding the most appropriate data to be used.

Discussion: STD/NA(99)21

33. The following issues were raised during the discussion:
 - If the current price estimates for FISIM are viewed as being the product of interest rates differentials and loans and deposits then the price falls out. Given there is a price associated with FISIM (the difference between observed interest rate and the reference rate), in principle it is simple to calculate volume estimates by deflating the balance of deposits/loans in a period by a general price index and multiplying this real level of deposits by the "price" derived from base period interest and reference rates.
 - Using a "mid-point rate" is a pragmatic way to obtain a reference rate. Using this approach a \$2m loan would embody double the service of a \$1m loan, which might strike some as odd. One explanation is that a financial institution has to "work twice as hard" to maintain the level of deposits necessary to offset a \$2m loan compared to a \$1m loan. Another possibility is that there may be different percentage amounts of FISIM on different amounts of loans and deposits, and the use of an overall reference rate will mask this. A third possibility is that FISIM is not symmetrical between borrowers and lenders and, on loans, it may approach a fixed amount rather than being a percentage of the loan.
 - The USA used to use a labour input method but now uses a weighted average of indexes of bank activity (ATMs, number of loans, etc) as the measure of the real value of FISIM. This is an interim measure and the issue will be re-examined at the next revision in 3 years. FISIM is allocated, but only to depositors.
 - Allocating FISIM is important because banking systems are so different. In particular the proportion of banking revenues coming from direct charges differs from one country to another and the rate of change towards direct charging also differs. As a result, not allocating FISIM

leads to an overstatement of GDP growth in individual countries and adversely affects international comparability overall.

- A Eurostat Task Force has examined measurement problems in the financial sector. The approaches identified are usable in other areas, such as insurance.
- The quantity/indicator approach is useful when products are well-defined and stable but such a method would not necessarily pick up some of the more complicated financial activities.
- Some participants argued that the same approach should be used for both current and constant price estimates, which implies that the constant price estimates should be obtained by using the base year interest rates as “prices”. Other participants argued that output volume indicators were appropriate.
- Attempts are being made in a number of countries to stop trying to measure the output of government services by using input indicators. Are the services of the banking industry similar? Calculating output using the differences in interest rates as a price provides only an approximation of the real services of the banking sector. Allocating FISIM using reference rate methods also gives volatile distributions.

Issues arising

- Further research is necessary on the implications of different methods of calculating constant price FISIM.

Presentation: *STD/NA(99)22 - Accrual recording of interest: Is there a case for revising the 1993 SNA? (IMF)*

34. SNA93 and other methods for accrual recording of interest used are not consistent. Recording interest in the national accounts on a (full) accrual basis implies that the total volume of interest on a loan, bond, debenture, etc., must be allocated over the period in which the liability is outstanding. Thus, accrual recording only affects the time of recording, not the volume of interest. In other words, the total volume of interest is the same for cash and for accrual recording.
35. In general terms, interest is defined as compensation for provision of financial capital. Accrual of interest can be recorded using three different approaches.
36. Using the “debtor approach”, interest can be defined as the amount that the debtor becomes liable to pay to the creditor over a given period of time without reducing the amount of principal outstanding. The interest may be either a determined sum of money or a percentage of the principal outstanding, although it is usually determined by applying an agreed interest rate to the amount of principal outstanding. Interest on bonds and debentures consists of two elements: coupon payments and the difference between the redemption price and the issue price. Changes in bond prices caused by changes in market interest rates constitute price changes and not volume changes. Thus, interest is a fixture that is not dependent on changes in market interest rates and related asset prices.
37. The “acquisition approach” (currently used in the balance of payments) states that interest is income on debt, payable in accordance with a binding agreement between creditor and debtor. For zero coupon bonds and other deep discounted bonds, interest is defined as the difference between the issue price and the value at maturity. However, if bonds are obtained from secondary markets, prevailing rates that reflect the difference between the new owner’s cost and the value at maturity should be used for the subsequent recording of interest. Thus, interest is a fixture as long as an

asset is not sold. If it is sold then, at the moment of resale, the interest is determined by the existing market interest rates prevailing at the time of the sale/purchase.

38. The “creditor approach” takes the view that interest is not a fixture but depends rather on the market price of a security. The total return on a security may be fixed at the time of issue of a bond, but not the split between holding gains and interest. If the market price of an asset rises as a result of a fall in interest rates the holder incurs an instant holding gain in exchange for an equal reduction of future interest. This occurs each time the interest rate changes.
39. Both the acquisition and the creditor approach include holding gains and losses in interest flows whereas the debtor approach does not. As a result, in the acquisition and creditor approaches the total volume of interest will differ between cash and accrual accounting, which violates the basic principle of accrual accounting.

Presentation: STD/NA(99)23 - Accounting for interest in debt securities in Australia (Australia)

40. The creditor approach is advocated by the ABS. Interest on debt securities is calculated by multiplying stocks of debt outstanding at market values by prevailing interest rates. This is seen as being consistent with the economic and accounting principles underlying the SNA and can be readily applied in practice.
41. Four principal areas need to be addressed. First, there must be consistency with current cost (market price) accounting. The “price” of debt is the interest rate. For tradable debt, neither the creditor nor the debtor is “locked in” until maturity. Therefore, the prevailing interest rate is the market price of debt for both creditor and debtor, which is consistent with valuing stocks at market values as these valuations reflect prevailing rates.
42. Second, the SNA is a system that describes economic behaviour. The economic behaviour of both creditor and debtor is determined by the prevailing interest rate. Using alternative interest rates to calculate interest could lead to results that are seemingly economically irrational.
43. Symmetry of reporting is a third very important issue. The prevailing interest rate is the only rate that can be guaranteed to make sense to both the debtor and creditor, thus ensuring symmetry of recording. The rate of interest at issue is irrelevant to a creditor who purchases a security some time after the initial issue.
44. The fourth important issue is the non-transaction flows that are derived under the alternative methods. Using the ABS method, non-transaction flows are recorded only when interest rates (i.e. “prices”) change. Alternative methods record non-transaction flows during periods when interest rates remain unchanged. Using these alternative methods, such flows cannot be explained and the SNA93 definition of interest is violated.
45. From a practical perspective, the ABS method is straightforward to apply: market values of securities are required for sectoral balance sheets and prevailing interest rates are readily observable. To adopt an alternative method would require detailed information on each type of security held, which would be difficult and expensive to obtain.

Discussion: STD/NA(99)22/23

46. The following issues were raised during the discussion:

- It is not necessarily correct that the accrual amount of interest should equal the cash amount of interest because, in reality, there is a mixture of interest and holding gains and losses involved. The amount of interest paid on a bond can be measured accurately only when there is no “price” change involved. Using the debtor approach involves ignoring a change in the underlying price.
- The response to interest rate change affects the market price of a marketable bond meaning that liabilities change. Values of assets must be recorded in SNA at market prices, i.e. the market values should be recorded for marketable bonds. Changes in portfolios and in interest rates mean that situations change between the time the bond is first issued and finally redeemed. The value of the liability is continually changing, and this value should be treated as a holding gain (or loss). When the value of an asset changes, then the return is automatically changed. The difference between the current value of an asset or a liability and its value on redemption can only accrue with the passage of time.
- There was disagreement over the statement that at the time of issue everything is fixed and the whole amount accruing is interest. The debtor's cash flows are fixed (unless the security is redeemed early), but the split between interest and holding gains is not. These will be affected by changes in the market place.
- The ABS method talks about applying an estimated interest rate to an estimated market value, but one participant felt that it would be preferable to directly measure interest payments and receipts by instrument.
- Perhaps we need a broader definition of income relating to bonds which would more closely line up with how economic actors are working.
- The conceptual issues need to be addressed first. There are problems with both the creditor and acquisition approaches. All income is generated by production, and losses cannot come into income. The main issue revolves around identifying the liability of an issuer. In practice, it is the value of a bond at any time in the market, or the liability of an issuer when that agency has contractually agreed to pay.
- The over-riding problem is with the interpretation of holding gains. A gradual increase in the value of a bond over time is not a holding gain. There is a fundamental disagreement on economic interpretation of holding gains that needs to be addressed.

Issues arising

- The issues involved with this topic are contained on an electronic discussion group (EDG) set up by the IMF. More papers and the comments received on them are contained on the EDG. Anyone can obtain access to the EDG by sending an e-mail to <accrual@imf.org>.
- This item will be included on the agenda of next year’s meeting where a summary will be presented of the arguments being advanced on the EDG for and against the various options.

Presentation: STD/NA(99)24 - *The treatment of pension funds in the Australian national accounts (Australia)*

47. This presentation dealt primarily with unfunded pension funds. A supplementary issue relating to the treatment of defined benefit schemes was also discussed.
48. Unfunded pension schemes were once a common arrangement in the Federal and State public sectors in Australia. State governments have largely replaced these schemes with fully funded schemes. SNA93 recommends that employer social contributions should be imputed using an actuarial type calculation but in practice the contributions may need to be estimated using the value

of benefits actually paid out during the period as a proxy. In the balance sheet, SNA93 treats assets and liabilities relating to unfunded pension schemes as memorandum items.

49. It is important to recognise assets and liabilities of unfunded public sector pension schemes of the type operating in Australia for several reasons. First, the benefits are explicitly defined as they relate to length of service, age at retirement and final salary on retirement. Second, when changes are made to benefits these apply only to new employees joining the schemes. Third, liabilities of unfunded schemes are being recorded in the annual budget documents of both Federal and State governments. Fourth, employees clearly regard their entitlements as financial assets. Thus, it was decided to show assets and liabilities associated with unfunded public sector pensions schemes as integral components of the Australian sectoral balance sheets rather than as memorandum items.
50. Estimating employer social contributions for unfunded schemes on the basis of actual payments made to retirees as a proxy was dismissed as an option because they would clearly understate the growth in accruing liabilities in some periods and overstate them in others. Estimates are made for both imputed employer contributions and imputed property income to ensure that government final consumption and GDP are not affected by whether or not general government superannuation schemes are funded.

Discussion: STD/NA(99)24

51. The following issues were raised during the discussion:

- Two related issues are not reflected in the Australian paper:
 - It is not just government which has unfunded pension schemes; there are also many private firms (particularly in Europe) which have them and the certainty of payment to the beneficiaries is not as strong as it may be for government schemes.
 - The paper seems to equate non-contributory schemes with unfunded schemes which is not necessarily the case. Treating pension rights from unfunded schemes as an asset in the balance sheets for households has the difficulty that the funds do not exist and the individuals concerned have no certainty regarding their eventual access to their expected pensions. The SNA93 assumes that pension schemes are all on a defined-contribution basis and there are unresolved issues concerning defined benefits schemes which may be over- or under-funded.
- A symmetrical treatment is required for private pension plans and those for government employees. Also, in the USA if there is a catch-up in business contributions to under-funded schemes then it is shown in the US accounts in the year in which the catch-up occurs; it would amount to not recording the economic behaviour of businesses correctly if they were not recorded in this way.
- The paper addresses a very important issue. For example, in Canada the government debt to GDP ratio would go up by about 15-20 percentage points if government unfunded liabilities were shown in the way proposed in the ABS paper (the actuarial liabilities are about \$C120 billion).
- Comparability is very important because any differences in treatment affect the government deficit and debt indicators. The Netherlands does not have this problem because 99% of pension schemes are funded. However, there is a grey area concerning what is a contingent liability and what is a real liability and how to make a distinction between them.
- Some sort of criteria are needed to assess whether a genuine asset/liability exists with an unfunded scheme. For example, is it possible for government to change the conditions of pensions unilaterally or not; is there some kind of bilateral agreement or labour contract?

- The ABS responded that the treatment adopted in Australia relates to the specific case of unfunded pension schemes in the Australian context. It may or may not be applicable to unfunded schemes (either government or private) in other countries, as the "certainty" of future benefits will vary from scheme to scheme. In Australia, there is agreement that the future benefits from unfunded public sector pension schemes are certain, so they need to be reflected in the balance sheets. The liabilities are actually shown in balance sheets produced by Federal and State governments. Government obligations to pay employers upon retirement is included in legislation in Australia. The benefits can remain even if you resign from employment. The schemes affect the economic behaviour of individuals because their rates of saving are influenced by the assets they consider they have in a superannuation scheme. In SNA93 the treatment of unfunded pension funds is unsatisfactory because there is no recognition in the core balance sheets of the assets/liabilities. This leads to imbalances between the production accounts and the financial accounts (as the imputed contributions are to be recorded in the production account, but there is no offset in the financial accounts/balance sheets).

Issues arising

- There is a mechanism for proposing changes to the SNA. It is necessary to prepare a submission to the Intersecretariat Working Group on National Accounts.
- If Australia and Canada decide to make a joint submission on this topic it would have to be made by the end of February 2000 to be considered at the next ISWGNA meeting.

Agenda item 3: Consumer taxes and subsidies

Presentation: STD/NA(99)25 - *Consumer subsidies and taxes - illustrative compilations for Australia (Australia)*

52. The aim of the satellite account proposal compiled by ABS and based on a proposal put forward by Anne Harrison at the 1998 National Accounts Meeting is to display subsidies and taxes more transparently by grouping value added taxes and other taxes on products relating to consumption as "Taxes on consumption"; grouping subsidies on production under "Collective consumption - purchased from enterprises"; grouping subsidies on products under "Individual consumption - purchased from enterprises"; and to define a new GDP measure - and a new set of other aggregates - at "production cost".
53. In order to complete the illustrative compilation, the income/use of income account has been presented according to both SNA93 and the satellite account proposal to show the broad effects on key aggregates and the relative presentational advantages of the satellite account and SNA93.
54. The major change introduced by the satellite account is the regrouping of items into the new aggregates "Taxes on producers", "Taxes on consumption", "Collective consumption" and "Individual consumption". A new concept of "Total final consumption at production cost" is also introduced.
55. The new aggregate of "GDP at production cost" presented in the satellite account amounts to a reduction of a little under 4 per cent of GDP at market prices as shown in the SNA93 presentation.
56. The satellite account has the presentational advantages of providing a more transparent presentation of changes in the tax mix (e.g. the revenue-neutral introduction of a goods and services tax) and changes in the mode of service delivery (e.g. the move to a purchaser-provider model for government services).

Discussion: STD/NA(99)25

57. The following issues were raised during the discussion:

- Implementing a VAT will influence GDP if there is not a “revenue-neutral” effect between the new VAT and the other taxes it is replacing (excluding income taxes). If there is a trade-off between the VAT and income taxes (e.g. lower income taxes and a higher VAT) then GDP at market prices will increase.
- In the SNA93, all subsidies are treated from the production side, but according to Anne Harrison’s proposal all subsidies are treated from the consumer side. The latter is the one shown in the Australian example and it is plausible because most subsidies paid by the government (in theory) benefit households, either through lower prices for goods and services or because they create jobs that would otherwise not exist.
- The issue of subsidies benefiting non-resident households was not specifically dealt with in the Australian presentation, as it is a minor issue for Australia. However, such subsidies could be significant in some countries and would need to be considered.

Presentation: STD/NA(99)26 - *Making services visible (OECD)*

58. The national accounts can be made more analytically powerful by showing aspects such as services more conspicuously. For example, there are three advantages in showing ancillary services explicitly. First, in order to promote comparability as efforts to explain movements in technological coefficients in the past have rarely been successful. Second, to investigate more clearly the change in emphasis from goods production to service production. Third, to provide an alternative, more neutral, treatment for ancillary services.
59. The first case discussed is that of an ancillary service clearly intermediate in nature, such as transport. Two further examples follow, sponsorship of sporting events and environmental protection where, although the costs are paid by enterprises, the benefits accrue to either households or the public at large. This is achieved by allowing enterprises to undertake final consumption expenditure though not actual final consumption. Social transfers in kind from enterprises to households are recorded in the case of sponsorship and from enterprises to government in the case of environmental protection.
60. An extension to allow some forms of services to be treated as new forms of capital formation is then discussed. For this two innovations are proposed. The first is to distinguish three types of capital formation; enterprise capital formation covering items such as plant and machinery; collective capital formation covering items of general benefit such as roads and improvements to the environment; and individual capital formation where the human capital element of training and education is embodied in individuals and does not “belong” to the enterprise paying for it. As with the cases above, a distinction is also made between the unit paying for the capital formation and the unit benefiting. This is achieved by means of a capital transfer called “expenditure on behalf of another unit” to explain the difference between capital formation expenditure and actual capital formation.
61. Balancing the supply and demand matrix can increase output and intermediate consumption but leave final demand unchanged (e.g. transport); it can increase output, decrease intermediate consumption and increase final consumption (e.g. advertising, environmental protection); or increase output, decrease intermediate consumption and increase capital formation (e.g. R&D, education). The case of household services is more complicated but still balances.

62. Although a supply and demand balance can be established for any enterprise or activity, it is the measure of income which ensures that we have brought production and demand into balance for the whole economy by ensuring intermediate consumption and intermediate demand are equal. Every activity, including illegal and environmental activities, must be measured. The implications for constant prices are that identifying an ancillary service as a secondary product bears on measuring the quantity because an increase in the quantity of ancillary production is a volume increase in the related product.
63. For environmental expenditures, current expenditure is always collective consumption, whether paid by taxes, paid by subsidies or imposed by legislation. Capital expenditure is always collective capital formation. For potential expenditure to abate pollution, we cannot just add in new intermediate consumption, nor can we merely reclassify final consumption to intermediate consumption.

Discussion: STD/NA(99)26

64. The following issues were raised during the discussion:
- These are important issues. In the Netherlands, for example, there has been a growing share of service industries due to outsourcing of certain activities or operational leasing or using personnel from employment agencies. It is difficult to decide exactly what kind of ancillary services should be taken into account – many can be outsourced or produced from own account, e.g. book-keeping, personnel affairs. More and more enterprises want to limit their activities to core business. The issue of who is the beneficiary is less clear-cut – e.g. sponsorship in sporting clubs is not necessarily for the benefit of the household.
 - The North American Classification System has eliminated ancillary services and put them into industry. It is not clear how output will be measured nor how to address “captive services” (treated as output of industry).
 - The proposed treatment of R&D and education as capital formation has an intuitive appeal but the valuation of this capital in the balance sheet and the calculation of depreciation are complex areas that would require a lot of thought.

Agenda item 4: Constant price estimates

Presentation: STD/NA(99)27 - *Aggregate real consumption and the cost-of-living: Theory and measurement (Prof. Hillinger)*

65. This theoretical paper has direct implications for how statistics should be computed or deflated to obtain real magnitudes. The proposed method has a general application and takes any nominal values and separates them into their underlying price and quantity change components. It involves elementary assumptions that have not previously been used in practice.
66. The main problem with chaining volumes is to determine how to link together segments that employ different prices as weights. For all known methods of chain indexes, sub-aggregates do not add up to the totals. Most ideas for measuring changes in quantities are elementary in terms of economic theory.
67. Centred price and quantity variations are based on the old Dupuit triangular measure, which can be justified from the perspective of numerical approximation. Quantity variation is defined as a change in quantity at a base period unit price. A quadratic approximation can be thought of in

terms of taking the slope at different points of a curve. In effect, a Laspeyres volume index is based on the slope of the initial part of the curve, a Paasche index on the end part of the curve. Superlative indexes have been advocated because they are symmetric between the two periods (in other words, they are based on a part of the middle section of the curve).

68. Linking is necessary because we want up to date prices to apply to quantities. The main difference between the traditional methods of looking at changes in volume indexes over time is that the indexes are ratios and so are inherently non-additive. However, the Hillinger approach is based on differences, which display no additivity problems. The results provide an approximation to the underlying theoretical ideal but they yield a close approximation and are additive in all situations.

Discussion: STD/NA(99)27

69. The following issues were raised during the discussion:

- It is not clear that there is a need to produce real volume series that are additive. It is the change over time in volume series that is more important, not whether the levels themselves are additive. The experience of countries which have introduced non-additive chain volume estimates is that they are readily accepted by users once the implications of the alternatives are made clear. Additivity is important when considering contributions to growth, but it is possible to derive from chain volume estimates theoretically correct contributions to growth that are additive.
- The USA tried to simulate existing series using the formula discussed. The effect of the allocation process to achieve additivity using the Hillinger formula gave some strange results. For example, when the chain series move less than a Laspeyres series the implicit prices can change sign and negative prices do not make sense.
- It would be necessary for countries to test the formulas presented before commenting on the details.
- A common framework will be needed to compare results between the traditional chain volumes and those using the additive approach.
- In responding to the discussion, Professor Hillinger explained that the paper is based on a critique of five points related to (non-)additivity in the American accounts. It is an intuitive idea but it is crucial when applied to an extended econometric model. There have been no practical applications using the formula yet.

Issues arising

- The US BEA stated that the degree of detail used in linking was crucial to the results and offered to submit a paper showing estimates based on the Hillinger formula and using different degrees of aggregation.
- The issues (especially practical issues) can be examined at next year's meeting if some countries are prepared to produce comparisons of growth rates using the Hillinger approach and other approaches currently in use in the national accounts. It is not necessary to do the whole of GDP. Any area which has significant differences in growth rates between a fixed base and a chain volume series would do (e.g. investment or a subset of it which included computers).
- Anyone who wishes to contact Professor Hillinger about this issue can do so by e-mail at: « Hillinger@econhist.vwl.uni-muenchen.de ». He has also set up a web site at the following address: « www.vwl.uni-muenchen.de/semecon/semecon.htm ».

Presentation: STD/NA(99)28 - Are consumer price indices suitable for deflating GDP? (UK)

70. The Boskin Commission report in the United States has led countries to reconsider the principles and practices underlying their consumer price indices (CPIs). The UK has set up a Technical Group to monitor research into potential changes in the Retail Price Index (RPI). For national accountants, the CPI provides a very important family of deflators for GDP. Users expect conceptual consistency between the CPI and the national accounts deflators but national accounts considerations are not a high priority for price statisticians.
71. A problem concerns whether the UK CPI should be regarded as either a cost of living index (COLI), defined as the ratio of the minimum expenditures required to attain a particular indifference curve under two price regimes, or a pure price index, characterised by price changes in a closely defined basket of goods and services, as presently used in the UK. According to SNA93, changes in the volume of consumption are not the same as changes in welfare. SNA93 defines a volume index as an average of the proportionate changes in the quantities of a specified set of goods and services between two periods. In principle, the price relatives that enter into the calculation of inter-temporal price indices should measure price changes. There must be consistency of methodology for deflating components of GDP in order to compile reliable constant price supply/use tables, which provide the most complete environment for accurate constant price calculation. However, the SNA's advocacy of Fisher indices is at variance with its emphasis on supply and use tables.
72. The SNA suggests three possible approaches to quality adjustment over time. First, an overlap period in which a new version of a product and the old one are both sold could be used because it allows for the effects of the changing qualities to be spliced together. Second, changes in producer costs between the old and new products could be used. Third, hedonic regression techniques could be used. The last two approaches are in conflict as they reveal consumer preferences rather than consumer costs.
73. A COLI can be defined as the ratio of the minimum expenditures required to attain a particular indifference curve under two price regimens. A "domain of consumption" of the CPI could be defined as the subset that restricts consumption to goods and services sold on the market. A COLI (even a modified one) does not address the problems of quality change or the particular requirements of a constant price I-O framework.
74. The SNA is not entirely consistent regarding the conceptual basis of price and volume indices. A COLI is not appropriate for deflating components of GDP insofar as it measures the costs of welfare rather than consumption. National accountants need to ensure that they are involved in CPI developments.

Discussion: STD/NA(99)28

75. The following issues were raised during the discussion:
 - Deflation of current price estimates in the national accounts should be carried out using detailed components of the CPI, in particular by choosing components which have been calculated in a way consistent with those used in the national accounts. Alternatives should be used where the CPI components are not consistent with national accounts concepts.
 - The concerns about problems regarding price and volume indices were overstated in the paper. If a constant price supply/use table is required using a Fisher formula, it can be derived by compiling a Laspeyres and a Paasche supply/use table for the year in question, balancing them and then taking their geometric mean.

- In producing supply/use tables it is not only consistency between the CPI and national accounts concepts that is important. Other price indexes (e.g. import price indexes or producer price indexes) can be inconsistent with the national accounts requirements or even with each other.
- An international group has been set up to address CPI issues and the development of a new CPI manual. The CPI statisticians have a much broader perspective now than in the past. In the new manual, for example, a chapter is proposed that explains how CPI relates to other indexes at different stages of the national accounts all the way up to supply/use tables.
- At the recent Ottawa Group (CPI) meeting various issues were considered which are relevant for the national accounts. They related to the form of the index (CPI or COLI), the index number formula, the scope of activities to be included and, of course, handling quality change.
- In the past, the USA has shown a table reconciling changes in CPI and the corresponding price index in the national accounts. Given the changes in the CPI in response to suggestions from Boskin Commission and previous research, changes have now been made in the presentation of this reconciliation. Users understand that two price measures are produced and that their underlying purposes are different.

Presentation: STD/NA(99)29 - *On the deflation of the annual households final consumption matrix (Italy)*

76. The starting point in this exercise is the Consumption Matrix (CM), which is used to determine the branch (industry) that produces a product and also the purpose of the item produced. For example, there is a cell that refers to the medicines produced by the chemical industry and used by households and those used for medical treatment by government or business. Appropriate deflators are assigned to each cell. However, the absence of information for some of the cells required the computation of specific deflators.
77. Normally, the deflator of a single cell of the consumer matrix is the weighted mean of the elementary price indexes related to that cell, using the weights from the CPI. For some expenditure items, it is possible to distinguish between different quality levels of the goods or services, such as accommodation expenditure and purchase of vehicles. For example, adjustments for deflating vehicles are expected to reflect the difference in quality standards between different categories of the same expenditure item.
78. For goods and services of the CM not properly represented in the market basket - represented in the tables by the absence of data for a cell for certain periods - specific deflators were computed from outside the CPI or there was a special aggregation of elementary CPI items, or price indexes of similar cells or price indexes of the branch or function were assigned to the cells with missing values. Once the set of deflators referring to each cell was completed, it was possible to calculate the CM in constant prices. The totals of CMs (in current and constant prices, per row and per column) were computed to obtain the deflators by branch and by purpose. At this stage of aggregation, a variable weights system was used. The branch and purpose deflators are regarded as Paasche indices.
79. The branch deflators have been used to deflate the share of nominal output devoted to household consumption. To deflate the output of many service activities (e.g. housework services, vehicles, renting, hotels, camping, other accommodation) the same indexes have been used to obtain a real measure of consumption by branch. It was also possible to ensure coherence between the household consumption and the price of the share of the output devoted to household consumption.

Discussion: STD/NA(99)29

80. The following issues were raised during the discussion:
- The prices in the tables do not include trade and transport margins, nor taxes and subsidies on products while consumption values are at purchaser's prices.
 - Branches cross classified by purpose categories should reflect products. In practice, there is no need to deflate branch and product simultaneously.
 - The household consumption approach uses various prices as a starting point for deriving deflators rather than being used directly. Also, it improves the national accounts figures at constant prices because it highlights problems and identifies relationships.

Agenda item 5: Purchasing power parities (PPPs)

Presentation: STD/NA(99)30 - *Projecting PPPs to form time series (OECD)*

81. In all, five sets of benchmark PPP results have been released: in 1980, 1985, 1990, 1993 and 1996. A time series for PPPs is desirable to enable series of real volumes to be calculated. In general these real volumes may alter either because of revisions to price relatives or because of revisions to the local currency data.
82. In order to interpolate missing years, the PPP for year t is multiplied by the ratio of the local (country) price in t+1 to that in t and this value is then divided by the ratio of the base country price in t+1 to that in t.
83. For calculating time series of PPPs, it is proposed that household consumption be broken down into goods, market services and non-market services and that government services be disaggregated into individual and collective services, as well as showing gross capital formation, net exports and market GDP.
84. Illustrative data for Austria was presented where PPPs were estimated for all years from 1980 to 1996 using each of the five benchmark estimates. For GDP and household final consumption expenditure, the estimates for four of the series are broadly consistent but those based on 1985 are less so. Without further information, it is impossible to say whether this indicates a possible problem with the Austrian data or with the US data (US is the reference country being used). The results for capital formation for the period since 1990 clearly reflect the fact that the price indices for the two countries are derived on different bases, the US figures being based on hedonic indices and the Austrian data not.

Discussion: STD/NA(99)30

85. The following issues were raised during the discussion:
- Revisions to real volumes in international prices should automatically follow revisions to local currency data such as those arising from the ongoing revision process in the national accounts or from major changes such as the introduction of SNA93.
 - Introducing SNA93 estimates complicates matters because GDP has a different scope from that under SNA68. This affects investment (e.g. the addition of software) and so PPPs for years up until 1996 are based on a different assets boundary which creates a problem of comparability. Not having a benchmark that includes prices for software could produce some distorted results

- The proposed time series should be circulated for comment before publication, together with details of the methodology so that possible suggestions can be made for a change in methodology.
- In the past, OECD has extrapolated the PPP for GDP back to 1970. From 1990 on, there are annual series for EU countries. The Penn tables encountered a problem in compiling time series. They located three sources of error for PPPs and developed a system that spreads the errors over all three sources.
- The method described to get data from intervening years is useful.
- The method of extrapolating forward one year and back one year from each three-year benchmark could lead to a problem of the total errors “falling between” the two estimated years.

Issues arising

- The chairman explained the reason for including this item on the agenda. PPPs were discussed at last year’s meeting for the first time. Most attention in compiling PPPs is focused on the prices side to the detriment of national accounts issues. However, some of the important problems that arise are on the national accounts side. For example, some implausible results for per capita volumes have been pointed out by critics of PPPs, based on the large divergence between the highest and lowest country values. While this criticism is valid it does not necessarily indicate a problem with the prices underlying the PPPs. Rather, some incomplete work in the OECD has shown that an even wider spread in the range of values is obtained by basing the comparisons on exchange rates rather than PPPs. This implies that inconsistencies in prices are not the problem; rather they are caused by inconsistencies in the way in which countries compile national accounts (e.g. their measure of alcohol consumption) or report the weights for the PPP exercise. A report will be prepared on the outcome of this research and put on the PPP internet site.

Agenda item 6: Capital formation

Presentation: STD/NA(99)31 - *Software estimates in the Netherlands, 1986-1997 (Netherlands)*

86. The 1995 ESA specifies several criteria for classifying purchases of software in gross fixed capital formation, which create problems on an implementation level. Software must satisfy the one-year criterion (service life must be greater than one year) and also be submitted to the “small tools” rule in which purchases of less than 500 Euro are considered as immediate consumption. Software can also be bought, leased, rented or included in purchased hardware.
87. Statistics for purchases of software by enterprises can come from different sources. Statistics on the costs of automation from establishments are recorded as intermediate consumption. Special surveys on fixed capital formation can be used but they have shown minimal response on software. Statistics Netherlands compiles automation statistics which generally cover three types of software: administrative and computer aided design (CAD) (original general purpose software and bespoke software), computer aided planning (CAP), and computer aided manufacturing (CAM).
88. Regarding own account production of software, the lack of data requires that wage costs of automation staff be used as an approximation, to be classified according to management, development, support, processing and other. The labour cost of development staff is used to estimate own account gross fixed capital formation in software. No markup is applied to arrive at estimated basic prices. Purchased and own account software comprise about one per cent of total GDP at the present time.

Presentation: STD/NA(99)32 - Recognition of software as investment in the US national accounts (USA)

89. At present, non-business purchases of software are included in personal consumption expenditures, government consumption expenditures, imports and exports. Business purchases of software are classified as intermediate inputs and are not included in GDP.
90. Several recent changes have been made by the BEA as part of the upcoming NIPA benchmark revision, to be released on 28 October 1999. The new treatment of software includes business purchases of pre-packaged and custom software in the "private fixed investment" component of GDP. Own-account production will also be counted as investment. Consumption of fixed capital will be calculated with service lives of three to five years, while consumption of fixed capital of government software will be added to government consumption expenditures as a measure of its service. Government purchases and own-account production will be reclassified from government consumption expenditures to gross government investment.
91. GDP for 1996 will increase by approximately \$115 billion (about 1.5% of GDP); consumption of fixed capital will be significantly increased; and corporate profits will see a moderate increase. Small increases in government current surplus, proprietor's income, personal income, personal saving and current surplus of government enterprises are also envisaged.
92. All estimates have been prepared from 1959. Own account estimates are based on employment and wages by occupation, while new quality-adjusted ("hedonic") price indexes are being developed for pre-packaged software. Price indexes from 1980 to 1998 show a large decline for pre-packaged software and computers and peripherals. However, the price indexes for own account production of software by business and governments indicate a steady increase. Prices of custom software show little variation across the time series.
93. The BEA research agenda for improving estimates of software will focus on improving estimates of imports and exports of pre-packaged software transmitted electronically and of custom software. The agenda also looks to improving estimates of leased or licensed software, identifying Y2K-related expenditures; providing updated estimates of the share of programmers' time spent creating new or significantly enhanced software; delineating empirically-based service lives of software; and using private source data to estimate quarterly sales of pre-packaged software.
94. The SNA93 guidelines regarding purchases and development of large databases were not followed by the BEA.

Presentation: STD/NA(99)33 - A survey method to measure own-account produced software for Austria (Austria)

95. This presentation focused on own-account produced software, providing an overview of the methods applied to estimate own-account produced software and describing the methodology and results of an enterprise based survey.
96. There are three methods used to measure own-account produced software. The first and preferred method, direct observation from company accounts, requires that in-house developed software be identified in company accounts. These will be available in internal cost accounting for large companies, representing production costs rather than basic prices. Austrian taxation law requires that purchased software be capitalised. The second method is cost-side estimates based on assumed/likely labour input. It commences with the assumption on the number of staff engaged in

developing in-house software. The question of whether all staff work on software development on own account leads to problems of valuation, which can be resolved using sensitivity analysis if basic data on average wages, etc are available in a time series context. The third method, special enterprise surveys, derive estimates on costs on the input side. Such a special survey would have the advantage of quantifying the components of the cost-side calculations. However, this method is also costly and extrapolating results is difficult.

97. Austria uses special enterprise-based surveys which also include government institutions. The questionnaire comprises such questions as the type, use and cost of own account software. In the surveys, 13 per cent of enterprises indicated they are producing in-house software. Including the survey results of in-house software in the Austrian national accounts will increase recent GDP growth by about 0.1 percentage points per year.

Discussion: STD/NA(99)31/32/33

98. The following issues were raised during the discussion:

- In the case of software, harmonisation of concepts is not sufficient to attain international comparability; estimation procedures should also be harmonised.
- There may have to be a tradeoff in the dual goals to either have harmonisation of methods or to be as close as possible to present economic theory.
- Software can have a disproportionate effect on growth in GDP because it has a relatively high weight and is growing rapidly so it is important to measure it as well as possible in the national accounts.
- Several delegates commented that their country's accounting standards require enterprises to capitalise software estimates and so there is consistency between commercial and national accounts.
- Y2K-related expenditure is a large issue in a number of countries and it is clear that a significant number of businesses replaced their systems rather than upgraded existing systems to be Y2K compliant.
- Price deflators for software are a major problem, both for own-account production and for pre-packaged software. There is a large difference between price indexes for own-account and pre-packaged software if deflators for the former are calculated using weighted prices of wages and other inputs. The wages should be adjusted for changes in productivity, as it could be considered that the production of software is one area that there could have been considerable productivity gains associated with technological change.. It may be possible to obtain (purchase) data from the Gartner Group to assess changes in the productivity in the development of computer software.
- SNA93 was initially going to treat R&D expenditures as capital but the decision was reversed. The decisive consideration was the difficulties in implementing this approach. However, software was seen as more specific than R&D. The SNA standards are vague because there was little guidance during drafting the SNA, parts of which were written 9 years ago, and there was little practical experience at the time to draft guidelines.
- There is obviously a large difference in methods of calculation, assumptions, sources and results between countries. The Swedish delegate proposed that a survey should be conducted by OECD of Member countries on methodology, sources and results to produce a comparative table. This initiative was supported by Australia and the USA.

Issues arising

- The Swedish and Australian delegates will produce a questionnaire on software which the OECD will circulate to its Member countries. The OECD will also be responsible for collating the results and producing a report.
- The issues which have emerged during implementation of the SNA93 guidelines on software should be used as a basis for updating the SNA93 guidelines in this field.
- The YK2 problem and its measurement need to be addressed further in another forum.

Presentation: STD/NA(99)34 - *A disaggregated estimate of gross capital formation by sector of origin and destination (Italy)*

99. The matrix of investment flows is a distribution matrix that analyses the flow of investment goods from production sectors to using sectors. Such a matrix is the first step in obtaining disaggregated estimates of capital stock. The aim is to identify the sources of investment, classified by the owners of the investment goods, as well as the flows from producer to user. The data at the detailed industry level is rough but a lot of the errors seem to cancel each other out.
100. The supply side of the accounts is the starting point. Capital formation estimates are available by origin, taking both imports and domestically produced capital into account. They are combined with estimates from the demand side using a commodity flow approach to balance the various flows. The matrix is balanced as part of the simultaneous balancing of the whole system. Some small persistent biases in the supply estimates have been found and corrected from the use of this procedure. However, no large discrepancies have emerged that create problems in balancing the two approaches. It is possible to analyse the discrepancies before and after balancing (which is not automatic). A set of variances is used, but these are still subjective.
101. Various constraints are imposed in the balancing procedure so that the components are forced to add to prescribed row and column totals. It takes several iterations before the matrix converges into a complete balance. Further research is to be conducted into making the balancing procedures more flexible.

Discussion: STD/NA(99)34

102. The following issues were raised during the discussion:
- The sales of existing investment assets between branches are not currently taken into account but it is planned to address this issue in the future.
 - When balancing supply and demand it is important to look closely at different data sources and the strengths and weaknesses of certain data so that automatic balancing procedures can be avoided.
 - From the supply side perspective, the correct industries are often not indicated because of multi-output units and multi-capital stock units.

Presentation: STD/NA(99)35 - *Model for the cyclical trend in stocks in Belgium (Belgium)*

103. Several different information sources exist relating to quarterly changes in stocks. The only information available on stocks in Belgium comes from business surveys, which show no obvious link with changes in stocks as estimated (residually) in the quarterly national accounts.
104. While it is difficult to use the results of business surveys as an instrument for directly measuring changes in stocks, a stock formation model can be used that allows the updating of the link between economic activity and changes in stocks. There are two principal macroeconomic models on stock formation: the steady output model, which justifies a counter-cyclical trend, and the stock accelerator, which explains a pro-cyclical trend.
105. Three sources of information are used to identify the stock-holding model that is used in Belgium. The first source, business surveys, reveals a very close link between economic activity (measured by the trend in GDP) and the assessment of stocks of finished products by manufacturers. Using the second source, national accounts, an analysis of the technical characteristics of the linear regression of changes in stocks on the trend in GDP (1981-1997) yielded a significant positive coefficient. On the basis of the third source, annual accounts of enterprises, a link between the trend in GDP and stocks of finished products has been noted.
106. The clear link between trends in economic activity and changes in stocks can also be investigated quarterly. Results estimated on a quarterly basis reveal two stock formation strategies that differ according to time scale: stocks used to maintain steady output in view of demand in the current and preceding quarters, and those acting as an accelerator in the light of earlier demand.
107. Methods used to estimate changes in stock in the quarterly accounts must therefore be multi-modal and combine the use of all available information sources: the balancing item, business surveys and the results of the model based on past stocks and current and past demand.
108. The conclusion of the investigations was that stocks keep output steady in the very short term and subsequently adopt accelerator behaviour; the latter predominates if annual data are used in the analysis rather than quarterly data.

Discussion: STD/NA(99)35

109. The following issues were raised during the discussion:
 - The UK is very interested in understanding movements in inventories. They calculate data directly from industries and the data seem to support an accelerator model.
 - One of the problems with this type of analysis is that using quarterly national accounts data on stocks results in wide confidence intervals.
 - In collecting business survey data is there any evidence that managers think about nominal and real stocks separately? There is also a difficulty in validating stocks because some of the statistical difference in stocks can be from sellers and buyers recording changes in stocks at different times during the quarterly recording period.
 - Stock change is a major problem, particularly when large seasonal changes in stock holdings are involved. It is doubtful that data showing an annual stock change relationship can be applied to a quarterly model.

- Graph 1 shows no connection between opinions on stock levels of finished goods and estimates of quarterly accounts. Estimates of stocks in quarterly national accounts may be subject to errors. Graph 2 shows some consistency between growth of GDP and opinions on stock levels. Perhaps quarterly estimates derived from quarterly national accounts may be the problem.
- Better source data is the only way to address the problem adequately.
- The business survey only concerns finished products, but stocks contain more than finished products. It is necessary to disaggregate different types of stocks because they behave differently.
- Business surveys which are qualitative (i.e. sensitivity indicators) are dangerous to use to calculate quantities.

Agenda item 7: Backcasting

Presentation: STD/NA(99)37 - Retropolating Italian annual national accounts data according to ESA95 (Italy)

110. ISTAT will undertake a large revision of the Italian national accounts in 1998, with 1992 as the benchmark year, using results derived from censuses and special surveys on households. The revision aims to integrate results for the benchmark year from these sources into the national accounts. Also, new estimation methods will be implemented to produce results that are “harmonised” with GNP. A 1995 base will be brought in for estimates at constant prices.
111. It was possible to reconstruct the “new” GDP in accordance with ESA79 definitions to provide the link between the new and old series. The reconstruction of series was divided into the following steps: reconstruction of a set of initial estimates of yearly national accounts series at current prices, in accordance with ESA79; balance of initial supply and demand estimates within an input–output table; estimation of ESA95 typical aggregates at current prices and construction of demand and supply side time series in accordance with ESA95; and deflation of yearly aggregates at current prices using a 1995 based price system. Both output and value added aggregates were used

Presentation: STD/NA(99)38 - Backward calculation of quarterly national accounts in Italy (Italy)

112. The key factors influencing the revision have been the adoption of the new ESA95 standards; the introduction of new classification systems; choice of new short-term indicators in estimating some quarterly items; and the use of a new seasonal adjustment procedure (Tramo-Seats). Data covers the period from quarter 1 in 1988 to quarter 1 in 1999. The Italian QNA continue to be compiled by using an indirect approach.
113. Long and consistent quarterly indicators are needed for the annual data to be disaggregated. The main problems involve the aggregation of the old indicators; reconstruction of series; and adoption of new indicators, such as those for intangibles. The adoption of Tramo-Seats as the seasonal adjustment procedure reflects the general strategy to move towards a model-based approach taken by ISTAT
114. From a prices and supply side perspective, the procedure for calculating quarterly constant price estimates by double-deflation comprises two steps: pure-deflation and controlled-deflation. All estimates of input-output indicators were fully implemented as from 1992, while figures for 1982 to 1991 were retrapolated. The calculations were at the level of 33 branches of economic activity

and 5 types of producers for the supply side. The main innovation concerns value added now being obtained through the constant price quarterly production (output) estimates.

115. Unlike other parts of the QNA, current quarterly figures of exports/imports of goods and services are estimated by a direct approach based on f.o.b. valuation. For goods, constant price estimates of imports/exports are obtained by using Fisher-type price deflators. Imports of services are deflated by a weighted average of prices adjusted by relevant exchange rates, while exports of services are deflated by a weighted average of output price indices.
116. New indicators for employment and compensation of employees are constructed using data from the labour force and large enterprises surveys.

Presentation: STD/NA(99)39 - Backward calculation of Dutch national accounting data - lessons from the past: Towards a new approach (Netherlands)

117. There are two objectives in the Dutch national accounts: to provide good level estimates and to produce data that adequately reflect economic growth. The primary objective, as for all countries, is to ensure comparability of data over time. In order to ensure that data also reflect the level of economic activity properly, it has been necessary to complete a major revision every ten years (1969, 1977, 1987, 1995). Consequently, consistent time series data have to be calculated.
118. Two broad methods can be distinguished for backward calculation in the Dutch national accounts: annual backward calculation and benchmark years combined with interpolation. First, methods of annual backward calculation can compile figures from “scratch”, meaning that all years for the time series are compiled in the same way as those for the revision year; by superimposing adjustments on integrated data before revision; by compiling time-series data by extrapolation using annual growth rates calculated before revision; or alternatively by using a combination of the last two methods.
119. Methods relating to the second category - benchmark some years and interpolate - involve either estimating figures for benchmark years from scratch, using new definitions, classifications and sources; or determining figures by superimposing adjustments on integrated data before revision. All methods differ according to the resources needed (e.g. annual backward calculation from scratch uses many resources). The quality of results has to be balanced with costs. For example, extrapolation using growth rates before revision is a trade-off with the quality of the data in time series. Applying growth rates may not present a major problem on a macro level but the quality of time series data certainly suffers at a more detailed level. Other issues concern timeliness (time series must be available as soon as possible), transparency of methods (superimposing adjustments on to data before revision is more transparent than other methods) and level of detail of data (the main users want detailed data such as supply and use tables and input-output tables in current prices and the previous year’s prices for a long time series).
120. Recently, Statistics Netherlands decided to change the method for compiling time series data of national accounts to a variant of the benchmark year/interpolation method. The 1995 revision necessitated inventory and quantification adjustments for benchmark years, which also allowed for consistency within the input-output framework. In the interpolation procedure, corrections for benchmark years are expressed as a percentage of original data; subsequently, these percentages are interpolated between the benchmark years assuming a linear pattern using specially designed software. It is important to note that this method will not be applied to sector accounts.

Presentation: STD/NA(99)40 - Implementation of the 1993 SNA in Canada: Backcasting issues (Canada)

121. Within the context of the SNA93 implementation in Canada, the three inter-related backcasting issues address whether the new and revised series consistent with SNA93 can be backcast; the methods that can be used for backcasting, and how far back a series should be backcast. In November 1997, many changes occurred in Canada with respect to the classification of sectors and transactions, and concepts and methodology. A highly integrated national accounting system has been in place in Canada going back to 1961, which includes annual input-output tables, annual and quarterly income and expenditure accounts, monthly real GDP by industry, quarterly financial accounts and annual balance sheet accounts. Canadian compilers and users jointly decided that it would be appropriate to backcast new and revised series to 1961 rather than limiting the revision to a short back period, say to 1991. Every effort was made to recompile the series for the back period for institutional units, reflecting the changes entailed by the implementation of SNA93 using their own accounting or other records available in earlier worksheets as much as possible.
122. Changes such as those caused by the new SNA can be meaningfully backcast by reference to the accounting and other records for the period in question and by replicating the new methodologies for the back period. Fixed proration formulas for backcasting are not very helpful for the kind of changes required to implement the 1993 SNA.

Discussion: STD/NA(99)37/38/39/40

123. The following issues were raised during the discussion:
- The main strength of the national accounts is looking at the behaviour of economies over time and how they perform through the business cycle. This requires a lengthy and consistent time series.
 - Three reasons can be identified for making revisions in the national accounts – new data needs to be implemented (easiest way of making revisions), improvements in methodology need to be completed using benchmarking; and the new concept of backward calculations to implement the new SNA.
 - Denmark released the first figures based on SNA93 for the years 1988-1996 but users responded that it was too short a time series. Later, a preliminary backcast figure was produced. A special group for backcasting was established which calculated figures from 1966 to 1987 based on SNA93. The project is divided into 3 steps. Figures are calculated according to the old system (SNA68) taking into account new sources, calculations methods, etc. The process is along similar lines as that in the Netherlands: a mixture of interpolation and benchmarking exercise, though there is not one year that is a benchmark for the whole of the national accounts. New activity and COICOP classifications were incorporated. The definitional changes between SNA68 and SNA93 were handled separately.
 - Norway adopted a similar approach to Denmark and the Netherlands. The methodology for backcasting depends on user requirements and when the last revision took place. When Norway first implemented the new national accounts system in 1995, figures were only available for five years. The user requirements (including those from the Research Department, which is responsible for detailed macroeconomic research) were for long time series and so detailed data were calculated from 1978.
 - Ideally, we should have standard methods of backcasting, but the methods depend on the availability of data and how accounts are put together. The UK used an approach a bit similar to

the Canadian methods that look at conceptual changes. The UK accounts were backcast to 1948, with supply/use tables for the last 10 years. It was very time consuming and expensive to complete revisions.

- The IMF considered international standardisation on revision policies would be useful because this greatly influences data comparability. The choice is to make revisions as they occur or to let users worry about differences caused in growth rates. It is difficult to come to one specific method because decisions depend on views on the quality of data involved. It is necessary to apply the methodology on a case by case basis. On the issue of the revision of annual and quarterly accounts, generally users would like revised quarterly levels that fit with annual accounts.
- In the USA, the goods and services and income accounts are the focus of making consistent time series and there are no annual I-O tables. Complete I-O tables are probably not necessary anyway because the type of analysis using long-term time series focuses on aggregate measures. For example, a full set of accounts is not needed to look at productivity analysis, behavioural analysis of savings etc. Initially the USA will go back to 1959 and then, 6 months later, to 1929 where the accounts start currently. The ability to complete backcasting depends on the statistical system implemented. There is a problem in the USA of how to introduce into time series census information and the survey data used in between as extrapolators.
- At present, Germany has backcast data only to 1991. To fulfil the ESA-regulation, by 2005, annual data of some aggregates will be backcast to 1970 and quarterly until 1980. So far, direct methods have been used. Input-output tables and supply/use tables are not backcast.
- In Australia the objective was to provide backcast quarterly series to 1959 using various techniques. The annual national accounts are the sum of the quarterly national accounts from 1959 on. Some disaggregations (sectoral information) are only backcast for 10 years at present.

Agenda item 8: Non-market output

Presentation: STD/NA/RD(99)1 and STD/NA/RD(99)2 - *Measuring public sector productivity: Report on the PUMA Expert Group meeting on measuring productivity in the government sector (OECD)*

124. Productivity has increased steadily in market services over the past few decades, but the measured productivity of non-market services has generally grown slowly, particularly considering the public sector reforms in many countries in recent years. However, productivity in the non-market sector suffers from inaccurate measurement. The issues surrounding the PUMA expert meeting are founded on the belief that there has been a productivity increase in the public sector and it examined possible changes in methods for productivity measurement in this area.
125. From a governmental perspective, relevant policy for the public sector involves efficient allocation of resources - both between private and public sectors, and among departments and agencies within the public sector - and evaluating the impacts of public management reform. From an agency management perspective, the new context focuses on results through management objectives. New challenges centre on greater and more efficient levels of production without increasing costs, but at the same time becoming more competitive.
126. Output measurement is a crucial factor in any assessment of cost-effectiveness, while productivity measures enable decision makers to make informed judgements. The move to tracking outputs in some countries to assess the effectiveness of budgetary measures has helped to provide the data needed to assess productivity changes in the government sector.

Discussion:

127. The following issues were raised during the discussion:

- In the USA there is a programme aimed at measuring productivity in the government sector, with a law having been passed stating that every agency must include a performance measure in its reports. Since then, there has been large debate on how to measure performance of government agencies, particularly whether measurement should be based on outcomes or outputs. It is easier to measure outputs. Statistical offices must comply with new legislation to measure output, but the methodology proposed is fairly simplistic: for example, should performance be measured in terms of the size of revisions to initially published data? Statistical agencies are keen to be involved in measuring performance (e.g. in schools and hospitals).
- Several countries commented that their agencies were interested in how to measure productivity in government sectors. Government volume increase is considered to have been underestimated due to declines in employment associated with apparently stable or even increasing output.
- The relationship between the concept of productivity and national accounts requirements needs to be carefully thought out. Productivity is a measure of the increase in efficiency in output of services – not of the effectiveness of these services.
- The national accounts are not interested in measuring the effectiveness of production, while government should be interested in measuring such effects.
- The presenter said that PUMA's work is based on the initial hypothesis that we often hear references made to performance, efficiency, shortcomings of indicators etc, and so we must eventually define these terms. We are talking about outputs and productivity as measured by economists and statisticians rather than by those interested in measuring the efficiency of government outputs. More depth may be necessary, but we definitely do need to assess outputs for government and then calculate productivity rates. Those countries working on directly measuring government outputs generally do so on an agency by agency basis, and then these results are aggregated by various methods. Not all OECD statistical offices wish to come up with productivity measures in this way because the objectives of national accountants and government are not the same.

Presentation: STD/NA(99)41 - *Non-market output - recent work by the ABS (Australia)*

128. The aim of this research is to assess the feasibility of introducing new volume measures for non-market output into the national accounts. The ABS has developed experimental new output measures health and education, and is in the process of developing such measures for police, corrections and courts services. Together, these activities constitute about two-thirds of total non-market services.

129. For segments of health services, new output volume measures for hospitals have been estimated by applying cost weights to case-mix data; estimates for psychiatric hospitals and nursing homes are based on cost-weighted patient days; estimates for medical services are based on fee-weighted number of attendances; while remaining components, which account for 20 per cent of total health services, continue to be based on input costs deflated by output price indexes. An annual chained Laspeyres index was constructed from these four output volume measures to arrive at an overall output volume measure for the health services industry. While the use of detailed disaggregation of the new output measure picks the "between-cell" (compositional) quality change, it does not take account of quality change within "cells". Other issues concern the treatment of unmeasured components, such as outpatient services and public health activities, and the influence of "gaming"

among service providers. Comparison of old and new series of output volumes for health and education show that new series data are growing more quickly than those using the old methods.

130. For components of education, the ABS has developed experimental output measures for schools based on the number of students, for universities based on the fee-weighted number of students, etc. There are no quality adjustments made for schools and proxy adjustments are undertaken for universities, etc. The ABS is experimenting with publication/citation indexes in an effort to measure the research and similar outputs of universities.
131. Output volume measures for police services are calculated according to an expenditure weighted index of caseloads across major activities (investigation, patrol, etc.). Measures for correctional institutions are calculated as cost-weighted prisoner days, while estimates for the justice system are calculated as an expenditure-weighted index of time-weighted caseloads across major levels (civil, criminal, etc.).
132. Regarding other non-market services, which comprise about one-third of total market services, caseload counts may be used for some services provided to individuals (e.g. administration of social security payments, processing of tax returns), while the present input-based approach may have to continue to be used for the remaining services (e.g. policy advice).
133. The next step for the ABS is to test new output measures within the supply-side framework to evaluate the plausibility of the new measures; and then to decide whether the new measures can be brought into the national accounts. If the measures are plausible, they will be incorporated into the national accounts from the middle of next year onwards. Education is problematic due to the quality issues but it is considered that new measures for health, police, correctional services and court services are likely to be implemented.

Discussion: STD/NA(99)41

134. The following issues were raised during the discussion:
 - If the number of students is used as the output measure for education there is a problem due to the quality problems. An alternative would be to use some sort of input productivity method which would also enable account to be taken of the use of more or better materials (the output measure will exhibit no change but intermediate consumption will increase using the input method).
 - Regarding quality change caused by different student/teacher ratios, there is a debate on class size in Australia at the moment and current thinking is that class size makes little difference within a limited range. Very large and very small class sizes do, however, seem to affect the quality of education.
 - In response to a question about how would the ABS handle the break in series in volume growth given data are available for only a short time (e.g. for the late 1980s and the 1990s), the ABS said that the first choice would probably be to simply show a break in series, even though this is not desirable from a time series perspective. The second option is to compile input and output based measures side by side. The question raises an interesting trade-off between having the best possible measure of growth for recent periods or having a less than optimal measure of growth but maintain consistency within the time series.

Presentation: STD/NA(99)42 - Non-market output at constant prices: Methodology and application in the Italian national accounts (Italy)

135. To estimate GDP at constant prices, a double deflation system based on price indices for output and intermediate consumption of various branches was implemented. In the Italian national accounts activity is disaggregated into 101 branches. The analysis by branch no longer separately identifies the activity of general government and non-profit institutions serving households which were formerly included in the branches of non-market services (they are included in the institutional sector classification).
136. Estimates at constant prices were calculated by dividing the economy into market and non-market sectors in compliance with the SNA93/ESA95 guidelines. General government represents the largest role in non-market services. Little data is available on the NPISH sector. However, to the extent possible, the methodology adopted was similar to that used for general government output.
137. Education estimates were also calculated using an input-based method but which is disaggregated according to the level of education pupils receive. In addition, experimental health and education services provided to individuals were measured on the basis of output methods using quantity indicators (an upper limit was applied to the education services provided). A large number of other general government services are included. Collective services are connected to collective general government operations (national defence, public security, etc) and input based methods are generally applied.

Discussion: STD/NA(99)42

138. The following issues were raised during the discussion:
 - The development of diagnostic groups for health expenditure has helped statistical offices to collect the data needed for an output-based method for health.
 - Various proxy output measures are available in different countries and there is currently no agreement on what the correct measure of output is.
 - In response to a question concerning whether the OECD should specify the types of data countries should start collecting to ensure comparability, the chairman said we cannot wait for agreement on the data because so many data sets are country specific. In addition, the OECD cannot enforce consistency in approaches. The international organisations must keep track of the differences underlying different sets of output data.
 - The importance of harmonisation within Europe was stressed. Using proxies as output indicators risks complicating the issue and difficulties could arise if some countries use welfare indicators rather than output indicators.
 - There are difficulties involved in trying to measure non-market services as market services. It is necessary to develop a list of criteria that these measures should meet (e.g. when is it better to use simple proxies or input measures?).
 - We need to distinguish between output and performance, particularly within the context of education, especially when we use costs to measure the nominal output. Making a productivity adjustment to deflated inputs is too risky because of the uncertainties surrounding such an adjustment.
 - Ideas in this field have been developing since 1975 when Peter Hill released a paper on using outputs for measuring constant price growth. Eurostat Task Forces are looking at how to define and measure outputs in health and education as are several NSOs. It is not always true that

deflated inputs are the last resort; for a large part of collective services, output is actually the sum of inputs (e.g. policy advice, diplomatic representation abroad etc) so using input measures is the correct approach in these cases.

Agenda item 9: Employment estimates

Presentation: STD/NA(99)43 - *The need for employment measures consistent with the national accounts (Australia)*

139. Data for employment estimates in the national accounts are derived from monthly labour force surveys (LFS), quarterly surveys of employment and earnings (SEE), and annual economic activity surveys. Estimates of employment are used by the ABS to compile estimates of compensation of employees and also to calculate quarterly industry value added estimates for some industries. The estimate of compensation of employees is essentially derived by multiplying SEE average wage earnings by the numbers of wage and salary earners from LFS (the LFS estimates are adjusted for persons employed but not receiving pay, for multiple job holders, and for persons incorrectly classified as wage and salary earners to place the two sources on a comparable basis).
140. Three key analyses of Australian national accounts require employment (or related) estimates: average earnings, productivity (both labour and multi-factor), and input-output employment multipliers. The ABS compiles both labour productivity (quarterly) and multi-factor productivity (annual) estimates for “market” industries, where hours actually worked is used as a measure of labour inputs although no account is taken for changes in quality of labour. This approach produces different results from those based on estimates compiled either using persons employed or “full time equivalents”. Input-output employment multipliers are calculated for each I-O industry using LFS estimates of the number of persons employed.

Presentation: STD/NA(99)44 - *The compilation of Dutch employment estimates after the 1995 revision (Netherlands)*

141. From the users’ perspective, one of the major problems prior to the 1995 revision was that (detailed) labour market data according to the so-called labour accounts was inconsistent with other employment (-related) data in the national accounts. Thus, the integration of data on employment and compensation of employees was a major goal of the 1995 revision. Labour accounts in the Netherlands comprise an integrated system of data on employment and compensation (a one-to-one link between the micro and macro-economic data). The source data used are labour force surveys; establishment surveys on employment, earnings and labour cost; and social security registrations. Source data for labour estimates in the national accounts includes production statistics, agricultural census, cost and finance statistics for health and specific sources for government, banking, insurance, etc., and, last but not least, the labour accounts.
142. Before the 1995 revision, there were small differences between macro-level estimates in the Labour accounts and those in the national accounts. Larger differences in level estimates were seen at a meso-level. Data on changes in employment and compensation of employees in the national and labour accounts were made consistent.
143. The results of the 1995 revision showed an increase in estimates of employment (full-time equivalents) and compensation of employees for the labour accounts and the national accounts. There is now consistent data available for industries at a 2-digit level, and publications for national accounts and the labour accounts have been combined.

144. The main differences in the data before and after the revision are caused by the compensation of employees in kind; change in treatment of people working in sheltered workshops; change in definition of compensation of employees (reimbursement of travel expenses, imputed contributions, etc); and exhaustiveness.
145. Future improvements are mainly of an organisational nature. They include the further alignment of the production processes of national accounts and the labour accounts and further research in some problematic areas such as education and banking. Separate results on employees and self-employed will be available next year.
146. A copy of a PhD paper on the labour accounts is available on request to Statistics Netherlands.

Discussion: STD/NA(99)43/44

147. The following issues were raised during the discussion:
- The labour based on full-time equivalents varies according to industries and this should be taken into account in deriving the overall labour measure expressed in full-time equivalents.
 - Labour force data can be used as overall indicators of movements in employment but a whole range of adjustments is required to provide a good measure of employment input on a national accounts basis.
 - It is difficult to define exactly what constitutes a paid employee. For example, in small businesses that either are not incorporated or which have a corporate status it is difficult to say whether or not the owners are self-employed or employees.
 - The UNSD, in close collaboration with UNECLAC and ILO, is planning to start work next year on the consistency at the international level between national accounts and classifications guidelines on the one hand and employment statistics and classifications on the other.

Presentation: STD/NA(99)45 - *The calculation of productivity in the national accounts: The situation in Switzerland (Switzerland)*

148. In the national accounts, labour productivity is defined as the efficiency with which human resources are used in the production process. Labour productivity is value added at constant prices per unit of employment cost contributing to production. Productivity is an important indicator for economic analysts, and it is often examined by branch. The principal concepts to respect with regard to calculating productivity are the limits of coverage, exhaustiveness of the volume of work measure; and coherence of the statistical unit.
149. Apparently stagnating labour productivity in Switzerland is a controversial subject, especially with regard to the choice of appropriate statistics relating to the input of work and the limits of productivity measurement in the case of financial activities. According to economic theory, there is a strong correlation between the volume of production and the volume of labour inputs. Increasing productivity is a structural phenomenon which has a positive impact on the development of the economy.
150. The production of financial intermediaries is mainly comprised of clearance commissions. However, the volume of clearance commissions does not necessarily reflect the whole output of banks because some of their activities are speculative. While the direct effects of trading in

speculative instruments are shown, often there are speculative gains. Therefore, the true level of banking activity in Switzerland is understated, with a consequent impact on the estimated change in productivity. The SNA treats the gains as non-productive even though there is employment related to the function and despite the fact that these gains “subsidise” the cost of other services.

Discussion: STD/NA(99)45

151. The following issues were raised during the discussion:

- When measuring productivity it is necessary to examine more than one input (eg labour productivity can be influenced by the capital/labour ratio, as well as the "underlying" productivity of the labour). Productivity can be affected by both cyclical and structural effects. It was suggested that banks earn revenue by making a market for derivatives and other financial instruments, and that the "margins" on these activities should be considered as part of income for production. However, profits (and losses) generated from holding financial instruments over time do not reflect income from production and therefore should not be treated as such in the production account.
- This issue is indicative of SNA problems caused by the hard-line view that lending is not a productive activity. This paper presents another proposal that suggests a more radical review of transactions involving financial services would be desirable. This should encompass enterprises outside the financial corporations sector which are also engaged in similar types of activities.
- Wages and salaries for workers in the financial sector must be included even if they are working exclusively on speculative-type operations. Perhaps this means that the normal way of calculating labour productivity is inappropriate for the banking sector.
- Anything which is defined as production must be consumed somewhere in the system. Thus if speculative services are somehow considered to represent production within the system then the consumer of the “service” must be identifiable within the system, with the consumption of the service shown as either intermediate consumption (and therefore a charge against GOS) or as final consumption expenditure, depending on the nature of the consumer.

Issues arising

- The issues underlying this particular problem of measuring banking output need to be developed further with the longer-term view of submitting a proposal to the ISWGNA for a change to be made to SNA93.

Agenda item 10: Institutional sectors

Presentation: STD/NA(99)46 - *Allocating small enterprises to institutional sector (OECD)*

152. Enterprises must be separated into corporate entities classified to the financial or non-financial sector and unincorporated enterprises classified to the household sector. In legal terms, all incorporated enterprises have full accounts and are listed on business registers. Conversely, unincorporated enterprises are not legally incorporated, they often have only partial accounts and thus may not appear on the business register. The SNA offers conflicting advice for those ambiguous cases where enterprises are legally incorporated but do not have a full set of accounts or do not appear on the business register. These conflicting exemptions often occur in transition countries which expect the business register to cover every economic unit including all the very

small incorporated businesses and the unincorporated ones also. The SNA assumes legal incorporation means full accounts. "Grossing up" often assumes in practice that those above the employment cut-off point are legally incorporated with full accounts.

153. In Poland, for example, 91.1 per cent of enterprises in 1996 contained five or fewer employees, while in Finland (1994) 86.2 per cent of enterprises contained four or fewer employers. The implication is that small enterprises largely correspond to "informal" activities. Showing the impact of these small units by placing them in the household sector may be analytically beneficial.

Discussion: STD/NA(99)46

154. The following issues were raised during the discussion:

- All enterprises (incorporated and non-incorporated) should be covered in the business register, including details on employment, and some sort of activity indicator. The size distribution in industries is heavily skewed in all countries, not just transition countries. With SNA, an employment cut-off is not the criteria for classification as a quasi corporation so, in practice, a cut-off based on employment is not a satisfactory solution.
- We should try to act in the spirit of the SNA, not interpret it in a legalistic sense. Issues differ so greatly from country to country that a manual cannot be drawn up to cover all issues. In practice, the main issue determining whether an unincorporated unit should be classified as quasi corporate is whether or not it can act independently of its owner.
- It is impossible to generalise a cut-off for all countries. Using legal criteria for incorporation in a country provides the best approach.
- In some countries, all unincorporated enterprises are included as quasi-corporations.
- The presentation may have been misleading in referring to presence on the business register rather than inclusion in enterprise surveys as a dividing characteristic between larger and very small enterprises.

Presentation: STD/NA(99)47 - *The classification of quasi-corporations in Korea (Korea)*

155. One of the aims of the SNA is to compile institutional accounts by sector. However it is difficult to distinguish between household sector data and corporate data. Quasi-corporations can be defined as unincorporated enterprises that function in a similar fashion to corporations; in other words, they must possess a complete set of accounts, including balance sheets.. For the purpose of institutional sectoring, they are treated as if they are corporations. In the 1968 SNA, production accounts were classified by economic activity and other accounts by institutional sector. With the 1993 SNA, all accounts including production accounts are to be classified according to institutional sector so more accurate criteria are required for classification.
156. The income tax law in Korea is that all enterprises must maintain double entry book-keeping and report their financial statements to tax authorities. Thus, it is considered that those businesses which submit a simplified form of income details for tax purposes should be classified as "pure" unincorporated enterprises because they do not keep a full set of accounts.
157. The main criterion used to separate quasi-corporations from other unincorporated enterprises is that quasi-corporations are defined as unincorporated enterprises owned by households but which submit a full set of financial statements to tax authorities. Financial data on these enterprises are stored on a database in the National Tax Office.

Discussion: STD/NA(99)47

158. The following issues were raised during the discussion:

- In Canada, all unincorporated enterprises and corporations are placed in a “business sector”.

Agenda item 11: Statistical developments in OECD

Presentation: STD/NA(99)48 - *Statistical indicators about electronic commerce, the information economy and the information society (OECD)*

159. In 1997, a Working Party on Indicators for the Information Society was established to provide a series of definitions for the “information society” and “e-commerce”. The goal of the Working Party and the subject of the three discussion papers published by the subgroup were to address policy needs, the definitions used (or more specifically the change from an industrial to a commodity based definition) and the present and future statistical measurements. An activity-based definition of the Information and Communication Technology (ICT) sector includes manufacturers and service sector companies. The ICT sector is not seen as one part of an overall classification; but rather as an alternative view. It is recognised that not all of the activities nor all businesses in some industries are really ICT. Significant difficulties also arise in data collection.
160. A commodity definition of the ICT sector is difficult because existing classifications are not based on technological grounds. Both local production and international trade data are required, rendering it necessary to consider both CPC and HS systems. It is hoped that the definition will be revised by the middle of next year.
161. The definition and measurement of electronic commerce is the most sensitive aspect of the work. There is considerable confusion surrounding the topic due to the use of different terminology. The 1998 S&T Ministerial meeting decided that the definition and measurement issues should be given very high priority. A sub-group has been formed to look at possible definitions and measurement issues. A progress report on the activities of this group which tries to bring together the policy needs, definitional and measurement practices is also available.

Discussion: STD/NA(99)48

162. The following issues were raised during the discussion:

- This work is a developing field and has implications for national accounts.
- From a national accounts perspective, there is a parallel between measuring tourism and ICT because both are cross-cutting activities that do not fit easily into the normal industry definitions. An ICT satellite account may be a useful way of presenting information on ICT activity in a national accounting framework.
- From an industry classification perspective, the American system has an information sector. Statistics will be published soon from a 1997 census. Statistical agencies in the USA are working together on the question of e-commerce. The approach is to look at transactions rather than industries or products as a starting point. The USA does not use model surveys but puts a question on existing surveys thus allowing comparability with data that already exists in the public domain. It also allows the flexibility required to produce a satellite account similar to that for tourism (e.g. by enabling information to be integrated into an I-O framework).

- E-commerce covers more than just financial transactions. The aim of the Working Party is to set out a range of definitions rather than a single definition. Information on transactors is important to policy analysts.
- A satellite account would be the most suitable approach. For example, a major part of ICT services is not physical and is produced in-house. It could be presented more flexibly in a satellite account.

Presentation: STD/NA(99)49 - Statistical Working Party of the OECD Industry Committee: Overview of activities (OECD)

163. The activities of SWIC are organised around two main areas: productivity measurement and analysis, and databases and indicator development.
164. A manual on productivity measurement is currently being produced. The main aim is to provide an accessible guide for statistical offices and analysts that is conducive to international harmonisation. Issues addressed include the preferred measure for labour input, capital stock, and methods for measuring them, many of which have already been addressed at this meeting. The first draft of the manual will be discussed on 16 November 1999, with publication expected in 2000 after further review by countries.
165. Another proposed reader on quality-adjustment of price indices for IT products aims to provide an accessible guide to different approaches to constructing IT deflators; to discuss some of the arguments surrounding hedonic deflation methods; and therefore to improve international harmonisation. Informal discussion of the reader, in the form of a small steering group, is scheduled for 18 November 1999, while a draft will be available for review by countries in 2000.
166. SWIC also oversees the compilation and dissemination of national statistics and the development of a large “ready-to-use” database for industrial analysis. This has four components: STAN (Structural Analysis database), BTM (Bilateral Trade by industrial activity), ANBERD (Business Enterprise R&D expenditure) and I-O tables. STAN makes use of the Annual National Accounts (ANA) activity tables maintained by the OECD and Industrial Structure Statistics (ISIS Revision 2). The bilateral trade database (BTM) draws on foreign trade statistics.
167. Challenges to be faced with expansion include the transition from ISIS Revision 2 to Revision 3 and the improvement of knowledge about the data. Three important issues involve the valuation of value added, which is important in the assessment of data for productivity analysis; knowledge about how value-added by industry has been deflated; and concordance between input and output measures.

Discussion: STD/NA(99)49

168. The following issues were raised during the discussion:
- Forecasts and productivity estimates are presented and reviewed by country representatives/experts in the Economic Review Committee. This year, marked differences were noted between OECD-derived TFP results (derived with a common methodology for all countries) and official data for Canada (based on national methodology). Because productivity measures generally receive significant attention in Canada, this issue was taken up by the Press and gave rise to widely-publicised discussions.

- TFP measurement is a very sensitive issue in Canada. The official TFP statistics published are very different to those presented by OECD. Even though they are not comparable, the Press assumes that they are.
- OECD is currently reviewing its productivity measurement programme and is striving for greater transparency on sources and methods to explain possible discrepancies between results from different statistical sources.
- National accountants are generally very interested in the manual on productivity measurement and the methods used to deflate IT products. The relationship between the capital stock and productivity manuals is important. Participants were assured that there has been co-ordination to ensure consistency between the two documents. Drafts of the productivity manual will also be made available to national accountants for information and comments.

Agenda item 12: Balancing and international comparability

Presentation: STD/NA(99)50 - *Coherence adjustments in the UK national accounts (UK)*

169. This article is due for publication shortly in Economic Trends. Three classifications of adjustment measures can be discerned: conceptual adjustments, quality adjustments and coherence adjustments. This paper discusses the coherence adjustment for 1995 up to 1997 and also the quality adjustment, although the distinction between these two types of adjustment is often unclear.
170. Quality adjustments in the 1999 Blue Book for income amount to £1 billion, with a -£1.5 billion adjustment for production. Coherence adjustments for production total -£3.3 billion and £3.6 billion for income. The total quality and coherence adjustments for expenditure in 1999 in the UK amount to £4.7 billion. The average coherence adjustment is 0.5 per cent. These estimates should be taken as rough guides only. Quality and coherence adjustments are published each year in the UK Blue Book. Gauging user reaction is important to allocate future resources and to drive future development.

Discussion: STD/NA(99)50

171. The following issues were raised during the discussion:
- The USA has been experiencing large problems with statistical discrepancies. These differences have been published, in addition to information on the conceptual adjustments. Publishing data in the public domain enables users to understand how the accounts are constructed and points to areas where weaknesses in measures are greatest and so where additional information should be collected.
 - All NSOs have similar problems with discrepancies. Quality ratings should be published for the national accounts as well, even if they are only subjective.
 - When the supply/use tables were introduced into the Australian national accounts, the ABS published some "coherence adjustment" data, but there was little apparent user interest. However, this may have been due to the fact that supply/use tables were introduced at the same time as SNA93 and chain volume measures, which may have "overshadowed" the impact of supply/use balancing.

Presentation: STD/NA(99)51 - Value added by industry: A problem of international comparison (Canada)

172. At present, OECD Member countries calculate value added at factor cost, basic prices and at market prices. The majority of OECD Member countries use the latter method. In Canada gross value added is calculated at factor cost by industry as it is felt that this measure better reflects the intuitive meaning of the concept. This concept has been used extensively for both labour productivity and TFP analysis.
173. 'There are problems with the comparability of the industry data reported to the OECD and which are presented in OECD publications. The main problem is that the valuation basis for the different estimates differs from country to country - some provide data at basic prices, others at purchasers' prices and others on a basis somewhere in between these. The differences can be quite large. For example, indirect taxes contribute 8.1 per cent of GDP at market prices at the total economy level in Canada. However, two thirds of indirect taxes are levied from two industries: trade (wholesale and retail) and real estate (including owner occupied). Together these two sectors contribute 25.2 per cent of value added at market prices or 21.7 per cent of value added at factor cost. Such a large difference in share would invalidate most comparisons being made between countries if some countries are reporting on one basis and others on a different one.

Discussion: STD/NA(99)51

174. The following issues were raised during the discussion:
- The issue of whether to use basic or market prices depends on the type of analysis being carried out. There are variations in the basis used by different countries and, because of their domestic requirements, it is difficult to force countries to adopt the same valuation basis.
 - SNA93 makes no recommendation regarding the valuation basis which should be used for gross value added.
 - Some countries compile value added at basic and at market prices so they could report both.
 - The UNSD reported that there is a Technical Subgroup of the ISWGNA on implementation of the new questionnaires. After the initial transition period, a meeting will be held (probably late next year) to compare all adjustments that international organisations have to make to data to ensure comparability.
 - The IMF said that countries should not add to the problem by using non-standard valuation methods.

Agenda item 13: SNA93 implementation

Presentation: STD/NA(99)52 - The new assessment of goods and services in the national accounts (France)

175. Earlier this year, a new set of French national accounts, consistent with SNA95, was published (referred to as "base 95"). The main impact of this change relates to improvements in the measurement of the main macro-economic aggregates. Comparisons of the differences between the old ("base 80") and the base 95 for GDP and final expenditures show an increase of nearly 2 per cent in the level of GDP and 1 per cent for final consumption. The three primary causes of the changes are the incorporation of France's overseas department (DOMs) into the economic territory

covered by the new base, the use of new or re-exploited statistical sources, and the introduction of new methodologies.

176. The inclusion of overseas departments accounts for about two thirds of the difference, which also accounts for the decline in foreign trade. Changes in definitions of investments accounted for about 4 percentage points difference. Some activities previously considered as non-market have been reclassified as market activities.
177. The trend at the macro level is similar for both bases, reflecting negative growth during the 1993 recession, recovery in 1994, a slowdown in 1995, etc. Also, the analysis is very similar for both bases when the trend is broken down into domestic demand and foreign trade. Despite the change in level, only small changes in movement are caused by the extension of the definition of gross fixed capital formation.
178. The base year for constant price estimates changed to 1995. In future, the base year will be changed every five years. A chain volume series is also being developed for the annual accounts, using 1995 as the reference base.

Presentation: STD/NA(99)54 - Revision of the Dutch national accounts: First results and background (Netherlands)

179. The main goals of the Dutch 1995 revision were to implement SNA93/ESA95 into the national accounts; to include changes brought about by EU requirements; to integrate new source data and calculation methods; to improve the link between national accounts data and source data (among which labour accounts); and to improve internal consistency in the national accounts system, particularly the discrepancy between Net Lending according to the capital account and Net Lending according to the financial account. The classifications of industry and products were revised in 1993.
180. The estimate for GDP for 1995 has been increased by 4.1 per cent as a result of the revision. The largest component is for consumption of fixed capital on public infrastructure (+1.4 percentage points of the total of +4.1 per cent), followed by software (+0.8 percentage points), employees in sheltered workshops (+0.6 percentage points), wages and salaries in kind (+0.4 percentage points) and valuation of insurance output (+0.4 percentage points).
181. The goal of fully implementing international guidelines in the Dutch national accounts has generally been achieved, although there is still room for improvement. One exception from the international guidelines is the inclusion of illegal activities. Estimates on drugs, prostitution and illegal gambling are not included because a survey of EU member states conducted two years ago on illegal activities indicated that other Member countries would not include them either. The problems with explicit estimates for these activities is that we do not know how much is implicitly included in the national accounts. Part of prostitution and “coffee shops” (where drugs are sold) may be included implicitly in the accounts via taxation sources but the extent is uncertain. The guidelines on intangible fixed assets such as software estimates and mineral exploration were also difficult to implement in practice.

Presentation: STD/NA(99)55 - The hidden economy in Poland in 1994-1997: CSO estimates (Poland)

182. In the early 1990s, it was necessary for many countries in transition to change their national accounting systems. In Poland, the first set of data using the new SNA/ESA methodology was produced in 1994. This methodology incorporated new definitions of gross fixed capital formation, household consumption and value added, in addition to introducing changes in the system of

constant prices to the previous year's prices. Rough estimates for the hidden economy were also implemented. Data were derived from special surveys. For example, labour force surveys for non-registered work were conducted in 1995 and 1998, special surveys were completed for constant production, and sample surveys were run for small units employing up to five persons.

183. The main problem regarding implementation of the new national accounts guidelines in Poland concerned estimates for the hidden economy. A comparison of data shows that the estimates of the hidden economy increased from 9 per cent of GDP in 1994 to 15 per cent in 1997. The most significant adjustment was made in trade and repairs (47%), followed by construction (17%). Estimates for non-registered work increased from 7 per cent of GDP in 1994 to 12 per cent in 1997, and non-registered labour increased from 2 per cent in 1994 to 5 per cent in 1997.

Discussion: STD/NA(99)52,54,55

- Japan cannot introduce the hidden economy into the national accounts due to lack of data.
- There is a common perception that the hidden economy is quite large. Recently 'The Economist' published an article on the size of the hidden economy in a number of countries. However, it used what is generally considered to be unreliable methodology.
- If countries published their estimates of the hidden economy and their methodology it would help to reduce some of the confusion on this topic.
- Several countries provided details of their implementation of SNA93.

Agenda item 14: Other business

184. Two sessions at the Cambridge IARIW meeting discussed how much the national accounts are being used in practice and to what extent they are being taught in universities. The general impression was that national accountants are not "selling" their product well to actual and potential users. It is therefore planned to launch a "chairman's initiative" to find opportunities to speak to professional meetings of economists and university lecturers and to assemble material on national accounts (in any language) which could be used for both teaching and research. Participants were asked to let Anne Harrison (currently IARIW chairman) have details of such material for inclusion on a web site and make suggestions about relevant meetings where greater exposure of the accounts could be made.
185. The next International I-O Conference will be held from 21-25 August 2000, in Macerata, Italy. A web site has been set up to provide details: <<<http://www.unimc.it/Ioconf>>>.
186. The ECE delegate provided details of a joint ECE/OECD/Eurostat meeting on national accounts to be held in Geneva from 26-28 April 2000.
187. The time preferred by most countries for next year's meeting was early October.
188. Potential topics for next year's meeting are:
- household satellite accounts
 - insurance (treatment of the "catastrophic" part as a capital transaction?)
 - progress on the EDGs for accrual recording of interest, transfer costs, and the general EDG which is to be set up to enable participants to provide feedback on issues raised during the current meeting
 - the treatment of pensions

- the Hillinger approach to deriving constant price estimates in practice (experimental estimates using gross fixed capital formation or some component of it containing computers?)
- PPPs
- non-market output
- estimates to show the effect of introducing satellite accounts for final expenditures by businesses
- follow up on Swiss paper on treatment of the split between capital gains and the output involved in providing a service
- e-commerce
- the basis on which lives for various assets are established
- environmental accounts
- consistency of implementation of SNA.

Statistical Offices' and related web sites

Statistics Canada http://www.statcan.ca/
Insituto Nacional de Estadistica Geografia e Informatica (INEGI) Mexico http://www.inegi.gob.mx/
Banco de Mexico http://www.banxico.org.mx/
U.S. Bureau of Economic Analysis http://www.bea.doc.gov/
US Bureau of the Census http://www.census.gov/
US Bureau of Labor Statistics http://stats.bls.gov/
US Department of Commerce http://www.stat-usa.gov/
US Fed http://www.bog.frb.fed.us/
NSO Korea http://www.nso.go.kr/
Bank of Korea http://www.bok.or.kr/
Japanese Statistics Bureau http://www.stat.go.jp/

Australian Bureau of Statistics http://www.abs.gov.au/
Statistics New Zealand http://www.stats.govt.nz/
Austrian Statistical Office http://www.oestat.gv.at
Czech Statistical Office (CzSO) http://infox.eunet.cz/csu/csu_e.html
Statistics Denmark http://www.dst.dk/
Bank of Finland http://www.bof.fi/
Statistics Finland http://www.stat.fi
Institut National de la Statistique et des Etudes Economiques (INSEE) France http://www.insee.fr/
Federal Statistical Office, Germany http://www.statistik-bund.de
Bundesbank, Germany http://www.bundesbank.de/
Hungarian Central Statistical Office http://www.ksh.hu/
National Economic Institute, Iceland http://www.ths.is
Statistics Iceland http://www.stjr.is/hagstofa/
CSO Ireland http://www.cso.ie/
National Institut of Statistics of Italy (ISTAT) http://www.istat.it/
Statistics Netherlands http://www.cbs.nl/
Statistics Norway http://www.ssb.no/ http://www.ssb.no/english/
CSO Poland http://www.stsp.gov.pl/

<p>Instituto Nacional de Estatística (INE) Portugal http://www.ine.pt/</p>
<p>Instituto Nacional de Estatística (INE) Spain http://www.ine.es/</p>
<p>Statistics Sweden http://www.scb.se/</p>
<p>Office Fédéral de la Statistique, Switzerland http://www.admin.ch/bfs/findex.htm</p>
<p>Sécretariat d'Etat à l'Economie, Switzerland (quarterly national accounts) http://www.seco-admin.ch/pib</p>
<p>Central Bank of Turkey http://www.tcmb.gov.tr/</p>
<p>State Institute of Statistics, Turkey http://www.die.gov.tr/</p>
<p>Office for National Statistics, United Kingdom http://www.ons.gov.uk/</p>
<p>Bank of England http://www.bankofengland.co.uk/</p>