OECD OCDE

NATIONAL ACCOUNTS MEETING

26-29 September 2000

FINAL REPORT

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REPORT OF 2000 ANNUAL OECD NATIONAL ACCOUNTS MEETING

Introduction

1. Paul McCarthy opened the meeting and welcomed all the delegates. He noted this year's agenda only partly consisted of topics that were requested by countries at the end of last year's meeting. Two significant new issues have arisen in recent months - the treatment of mobile phone licences and how to handle share options in the national accounts. The sessions on these two topics have been allocated almost half a day each.

2. There would be several short information sessions on work being done in the OECD on developing a productivity manual, setting up a collection of input-output data, and investigating the effects of expenditures on software on OECD Member countries' economies.

3. As was the case last year, 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 around the end of the October.

Agenda item 1: Household and government sector issues

Presentation: STD/NA(2000)01 - *Disaggregating the household sector (OECD)*

4. The OECD presented a paper showing that disaggregating the household sector can make the national accounts more useful for analytical purposes. The accounts themselves also provide a convenient framework for examining some micro issues. The characteristics of people are not very identifiable in the SNA. Typically, we look at employees at a broad level, with no direct link to household type. Some of the early SAMs had to be based on unrealistic simplifying assumptions such as having one cash worker per household, and with that worker having only one cash job.

5. Some social policy issues that are of interest relate to whether or not the main income earner is of working age and, if so, is he/she in employment? There are three broad categories of households:

   - of working age and in work
   - of working age and not in work
   - not of working age.

6. Producing macro/micro links is very useful for anyone looking at issues such as jobs strategy, pensions and an ageing population. There is a divergence of opinion between those using the micro approach and national accountants. The former consider the income data are generally "good" and that the expenditure data are of relatively poor quality. On the other hand national accountants use household expenditure data extensively. The types of issues that the income statisticians are interested in are whether or not interest payments are for business or on consumer debt, so that answers can be found to questions about whether or not a household in consumer debt is poorer than one which is not.

7. There are transfers which are hidden in the national accounts but which can be very important when examining how households behave.. For example, interhousehold gifts can be significant but they are unobservable in the national accounts because they are between units within one sector. Lottery winnings may have a huge effect on the households receiving the payouts but the national accounts only take the difference between the total amounts outlaid and the amounts paid back to the winners. Within the overall economy insurance premiums and claims balance (roughly at least). However, there can be significant amounts of cross-subsidisation across sectors.

8. All the above issues can be better examined by having the more detailed dimensions proposed in the paper.

Discussion: STD/NA(2000)01

9. The following issues were raised during the discussion:

- Expenditure on health and education was not reflected in the distribution of income.
- It would be necessary to also allocate transfers in kind.
- It would be useful to identify who is consuming the services.
- There has not been sufficient emphasis on issues concerning the household sector in the national accounts. Next year Germany plans to release two publications showing income distribution by households and by type of income, and something similar for disposable income.
- Is the proposed split useful for users and do we have sufficient data of sufficient quality?
- Is there any use in benchmarking levels of micro date to the macro levels if it simply involves scaling up the micro data to macro benchmarks and leaving the relativities broadly unchanged.
- Benchmarking micro data to macro may be satisfactory for examining the distribution but not the actual levels. It may be useful for pointing out data inconsistencies.

Presentation: STD/NA(2000)02 - *A simple module linking social protection statistics and the national accounts (Netherlands)*

10. The Statistics Netherlands paper presents a means of linking European social protection statistics and national accounts data. The national accounts provide a frame of reference for the social protection statistics. Details of the social protection benefits are available by function and scheme. By linking them into the national accounts it is possible to obtain a simple overview of social protection benefits in a country. The analysis can be based on the whole overview or by function. The results are suitable for both international and intertemporal comparisons. Some tables of results were presented.

11. In examining the extended social protection benefits and the national accounts, the relevant variables are intermediate consumption, wages and salaries in kind, subsidies to producers, income transfers to producers, capital transfers to producers and household final consumption expenditure. There are three major shortcoming in the national accounts for this type of presentation. No tax expenditures are identified; all benefits are presented on a gross basis and there are no volumes and prices of the benefits. The main conclusions are that linking social protection statistics and the national accounts is a simple process which provides new opportunities for confronting the completeness and reliability of the social protection and national accounts data.

Discussion: STD/NA(2000)02

12. The following issue was raised during the discussion:

- In response to a question the presenter said that at the moment the data were not available to classify output by details of the households involved, but it was hoped to extend the work to cover this type of detail in the future.

Presentation: STD/NA(2000)04 - *Augmenting and disaggregating estimates of household wealth (Australia)*

13. The ABS publishes both national and sectoral balance sheets. The household balance sheet shows the net worth of the household sector, and the composition of the sector's assets and liabilities. There is great interest in how this net worth is distributed across households, and how net worth evolves over the life cycle of the household. The project aims to compile household assets and liability estimates dissected by: (a) household composition, and the ages of the people within households, (b) income and wealth groups, and (c) other characteristics, such as labour force status or geographic region.

14. There are two main data sources. The household balance sheet, which provides benchmarks for aggregate household asset and liability values, and the household or income unit data from household surveys or administrative data sources. Three approaches were used to estimate distributional data:

- take data directly derived from a survey, and benchmark the aggregates to the national accounts;
- take the ratio of a national accounts household asset class to a related aggregate income figure, and apply this to income data from a survey to derive asset values for households;
- model an asset or liability and link it back to the survey data using characteristics of the households.

15. These methods will involve confrontation of national accounts and survey data, which may suggest areas where the national accounts estimates could be improved or changes to current surveys which would enhance the estimates. A series of consumer durables data would also be useful if the ABS decides to proceed with a household satellite account.

16. In Australia, home ownership was found to be the most significant asset of households, accounting for 41% of total household asset values. Assets and wealth were found to be more evenly distributed than income.

Discussion: STD/NA(2000)04

17. The following issues were raised during the discussion:

- The USA delegate was surprised by the conclusion that assets are more evenly distributed than income. He queried whether or not this may due to data problems. In particular, it may be necessary to specially target the high wealth population in the surveys. The presenter conceded that the survey of income and housing could be missing some high income earners. However, he went on to say that Australia has high home ownership and extensive superannuation schemes. Between them homes and superannuation account for about 70% of total household wealth. In both cases the values of these assets generally rise as people age.

At the same time incomes tend to rise as people age, but probably not as quickly and only up until they retire. Thus, retirees, who account for a substantial proportion of the Australian population, can have both modest incomes and relatively high wealth. They have the effect of reducing wealth dispersion relative to income dispersion for the population as a whole.

- The distribution of wealth is interesting. In Table 2, a possible reason for having the results for one group of households appearing to be strange is that net worth is classified by income quintile. It is likely there would be a more steeply raked distribution if it was ranked by net worth quintile. The presenter said both types of presentation would be considered for inclusion in the final report of the project.

Presentation: STD/NA(2000)05 - *Individual consumption provided to households by general government (Italy)*

18. Aggregate final individual consumption expenditure is calculated as the sum of three components. The ISTAT paper described the methodology underlying the two non-market components. On the resources side, households use services acquired on a free basis by general government and NPISHs. For the government sector, individual final consumption expenditure is the sum of outlays for (a) health, (b) education, (c) sport, recreation and culture, and (d) social protection. Expenditures excluded from these 4 divisions relate to general administration, regulation, and research and development. The classifications used are COFOG and COPNI. Links are also required to COICOP for health services, education services, recreational and cultural services, and religious services plus services provided by NPISHs.

19. COFOG provides a means to allocate expenditures of government to the different functions and to measure the effects that the government sector has on the economic and social activities of the other sectors. The methodology for the estimation was to cross classify public expenditure at a very detailed level by function and by economic area to study trends in government outlays. In effect, it was possible to completely reconstruct the public sector activities by function for 1988-1999. Administrative data was the main source. The major problems faced were the lack of standardisation, the classifications not being completely homogeneous and a lack of timeliness in updating the classifications.

20. To obtain comparable data, several bridge matrices were developed to classify outlays of government units that perform multifunctional activities. The matrices link the specific functional classification for administrative purposes to the COFOG classes. It was necessary to split the activity of non-profit organisations between expenditure for religious purposes and expenditure for political parties, trade unions and so on. This process uses the institutional unit as the unit of analysis and matches its specific functional classification to the relevant part of COFOG.

Discussion: STD/NA(2000)05

21. There was no discussion on this paper because it was presented by someone on behalf of the author.

Agenda item 2: Satellite accounts and input-output tables

Presentation: STD/NA(2000)06 - *Presentation of the Greek NAMEA tables for the period 1988/1996 (Greece)*

22. The NAMEA framework is a tool which links environmental and economic data and enables direct comparisons between the two types of statistics. An experimental Greek NAMEA table was

constructed in respect of 1994, based on the Danish NAMEA. This has now been extended to a series of tables running from 1988 to 1996.

23. The general framework used by Greece is based on an environmental account matrix consisting of seven columns:

- Part 1 of the table is the symmetric matrix of total intermediate inputs and gross output for the period 1988-1996.
- Part 2 refers to the vectors of final uses.
- Part 3 of the table presents the vector of gross domestic value of production.
- In the Greek tables, Part 4 refers only to lignite stocks.
- Part 5 presents seven types of atmospheric emissions from different industries and households.
- Part 6 concerns the impact of greenhouse gases and acidification phenomena on the environment.
- Part 7 presents the total volume of pollutants (in thousands of tonnes).

24. In the rows of the NAMEA tables below the primary inputs, the accounts are shown for the quantities of energy flows (in physical units such as cubic metres of gas, tonnes of crude oil, giga-watt-hours of electricity, etc) for intermediate and final uses, such as private consumption, exports and other final demand. These energy accounts exist as fully consistent satellite accounts to the I-O tables. The intermediate energy uses to 25 industries are obtained from a more detailed set of I-O tables. One row presents the total energy input and information on total pollutants is also shown. Finally, in the bottom part of the NAMEA table is various information on the net changes in energy reserves, waste treatment and disposal, and the emissions of other air pollutants related to the greenhouse effect.

Discussion: STD/NA(2000)06

25. The following issues were raised during the discussion:

- The Eurostat delegate said that NAMEAs are now available for 14 EU Member states. To date, work has focused on air emissions but the framework is very flexible and is able to be extended, as this paper shows.
- Emissions from shipping in international waters are included in some countries' NAMEAs (such as Norway's) but these are not included yet in the Greek tables, which will be extended into this area later; they will also be extended to include imported air pollution.
- In response to a question by a French delegate, the author said that emissions of transport used in non-transport are treated as emissions of the transport industry.
- Germany has something similar with its comparable input-output tables in monetary and physical units.

Presentation: STD/NA(2000)07 - *The magic triangle of input-output tables (Germany)*

26. A paper presented by the German delegate argued that a successful strategy on sustainable development should integrate each of the social, environmental and economic aspects of sustainability. These three dimensions of sustainability can be depicted as the corners of a triangle.

I-O tables are generally used to support detailed economic analysis. However, they can be also used for ecological and social studies. Experience has shown that it is useful to present I-O tables based on different measurement units to assist with special studies on different aspects of sustainability:

27. The traditional I-O tables are expressed in monetary units and they are mainly used in analysing economic production and associated issues. However, only a small proportion of the overall activities of the population is associated with economic production. Producing I-O tables expressed in physical units (tonnes etc.) would assist in ecological studies. Going further and expressing I-O tables in terms of time units can provide a useful database for social studies. In each of the above 3 types of I-O tables, the links between primary inputs, the final uses and the activities linking the various elements of these two were presented.

Discussion: STD/NA(2000)07

28. The following issues were raised during the discussion:

- The Canadian delegate commented that too much has been made out of the I-O table and the approach is confusing because different names have been used for national accounts concepts (eg, intermediate consumption is used in a different way from normal). The presenter explained that the idea is to have a consistent naming pattern in all 3 tables and so it is not possible to always be consistent with the core system of national accounts.
- An OECD delegate commented on the concept of "consumption of education capital" was introduced during the presentation; he said the amounts involved seem to be extraordinarily large. The presenter explained that the starting point was an I-O table with variables expressed in monetary terms. These were then converted, within the framework of input-output analysis, into time units, using a "time model". The result is that the estimates are derived rather than being based on hard data with the exception of using the results of a time budget study, conducted for the years 1991/1992.
- The Swiss delegate pointed out that, in the paper, all natural resources are taken into account in the same way whether they are renewable or not. They should be treated differently. The presenter agreed with this statement but pointed out that the work so far is only just the start.
- The concepts presented in the paper are a useful addition to sustainable development work. It is interesting to see education being depreciated, but it is a logical extension of treating it as capital.

Presentation: STD/NA(2000)09 - *Using input-output tables for economic analysis (OECD)*

29. In 1995 the OECD published its Input-Output database. Symmetric tables were available for 12 countries, based on 35 industries, expressed in current and constant prices, and showing both investment flow and imported intermediate input matrices. The tables proved to be very useful for studies such as those into the roles of manufacturing and services, structural change, and tracing technology flows through their links with R&D expenditure data.

30. While these tables were produced to support the above types of analysis, which were of interest at that time, there is now renewed interest in technology links. For example, issues such as who uses ICT capital in the "new economy", the effects of hedonic deflators on GDP and its structure, etc, are becoming important for a lot of commentators. The OECD intends to update the I-O database during 2000/2001, using financial support from the UK Department of Trade and Industry. It will be a joint project between the OECD's Directorate for Science, Technology and Industry and the

Statistics Directorate. Work is due to start at the beginning of October, with an inventory of available tables (national and by Eurostat) being compiled. This will lead to a detailed proposal for updating the I-O database. Collection of tables from countries is expected to be in early 2001.

National accountants are asked to provide support to this project with advice on methodology and by supplying national I/O tables.

Discussion: STD/NA(2000)09

31. The following issues were raised during the discussion:

- The project should also cover the quality of I-O tables themselves – eg, how much is directly estimated and how much is imputed from earlier years' splits. To do this satisfactorily would require information on data sources, quality, links to the national accounts, and reference date of the data.
- The Canadian delegate said that Statistics Canada's experience has been that it is useful to have a time series of I-O data. The project should be limited to current price tables only in the initial stages and a decision should be made about constant price tables after experience has been gained in analysing the data. It is not necessary to aim at collecting symmetric tables; supply-use tables should be collected, at least as a starting point.

Presentation: STD/NA(2000)10 - *Development of social accounting matrices in the EU: progress report on the Leadership Group on SAMs (Netherlands)*

32. The Netherlands delegate commenced his presentation with some background on the Leadership Group (LEG) on SAMs, which started in October 1999 with an expected term of two years. The main reason for starting the LEG was the growing need for integrated and comprehensive accounts for labour, on a basis consistent with the national accounts. The objectives of the LEG are to design a methodology for compiling SAMs, designing a set of standard classifications to be used, and exploring the possibilities for compiling SAMs in all European countries, using existing sources.

33. The focus will be on labour market information. A pilot SAM will be compiled for all participating countries in respect of 1997. Also, a Handbook on SAMs will be written. So far, all participants have become acquainted with general features of SAMs (matrix presentation, data requirements, etc). Data sources available have been compared for each country; enabling problems with insufficient data to be identified and, in some cases, solved. The LEG has reached agreement on the most important classifications to be used in the SAM (covering activities, labour and households). A national accounting matrix (NAM) has already been compiled for most countries. Various countries have also estimated the information needed to go from a NAM to a SAM (wages and labour volumes by branch of industry and type of labour).

34. Future work will be for each country to finish off filling in essential parts of the matrix. Any difficulties identified in this process will be solved by the LEG. SAMs are to be completed for each country. The information already available (papers and country reports) will be used to write a handbook in the second year. Several non -participating institutions have expressed their interest and have nominated contact persons. A workshop on the compilation of SAMs will be organised at the end of the LEG's term.

Discussion: STD/NA(2000)10

35. The following issues were raised during the discussion:

- In Norway, the labour accounts are linked into the national accounts, but work is required on counterpart data between different institutional sectors. The breakdown of households is a problem which has not yet been satisfactorily resolved. What is the purpose of the handbook? The presenter said the LEG will be working on a greater elaboration of the labour accounts, income distribution and redistribution and also wants to look at more detailed dissections. The handbook is a means of providing detailed guidance on sources and methods.
- The New Zealand delegate said there could be data problems with the detailed household dissections and no user demand for this type of data has been expressed in New Zealand.
- An OECD delegate said that, from a productivity point of view, labour input has traditionally been based on the simple sum of hours worked. However, it is important to split by education, skills etc because skills have increased over time. This shows up in a rise of constant-quality labour input.
- It is costly to build up a database sufficiently detailed to produce SAMs.
- The presenter said user needs are being expressed for matching labour market trends to the national accounts. SAMs enable the effects of labour market policies to be tracked.
- The concepts of actual consumption and actual income are important in the context of SAMs.
- SAMs for developing and developed countries should be different because the policy needs they are serving are different.

Presentation: STD/NA(2000)03 - *Integration of the labour market statistics into the Belgian national accounts (Belgium)*

36. In the method of compiling the national accounts in Belgium, three general principles are applied: systematic use of a directory of production units based on the business register, maximum use of administrative data and supplementary use of statistical information and survey results.

37. The estimate of the labour market statistics (employment and unemployment) must be consistent with that of the other national accounts aggregates. Since they are closely linked to the trend in value added, it is crucial for employment and the wage bill to be estimated by a comparable methodology, namely one based on the individual administrative data collected from enterprises and compiled with the help of the directory of production units.

38. The statistical information on the labour market (compensation of employees, employment and unemployment) currently available for Belgium comes partly from the use for statistical purposes of administrative data collected by social security institutions in the course of their work. In addition, special systems for collecting information on the labour market, such as the National Statistical Institute (NSI) surveys of the labour force and wage costs, supplement the available information.

39. For the labour statistics, the only way to satisfy the objectives of internal consistency (between employment and unemployment) and of external consistency (between the labour statistics and other national accounts aggregates) is to combine the administrative information (for the estimation of wages and employment) and the survey results (for unemployment and to adjust the administrative data) in an appropriate manner.

40. The standardisation of the information available in Belgium on labour market statistics is a priority aim of the statistical approach being adopted. It will also help in producing a social accounting matrix integrating the national accounts and the labour accounts.

Discussion: STD/NA(2000)03

41. The following issues were raised during the discussion:

- The Mexican delegate pointed out it is necessary to distinguish between employees and jobs and determine how best to classify them to industry, with agriculture being a particular problem in some countries.
- The Greek delegate asked why the administrative data are so different from the survey data? The presenter explained that statistics in Belgium are affected by institutional arrangements. For example, the levels of unemployment from administrative sources and surveys are quite different. The administrative data are based on social security requirements, while the survey data are based on someone who works at least 1 hour per week being classified as employed.
- The New Zealand delegate commented that the business survey based and household survey based estimates are difficult to reconcile and it would be interesting to see how other countries do it.
- In Australia, there is a regular but infrequent (every couple of years) survey of multiple job holders to adjust the labour force survey data from employment to jobs. One problem is that accurate industry data is not available from the household based labour force survey (objective industry coding can be done for only 50-60% of cases). An employer based employment survey is used to split employment by industry.

Agenda item 3: Measuring real interest

Presentation: STD/NA(2000)12 - *The treatment of real interest in the national accounts (UK)*

42. The UK paper on this topic explained that there are three ways of measuring real interest. They are described in the main text of SNA93, in Chapter XIX Annex B of SNA93, and in the OECD's *Handbook on OECD Inflation Accounting*. The main issue is that inflation undermines the current price accounts. Even with low rates of inflation the current price accounts are distorted to some extent. Allowing for inflation in some way involves a fudge. In practice, a higher interest rate than is strictly needed is charged to allow for inflation. In effect, the interest charge consists of two parts: (a) protection against inflation, and (b) a real rate of return for the lender.

43. An example was presented showing the effects of the three different treatments when inflation is high. In the national accounts, interest payments are recorded in the allocation of primary income account. Therefore they contribute to subsequent balancing items such as primary income, disposable income, savings and net financial surplus or deficit. This feeds through to the cash balance sheet. The treatment described in the body of SNA93 gives a false impression of the economic reality because it does not take account of the loss due to inflation. The inflation accounting approach suggests overcoming this problem by introducing a capital transfer to "square" the story. This allows the treatment to change the balancing actions up to but not including the financial surplus. Annex B from SNA93 squares the account by allowing a revaluation - a holding gain or loss - which changes all the balancing items up to and including the financial surplus. However, there is a problem because Annex B of SNA93 says that negative real interest is not allowed (holding losses must not feature in the current accounts). A fourth (new)

approach involves allowing negative real interest and squaring the account through the other changes in volume account. It allows the financial surplus to be affected by real interest but avoids the revaluation debate.

44. There is an electronic discussion group (EDG) on this issue and contributions are welcome. When the EDG debate is closed off the findings will be submitted to the ISWGNA to determine what further action is required. The EDG is administered by the World Bank and its address is: "www.WorldBank.org/data/working/iswgna_background.html".

Discussion: STD/NA(2000)12

45. The following issues were raised during the discussion:

- The Israeli delegate commented that lenders want to retain the purchasing power of their money. The OECD handbook solution transferred the problem from the current account to the capital account. It is important even when inflation is low, although the problem is obviously more significant when inflation is high. For unlinked loans, real interest should be estimated by applying the CPI.
- The French delegate pointed out that there is a consistency problem involved - why correct something like government interest expenditures for the effects of inflation but not the receipts (eg VAT)?
- The Canadian delegate said that any non-zero inflation has potentially bad implications for the national accounts. Inflation affects anything which is going to be aggregated because it is not consistent across components. With high inflation, w are looking at an extreme example. We tend to assume low inflation does not affect the national accounts but it does.
- An OECD Delegate pointed out that the field of "Inflation Accounting" (as described in the OECD handbook) affects more than just interest. It describes the need for "common price levels" (CPLs) covering a whole range of different economic transactions.
- Negative real interest is a relevant concept. The only real flow in the ONS example is the amount (230) that comes through as cash in the closing assets. What is the volume of services from money flows? What is the "pure" rate of interest and what is the "real" rate of interest? How does pure and real interest differ? In practice, there are there 3 components, (a) inflation (b) service charge (c) something else. What is the something else?
- SNA93 contains a rule that if any prices contain an expected inflation mark-up then the mark-up should be treated as interest. Is it only high inflation or inflation in general that is relevant? How is high inflation defined? Why not have negative flows if inflation is higher than the returns.
- A few delegates commented they do not like the idea of using a capital transfer to balance out the accounts.
- One of the members of the Expert Groups which were involved in writing SNA93 said the problem with the fourth way is that the reconciliation account was "cleaned up" during the SNA revision and should not be treated as a "catch all" category. In practice, there is no single currency in circulation in a country suffering from high inflation. There is also some "currency-linked" currency, which is why Annex B to chapter XIX in the SNA does not allow negative real interest. The treatment recommended in the Annex would show any real holding loss in the revaluation account.

- In Switzerland in the 1970s real interest rates were negative and so there was an expectation by non-residents of capital gains through the Swiss franc appreciating. However, the Swiss could not afford to do anything other than accept the real holding losses from the negative real interest because they would potentially face larger losses if they moved into another currency.
- If interest is 10% and inflation is 8% then real interest is 2%. If the interest is the price of money and it declines to 9% then this is a decline in nominal prices, which would almost certainly be different from the CPI so it is difficult to work out the best means of identifying the underlying price movements.
- The USA delegate said it is necessary to decide if an inflation adjustment is ex ante or take what happened after the fact – this is the central issue and in some cases there could be a dramatic difference between the two.

Issues arising

- Participants were asked to further the debate by contributing to the EDG on this issue at: "www.WorldBank.org/data/working/iswgna_background.html".

Agenda item 4: Mobile phone licences

Presentation: STD/NA(2000)13 - *Report of the special ISWGNA meeting on the treatment of mobile phone licences; and some questions (OECD)*

46. The ISWGNA held a special meeting on 23 June 2000 to discuss the treatment of mobile phone licences because Eurostat had to make a decision by the end of June. Broadly, there are 4 possible alternatives, although one has two dimensions to it:

(a) payment of taxes by the licensee

(b) purchase of services by the licensee

(c) payment of rent by the licensee

(d) purchase of an asset

- either purchasing the spectrum itself, or
- the creation and subsequent purchase/sale of a licence which is a new asset separate from the spectrum itself.

47. Treatment as taxes was ruled out because the payments for licences are not compulsory and something is provided in return for the payments so they are not unrequited. The purchase of a service was also ruled out because the payments made are clearly out of all proportion to the costs of providing the services.

48. A recommendation had to be made on the classification of the spectrum because it is not explicitly covered in the SNA. The spectrum seems to fit best into the category of tangible non-produced assets, which are described by SNA93 as covering "mainly land and subsoil assets" (paragraph 7.87).

49. Transferability is an important issue. Something which is directly transferable has a potential resale value that clearly precludes a treatment of payments for the licences as being rent. So transferability is a sufficient condition for classification as an asset. However, it is not a necessary

condition because it does not preclude economic benefits being derived by holding the licences (ie, the licences are assets in their own right). In practice, most licences are transferable either directly (by the licensee selling it) or indirectly (through the licensee being acquired by a takeover). Members of ISWGNA who had been involved in writing SNA93 confirmed that the term "transferable" was specifically included in the SNA because it defines the first time that a market value can be put on an asset.

50. The licence itself is a construct of society and so is classified as an intangible non-produced asset. The licence exists separately from the spectrum. Payments for the licence can consist of (1) an upfront payment (2) regular payments at specified intervals, or (3) a combination of these two. The method of paying for a licence is a financial issue. The period used for determining whether or not something produced is actually an asset is its use for more than one year. ISWGNA used this as a guide in determining the cutoff between the licence payments being rent or the purchase of an asset.

51. In SNA93, amortisation of intangible non-produced assets is recorded in the other changes in volume account not the current accounts. In practice, the total value of the licence plus spectrum (ie, the country's net worth) must remain constant so, as a licence is amortised, the value of the spectrum to the government increases because the right to use it can potentially be sold again.

52. The ISWGNA reviewed this decision at its regular meeting last week (21 September). Nothing new has been presented since the June meeting and the ISWGNA is happy with the June decision. Also, it considers there is no need to change SNA93 specifically to handle this case.

Presentation: STD/NA(2000)14 - *The treatment of payments for mobile phone licences in the national accounts (UK)*

53. In this paper the ONS considered the main two options for treating the UK licences are rent (of the spectrum) or sale of an asset (the licence). The options cannot be clearly interpreted within SNA/ESA guidelines because they are not specifically covered and so further debate is needed. The Eurostat decision differs from the ISWGNA decision because of the different period for the life of the licence to be treated as an asset (Eurostat used 5 years while the ISWGNA suggested 1 year).

54. The effect of treating the payments as rent rather than as a sale of an asset is the distribution of net borrowing over the life of the licence. The sale of an asset option implies the spectrum is being sold. In reality it is just being used for a limited time. The ONS agrees the spectrum is analogous to land and so should be included as a tangible non-produced asset. Also, the timing of payments is a financial issue

55. Under SNA93, three types of benefits may be derived from different kinds of assets:

(a) using produced assets

(b) property incomes for owners (spectrum)

(c) selling store of value (licences).

56. SNA explicitly covers transferable leases and contracts. Under EU law the mobile phone licences are non-transferable so they are a different asset. In other words, any value they may have is not realisable because they cannot be sold. The sale of the company itself is not the same because it is simply a sale of the company's shares. The implications are that non-transferable leases are not assets. Rent on land is currently treated as property income and the implication under the

ISWGNA/Eurostat decision is that it should be the sale of a lease which would mean there would no longer be any rent. This is a fundamental change to the SNA.

57. The rent option recognises both assets but the sale of an asset option does not. The values are not linked. An example was presented showing that the licence and the underlying asset can be linked, but they are not necessarily linked. The recognition of the licence as an asset depends on the timing of payments which should not be used as a criterion to classify assets because the result is having similar activities classified differently.

58. The IMF acknowledges the difficulties in the licence not being transferable and so proposes a new principle in SNA of separating the licence from rent by the lease length. It uses produced asset definitions to do so. There is no justification for doing so within the existing SNA and so this is not a satisfactory interpretation of the SNA. Rent has the advantage of being consistent across the world, for both transferable and non-transferable licences, it fits into the existing structure, and is consistent with the treatment of land.

59. ONS proposes that the debate should be taken forward in an electronic discussion group, led by ISWGNA, with a concluding workshop next year.

Presentation: STD/NA(2000)15 - *The treatment of sales of mobile phone licences in the national accounts (IMF)*

60. Mobile phone licences bestow the exclusive right to use part of the broadband spectrum for telecommunication. They are being auctioned for substantial sums, and rules need to be developed on how to treat them in the national accounts.

61. The IMF has investigated this issue in detail in producing the paper on this topic and its main conclusions are:

(a) mobile phone licences are intangible non-produced assets

(b) the spectrum itself is a tangible non-produced asset owned by government

(c) the sale of the licence is the sale of an asset.

62. The alternatives considered were recording mobile phone licences as production of a service, as a tax, as the sale of the spectrum itself, as rent, and as the sale of the licence as an asset. Treatment as a service was ruled out because there is no ongoing production process and charges are out of all proportion to the costs. The payments for licences are clearly not taxes because there is a quid pro quo and the charges are not based on regulations but on mutual consent. In addition, the number of licences is limited. It was not considered to be the sale of the spectrum itself because the government does not relinquish the ownership of the spectrum and the term of the licence potentially exceeds the economic life span of the spectrum. The government automatically returns to full ownership after expiration of the lease.

63. The mobile phone licences should not be recorded as rent because the economic risks and benefits accrue to the licence holder, the licence has an independent value from the original amount and this applies independently of transferability. When looking at the licence payments as sales of an asset it is clear two assets are involved - the broadband spectrum itself, and the licence contract. The broadband spectrum is an economic asset because it is owned (by government) and the owner derives benefits from it. The broadband spectrum is a tangible asset because it exists in nature, ownership has been established over it and it is not a construct of society. The licence contract is an economic asset if the risks and benefits accrue to the licence holder, the contract cannot be

cancelled unilaterally by government and the contract provides exclusiveness. The licence contracts are intangible assets because they are a construct of society, they convey an economic benefit to another party and the contracts provide exclusiveness.

64. The treatment proposed by the IMF does not affect SNA93 because treatment of the broadband spectrum as a non-produced tangible asset is within the systems' definitions as is treatment of the licence as a non-produced intangible asset. The main effects in the accounts are that treating the licences as the sale of an asset affects only net lending and borrowing and only at the time of the contract being written, while treatment as rent affects disposable income, saving, and net lending and borrowing over the life span of the contract.

Discussion: STD/NA(2000)13, STD/NA(2000)14, STD/NA(2000)15

65. The following issues were raised during the discussion:

- The UK added that the sale of the licence gives the same result as the sale of spectrum so in practice it is a de facto sale of the spectrum.
- France supports the decision of Eurostat (ie, the licences themselves are assets). The French delegate queried the first dot point in paragraph 5 of the ISWGNA report concerning the net worth of a business increasing as a result of acquiring a licence. He said that the recognition in the IMF paper of the spectrum as a non-produced asset similar to subsoil assets implies a treatment as rent, given the analogy with land. In this way companies will reduce profits by the amounts written off because rent will affect the income available to companies. The right of use of something is an asset. Copyrights are not assets, nor are patents; it is the underlying entities which are assets. The current SNA does not recognise the right of use as an asset. Box 1 on page 10 of the IMF paper indicates a lease is not an asset when it is transferred from the owner to first tenant but it becomes an asset when it is transferred from the first to second etc. The transferable lease income is a windfall. A simpler option is to assume the sale of the spectrum itself (one generation only). The IMF case against this option is weak. There is a problem of relative values; economically speaking the IMF case for amortising the licences is flawed. In effect different generations of the spectrum can be involved over time and so different assets are being sold at different times. It is necessary to look in more detail at the implications of the terms of payment being different. He supports setting up an EDG.
- In Singapore the government recently awarded generous compensation to the present two licensees of telecommunication services in view of an acceleration in the liberalisation of telecommunication services. Since the payment of this compensation might be viewed as the buy-back of telephone licences with the view to reselling them to a larger number of telephone providers, mobile phone licences were regarded as an asset. The award and withdrawal (or cancellation) of such licences could then be viewed as the sale and purchase of an asset.
- Denmark supports the treatment as rents via the analogy to land. If licences and land are to be treated differently then the differences between them need to be identified.
- Canada supports the UK position. Company profits go up if the licences are treated as assets. Rent is probably the more appealing alternative.
- The Norwegian delegate commented that we are talking about the sale of a licence and the licence should be recorded in the accounts as an asset. One cannot afford to delay a decision because these things are affecting the accounts now.

- The Australian delegate said that criteria such as exclusivity, risks of operation etc are not useful in making a decision. The implication of treating non-transferable licences as an asset is that we should change the treatment of land.
- It was pointed out that having businesses outbidding each other in an auction indicated they are bidding for an asset. In the UK case, businesses are including the licences as assets in their accounts.
- There is a distinction between whether an asset is transferable separately by the current holder and transferable as part of a going concern if the company is taken over. In that case the new owner acquires ownership of all the previous company's assets and liabilities including the licence even though there may not be a single transaction showing the "purchase" of the licence as such.
- Regarding the land/licence analogy, there is a possibility that long-term leases of land have a value of their own. It is important not to confuse the right to use something with the risks of use. The life span of the spectrum is infinite. The length of the licence and the length of life of technology are key points.
- Denmark disagreed that the pattern of payments is relevant. He considers the licence itself is an asset but the same arguments can be posed for land.
- Regarding ownership of risks/benefits, the UK delegate asked who suffers the risk of the spectrum being jammed, the licence-holder or the spectrum owner? Transferability is a critical issue. Amortisation is another important issue because of the way in which it is brought in through other changes in volume. The SNA states that economic accounting principles should apply when there is a conflict between business accounting and economic accounting.

Issues arising

- The OECD, as chair of the ISWGNA, said that the OECD would set up an ISWGNA-sponsored EDG to enable further debate on this issue.
  (NOTE: This EDG has now been set up on the OECD national accounts internet site: "http://www.oecd.org/std/nahome.htm".)

Agenda item 5: Recording on an accruals basis

Presentation: STD/NA(2000)16 - *Recording taxes on an accruals basis (Denmark)*

66. Eurostat has proposed to change ESA95 to make it possible to use the "time-adjusted cash" principle in relation to taxes and social contributions - that is, in a given year only to record those values which over time will actually be paid. The Danish paper investigates those situations in which taxes should not be recorded as accrued according to SNA and ESA and goes on to argue that these exceptions do not include the case of bankruptcy (which the time adjusted cash principle does include).

67. Bankruptcy is an important reason for non-payment of taxes in developed countries. In effect, enterprises enter an indirect relationship and only act as an agent of another unit. With time adjusted cash accounting at the macro level the recording of some transactions depends on future events so estimates have to be made in advance and these estimates will have to be revised later if they prove to be wrong.

68. The rules in SNA defining which tax transactions should not be recorded in the system do not include the case of bankruptcy. If they did then paragraph 8.50 in SNA93 would not have read: "In **some** countries, and for **some** taxes,…"; rather it would have been "In **all** countries, and for **all** taxes,…". In addition, some supplementary transactions would have been incorporated in SNA, ie, transfers from households to corporations. A number of variables would have been defined in another way (basic prices, compensation of employees, gross operating surplus etc). SNA93 would probably have stated more explicitly that the recording of taxes differed from the recording of other transactions. The time adjusted cash principle has far-reaching consequences because it introduces an asymmetry between the recording of taxes and the recording of other transactions, it eliminates the fundamental micro-macro linkage in the SNA, and it introduces a dependence on future events in recording transactions. Statistics Denmark is strongly in favour of the present accrual accounting principle in SNA and the Eurostat proposal violates the accrual principle.

Presentation: STD/NA(2000)17 - *Recording of taxes in national accounts and government finance statistics (IMF)*

69. In the SNA revision process, three major issues concerning taxes were covered (a) valuation (b) time of recording, and (c) classification. The purpose of this IMF paper is to discuss how to record taxes that are not likely to be collected. In general, valuation in both the SNA93 and ESA95 is based on market prices for goods and services and face value for distributive transactions. The treatment of unpaid transactions in both is that unilateral write-offs (creditor only) should be other changes in volume while debt forgiveness (ie, consent between creditor and debtor) should be treated as a capital transfer. The time of recording is based on the accrual principle, although due for payment and cash can be used as second-best alternatives if it is not possible to use accrual. The valuation of taxes is based on the time due for payment. It should be noted that "due for payment" is a valuation principle that should not be confused with time of recording.

70. Considerations in recording include avoiding unrealistic estimates of tax receipts. In practice, the government not being a party to the underlying transactions makes the valuation subjective. The treatment of unpaid taxes as write-offs or capital transfers is often unrealistic (in fact, debtors may not even know about it). As a result, SNA93 states "… it may be preferable … to ignore unpaid tax liabilities and to confine the measurement of taxes in the system to those actually paid". The draft government finance statistics manual is fully consistent with SNA93. The time of recording is based on the accrual principle. However when there is evidence that some taxes will not be collected, these should not be included in revenue. The main purpose of the new EU regulation is to avoid unpaid taxes artificially affecting governments' estimates of net lending/borrowing.

Discussion: STD/NA(2000)16, STD/NA(2000)17

71. There was no discussion on this topic.

Presentation: STD/NA(2000)18 - *Handling disaster insurance in the national accounts (OECD)*

72. The aims of this OECD paper are to draw attention to the characteristics of catastrophe (and other 'lumpy') insurance which pose problems for national accountants and to provide some background information on how catastrophe business is handled by the insurance and reinsurance industry. For certain classes of non-life insurance, claims are greater in some years than the sum of premiums and investment income, which results in negative output according to the current SNA93 formula for insurance output.

73. Catastrophe insurance is characterised by huge, infrequent and largely unpredictable loss events which are typically natural disasters causing a dramatic rise in the number of claims, and possibly the average size of claims. However other, non-catastrophe, causes of unusually heavy claims are other 'man-made' disasters, eg, power stations leading to both property and casualty (liability) claims or unexpectedly high frequency of aviation/marine losses in a year or unexpected liability claims, eg, asbestosis, environmental clean-up. The probability of loss is based on limited experience, but the size of potential loss is predictable. The basic requirement of insurance is that claims can be met from reserves of premiums and investment income. This is satisfied in an annual context for life and most classes of non-life insurance, ie, the relationship between premiums and claims is stable in the short-term, and thus there are no particular timing issues in the national accounts. However some classes of non-life insurance do not demonstrate stability from year to year, but over a longer time frame. In such cases balance is achieved and underwriting decisions made over the medium term. In other words, years of heavy losses are accommodated using other (catch-up) years to re-establish reserves The SNA output formula will give negative output in the most lumpy years, ie, when claims are exceptionally heavy (catastrophic losses), and may be overestimating output in the intervening years.

74. There are several alternatives available for handling the potential negative output. First, use the existing SNA formula but adapt the calculation of some elements by using smoothed claims as a proxy for smooth exposure to risk. Second, adapt the existing formula by including an element for changes in reserves (non-life). Third, completely redesign the national accounts approach by recording premiums plus investment income as output and claims due as intermediate consumption.

75. Reinsurance involves shifting part or all of the insurance originally written by one insurer to another insurer. Reinsurance is used for several reasons, the most important being to allow a wider spread, to reduce the level of the unearned premium reserve required by law and temporarily raise the policyholders' surpluses thus allowing the insurer to write more business, and to provide catastrophe protection. Many businesses are moving towards an integrated approach to risk management, using reinsurance or insurance derivatives. Insurance-risk securities relevant to catastrophic risks include catastrophe event (cat) bonds, catastrophe equity put options (CatEputs) and contingent (debt) surplus notes. These look like financial instruments to investors and reinsurance contracts to insurance companies.

Discussion: STD/NA(2000)18

76. The following issues were raised during the discussion:

- In Australia, expected claims are used instead of claims in the calculation of non-life insurance output. Expected claims are estimated by taking a moving average of claims. In general the length of the moving average is 5 years, but in the case of a few major catastrophes the claims are averaged over 19 years.
- In Canada, output was negative in current prices following the ice storm in Ontario and Quebec a couple of years ago. There is a problem in smoothing values because you finish up with inconsistencies (eg, with taxes etc) which are not smoothed. However, Statistics Canada did smooth the volumes after the ice storm.
- Statistics New Zealand smoothes the "service charge ratio" (service charge over total premiums paid). The NZ delegate agrees that there is a problem of consistency with other elements. Reinsurance is included in imports in NZ because a lot of risk finishes up offshore.

- Last winter's storms in Europe would result in huge negative output in the countries affected. The problem with the ABS approach is that the amounts potentially have to be adjusted over time. An alternative is to make a capital transfer from insurance company policy holders.

Issues arising

- The OECD was asked to record the solutions adopted by all countries. A suggestion was also made that the OECD should set up an EDG to discuss this issue.

Agenda item 6: The underground economy

Presentation: STD/NA(2000)19 - *Empirical procedure in measuring non-observed economy in GDP estimates (Greece)*

77. A series of steps is being taken to include the non-observed economy (NOE) in the Greek national accounts.

(1) collect the information needed to understand the strengths and weaknesses of the sources and methods used in the compilation of the national accounts

(2) identify the basic information that should be collected by the sample surveys conducted on the productive activities of small industry

(3) set up a business register to assist in the measurement of the NOE

(4) use the register of enterprises and establishment for checking the exhaustiveness of data obtained in the production surveys

(5) make adjustments in the national accounts to include the second (or third) job in overall employment and to compile an annual employment matrix for each industry

(6) make adjustments in the base year in the national accounts to the output of some industries based on the difference between the theoretical non-deductible VAT and the empirical (or received) VAT

(7) present the methods used for integrating the production and the expenditure results on the macro or the product level and the need to calculate GDP by the three different approaches

(8) integrate the data from the three approaches to estimating GDP with the aim of measuring any additional NOE activities

(9) firm up the measure of NOE activities by balancing within the supply / use framework.

78. The key characteristic of this system is a common product classification for all purposes (ie, production, intermediate consumption, household consumption, capital formation, foreign trade, etc). The product classification enables an analysis at the detailed level where the supply and use of each product group should be equal. According to this method of integration there is a single estimate of GDP, resulting from the system that is made consistent at the most detailed level. From the point of view of the reliability and exhaustiveness of the national accounts this method of integration at the product level is clearly favourable.

Presentation: STD/NA(2000)20 - *Macroeconomic approach to the estimate of the underground economy (Italy)*

79. The "underground economy" represents the legal production that is not directly observed. The economic underground comprises irregular work, under-reporting of income by enterprises and other actions to avoid fiscal and administrative rules. The statistical underground results from the difficulty of obtaining full coverage of the business register and updating sufficiently quickly. Missing responses (partial and total) present other statistical problems. A new Italian methodology for identifying the "economic underground" was presented to the meeting. It is based on using the input of labour to determine more precisely the components of the economic underground.

80. Supply estimates are used to identify the share of output attributable to the economic underground. Apart from improvements in data sources, the main innovations in the labour input procedure relate to the integration of the information sources on the demand and the supply of labour and a new methodology for estimating non-resident irregular foreign workers. Considerable use is made of administrative sources of information for measuring both regular and irregular employment. It also provides the information needed for an accurate analysis of the segmentation of the labour market with the objective of identifying the various types of non-regular workers and tracking changes in the labour market. Some permanent jobs are irregular because they are carried out without observing the labour regulations in force. They include the occasional activities undertaken by persons belonging to the "not active" population, the jobs of both resident and non-resident irregular foreigners, and the second (and third) jobs not reported to the tax institutions.

81. The part of the supply estimates attributable to the underground economy is identified through a comparison between the supply side and the demand side estimates in an input-output framework. The underground in the supply data is closely connected to tax evasion. There are two different hypotheses. The first is that the differences are specifically attributable to the economic underground phenomenon while the second is that they are the result of a mixture of statistical and economic underground. The technique used is to look at the economic significance of the initial estimates and match business activity to employment by kind of activity, and then apply similar activity levels to the independently determined employment levels. The higher estimate calculated is the one used in the Italian national accounts.

Discussion: STD/NA(2000)19, STD/NA(2000)20

82. The following issues were raised during the discussion:

- The Canadian delegate commented that the level is large and growing. He asked how much does the percentage contribution vary by industry? The author said that the trade and lodging sectors have the highest adjustments, at 42.5% of value added for the relevant industry.
- The starting point in the Greek accounts is to improve the source data for the worst affected industries (eg, house building, trade). When results from different sources are compared it is obvious that some industries have higher NOE than others. There is a different of about 40% in total in Greece. In housing the upward adjustment was 140%, while it was 99% in health, and 53% in education. Some downward adjustments were also required for some industries (eg, forestry and fishing).
- The IMF delegate asked if the adjustment is based on an improvement in the business register. Most units which would be added would be small and it would be hard to avoid irregular updating. In addition, have techniques such as area sampling been considered? The presenter said that nothing along these lines had been done.

- An alternative would be to construct an employment matrix annually and compare data on an industry basis between the business register and the labour force survey.
- The author said that the estimates are produced at the micro level rather than macro. Comparing sources and uses enables imbalances to be identified and corrected.

Presentation: STD/NA(2000)21 - *Handbook on "The non-observed economy" (OECD)*

83. Reasons for the OECD producing this handbook are that many different estimates of the size of the underground economy are quoted by commentators, to the point at times where they challenge the credibility of official statistics. Often there are significant problems with the measurement methods used in these studies and so a decision was made to systematically set out the concepts behind measuring the underground economy and the methods available to do so.

84. The contributors to the handbook to date have been a mixture of statistical offices, international organisations and a university. A draft version of the handbook is being discussed in detail at a meeting in Russia in October. The handbook is based around international standards and will be a supplement to SNA93. The major components included are the underground, illegal, informal and otherwise missed sectors (own final use, and the "statistical underground").

85. A three step approach is being adopted: first, to improve the basic statistics, second to supplement the basic statistics with special surveys, third, to use analyses and models to adjust estimates within the national accounts. Major principles are to adopt a systematic rather than ad hoc approach, to use data in preference to models, and to use low level models in preference to high level models if there is no alternative to modelling. The contents of the handbook are:
   - Introduction
   - Conceptual framework
   - NOE description and measurement
   - Review and improvement of basic program
   - Supplementary surveys, adjustments and analyses
   - Achieving exhaustiveness of national accounts
   - Illegal activities
   - Informal sector
   - Implementation strategies
   - Annex - References
   - Annex - Terminology

Discussion: STD/NA(2000)21

86. There was no discussion as this was an information item.

Agenda item 7: PPPs

Presentation: STD/NA(2000)22 - *Proposed expenditure classification in the OECD-Eurostat PPP Programme (OECD)*

87. The expenditure classification used in the OECD-Eurostat PPP Programme has to be revised because of the adoption of SNA93/ESA95 and the related classifications. In the process, changes have been made to eliminate unnecessary details and to introduce refinements when a basic heading is heterogeneous, eg, because of taxation. The standard SNA classifications are used (ie, COICOP, COPNI, COFOG, and CPA).

88. The main changes proposed by the OECD are in the number of basic headings. While the total number of basic headings changes from 216 to 221, there are some large changes in the components. In particular, the basic headings for individual consumption expenditure by households decline from 167 to 146, while the number of basic headings for individual consumption expenditure by government increases from 10 to 29. Initially, the aim was to considerably aggregate the household part. However, a relatively detailed classification is still proposed, because the classification forms a framework for the product lists and so it is not possible to reduce the number of items too much. In addition, even a rough weighting is better than allowing the calculation process to create implicit weights at random on the basis of which products are priced and how they overlap. A detailed classification provides a better possibility of exercising flexibility in the calculations. The government consumption expenditure is a particularly difficult area because of institutional differences between countries. The complexity of the proposed classification is due to merging COFOG and the activity classification.

89. In line with SNA93/ESA95, two categories of consumption expenditure are identified: final consumption expenditure on goods and services, and production of goods and services. The production accounts are based on an activity classification, and types of services (e.g. outpatient and hospital services) are not required separately. In the production accounts, a new basic heading is identified: "(minus) receipts from sales". This enables the final consumption expenditure to be calculated from the output data. PPPs for government services will be used as proxy PPPs for NPISHs.

90. Due to institutional differences and other reasons the classification may not be completely appropriate for all countries and so additional data from countries might be needed to fill gaps. The proposed expenditure classification is based on the OECD's understanding of what could be feasible for countries. Any comments to improve the proposal are more than welcome.

Discussion: STD/NA(2000)22

91. The following issues were raised during the discussion:

- A common questionnaire is required for NPISHs because they can be significant.
- Government sales are becoming an increasingly important item in Canada and so it is reasonable to treat them separately.

Agenda item 8: Volume estimates and productivity

Presentation: STD/NA(2000)11 - *The chain index for GDP volume measures: the Italian experience (Italy)*

92. SNA93 and ESA95 recommend using chain indexes for measuring growth rates in volume and price. The Fisher index is preferred but the Laspeyres index is also acceptable for volumes The advantages of chain series are that they better reflect the overall trend over time because they incorporate the effects of variations in relative prices and so are more representative of fixed-base series. Generally the choice of the formula for chain volume series has little practical effect. The main disadvantages are that the chaining amplifies the changes when prices and quantities "bounce", and the chain indexes are not additive.

93. The chain index for Italian GDP volume measures is based on value added estimates for 101 branches of economic activity. The years 1992-1999 are those for which the historic series of the value added are available with the maximum level of disaggregation. Adopting alternative formulas in the chaining technique has a modest effect on growth rates. However, the Laspeyres chain indexes tend to eliminate the substitution bias phenomenon which is characteristic of the traditional direct approach. In practice, the Laspeyres chain index represents a good approximation to the chain Fisher index. It is clear that chaining is superior to the more traditional method of the fixed-base indexes.

Presentation: STD/NA(2000)23 - *Consistent aggregation and chaining of price and quantity measures (Professor Hillinger)*

94. Professor Hillinger's presentation described an approach which has been changed from that presented in the paper and which concerns work in progress. Its objective is to develop a theory of index numbers that is not based on the assumption of a single, utility–maximising consumer with homothetic preferences. This theory tackles the problem by working out what is required to restore the level of welfare after prices have risen. It also builds a bridge to the field of cost-benefit analysis where expenditures at different prices have to be compared. However, it was not possible to give a full exposition of the changed approach during the meeting.

Presentation: STD/NA(2000)24 - *Chain volumes based on the Hillinger aggregation method (OECD)*

95. Following Prof. Hillinger's presentation in 1999, further thought was given by the OECD to his proposals. This document reviews some of his points and uses a data set (gross fixed capital formation by asset for Australia) to apply the Hillinger method.

96. Professor Hillinger's main points are that many countries' national accounts constant price statistics are flawed because they lack additivity. He proposes a method based on *variations* with a triple claim:

(a) it would avoid substitution biases

(b) it would generate additivity in constant price levels

(c) it would be based on strong theoretical foundations.

97. The aggregate Hillinger price index is based on quantity weights which are arithmetic averages of comparison periods, a formulation which follows directly from consumer theory. The volumes in

the US NIPAs are based on a Fisher chain index (a "superlative" index), which also uses quantity weights from both periods. The Fisher index's formulation also follows directly from consumer/producer theory. The results for the Hillinger and Fisher volumes are very close at the aggregate level.

98. Real expenditure is equal to the value of each subcomponent deflated by an aggregate price index. Real expenditure levels are additive and can be transformed into index numbers but there is limited analytical use of such a real expenditure index. Hillinger suggests a further decomposition of real expenditure in quantity and relative price variations. Again, these results are additive but are probably of little analytical use. After all, users are interested in quantity indexes, not variations. To obtain indexes, there are 2 possibilities. The first is to use the real expenditure level of some base year, and add quantity variations, which yields a series of constant price levels and a quantity index can be formed. Empirically, the results are quite different from those from a Fisher index (eg, computer investment grows by 12 % per year versus 15.4% with the Fisher quantity index). The interpretation of this index is a little difficult and it is not clear that it will necessarily remain positive. The second is to use Hillinger's proposal for index decomposition. The problem is that the indexes cannot be derived from the variations, or vice versa. When applied, they yield results that are quite close to Fisher quantity indexes. For example, in Table 4, the normalised quantity index for computers rises by 15.5%, the Fisher index by 15.4%. This adds little to existing measures. In particular, when re-converted to constant-price levels, non-additivity prevails.

99. The conclusions are that the Hillinger approach produces additive sub-components but their analytical use is limited and it is not obvious how to transform them into meaningful and consistent index numbers. The index numbers are not consistent with the proposed variations and yield results that are close to traditional methods. In particular, the implied constant price levels are not additive. More importantly, there is a general issue whether additivity is necessarily a desirable property of constant price data. If not, there is no point in seeking additivity.

Presentation: STD/NA(2000)25 - *How the chain additivity issue is treated in the U.S. economic accounts (USA)*

100. Prior to January 1996, the U.S. national income and product accounts (NIPAs) used fixed weights and a single base year for all periods (eg, a 1987 base year for all constant-dollar estimates from 1929-1995). Constant-dollar estimates were fully additive. Since January 1996, the NIPAs have presented price and quantity indexes based on chain-type Fisher formula, as well as real GDP in "chained dollars," which are calculated by multiplying the current-price GDP measures for the reference year (presently 1996) by the quantity index scaled to equal 1 in that year. These chained-dollar estimates are not additive, and a residual is presented in each table.

101. For measuring growth rates over time, additivity is not needed (and may be misleading). For making comparisons between aggregates (relative sizes or shares) at a point in time, current price estimates are generally preferable to volume measures. For developing new aggregates that are not published by the statistical agency, such as GDP less communications equipment, analysts previously had been able to make use of the additivity properties of fixed-weighted real GDP. Now, a chain-type calculation is required. Because the Fisher formula is approximately consistent in aggregation, the "Fisher of Fishers" works well. However, an additive formula is needed for decomposing changes in an aggregate into contributions of its component. BEA publishes contributions to percent change in real GDP. A "Fisher of Fishers" can be used to check for consistency of intermediate-level subcomponents with overall total.

102. Under Professor Hillinger's proposed approach, if "real" aggregates are all divided by a common price index, then these measures are of little use for most traditional uses such as calculation of growth rates of subaggregates. In addition, if "real" subaggregates are obtained by chaining normalised quantity variations, then these estimates can have unusual properties. For example, tables 1 and 2 of the paper show that a subaggregate can be negative, even when all prices and quantities are positive.

Discussion: STD/NA(2000)11, STD/NA(2000)23, STD/NA(2000)24, STD/NA(2000)25

103. The following issues were raised during the discussion:

- The Australian delegate commented that Professor Hillinger appeared to have changed his objective from having additivity in $ terms to having additivity in terms of proportional rates of change as in a translog function. Professor Hillinger now favoured using the Tornquist index - a superlative index which is exact for the translog functional form. He wondered whether Professor Hillinger had it in mind to apply the economic theory of the firm to consumers, as the former led to a translog functional form. The Australian delegate then went on to observe that the objective in compiling volume indexes is to obtain the best estimates of growth. He asserted that it is impossible to have both good estimates of growth and additivity over a long period of time. However, if chain Laspeyres indexes are compiled it is possible to have additivity for a limited period. Australia produces annually-reweighted chain Laspeyres indexes and references them to the current price values in the latest base year. Thus, the volume estimates are additive for the latest four to seven quarters.
- The Eurostat delegate agreed that additivity is not necessary. However, additivity is useful in balancing which means using chain Laspeyres series in previous year's prices for this process. This is missing in the US approach.
- The Norwegian delegate said that the Norwegian volume measures had been chained for a long time. It is necessary to balance supply/use tables in both current and constant prices, which can be done in previous year's prices. Additivity is not a problem for users.
- Canada has always chained but with frequencies of 5 years or so. They are currently looking at several options, including a rolling annual chain with fixed weights for the last 2 or 3 years using the latest I-O tables as a base for detailed industry statistics. For macro national accounts, they are most likely going for a chain Fisher.
- I-O tables are only produced in current prices in US. The US delegate agreed that a Fisher formula would be difficult to apply to I-O tables. Ratios should always be calculated in current prices.
- Several countries said that they use constant price supply/use tables to provide benchmarks for chain quarterly series. They also provide the data required for MFP estimates by industry.
- Professor Hillinger said that under his new theory a Tornquist index does not assume maximisation of any kind. It is necessary for systemic measures to respect the value of price changes when computing quantity indexes.
- The Eurostat delegate informed the meeting that a draft version of its handbook on price and volume measures is now available.

Presentation: STD/NA(2000)26 - *Developments in the measurement of general government output (UK)*

104. Much of government output is non-market so there is no natural output measure. The current procedure is to assume outputs are proportional to deflated inputs, which does not reflect improvements in the efficiency of operations or changes in productivity. Since 1998, cost-weighted activity indexes (CWAIs) have been compiled by the ONS and they were the subject of this paper. They involve listing activities covering all or most work in the given area. For each activity, a volume measure is identified, such as a count of incidents. Weights are then produced to combine the activity measures. For example, the output indicators for general practice doctors are based on the number of patient visits, for dentists the number of treatments, for ophthalmic services the number of tests, for pharmaceutical services the number of prescriptions dispensed etc.

105. Education provides a particular problem. The output is based on the number of pupils classified separately for nurseries, primary schools, secondary schools, special needs (further education is excluded). The major problem relates to adjusting for quality change. An adjustment is made to primary and secondary school students based on the feeling that there has been a steady improvement in examination results. Currently the adjustment is an arbitrary ¼% a year.

106. For administrative activities, like social security, output indicators are obtained split by type of benefit. The volume measure for each type of benefit is the number of new claimants in a period (this excludes work involved in rejecting ineligible claimants and in reassessing those whose circumstances change). Similar types of output indicators are identified for other administrative services (Justice, Legal Aid Board, Prisons etc).

107. In most of the above cases the types of measures used are relatively uncontroversial. However, particular difficulties arise when preventive type services are examined. For example, fighting fires is only part of the job for fire brigades. They also have to attend false alarms and be involved in fire prevention. It is not obvious how to define the output for fire prevention. ONS intends to look at using fire prevention inspections, examination of plans, and community work. In a similar fashion, defining the output of the police is another area full of conceptual problems. The police are there to prevent crime and traffic accidents as well as "positive" things such as solve crimes. Defence has a similar conceptual problem to the police. The main job of the armed forces is to deter others rather than to do anything directly. One suggestion of measuring deterrence is based on the forces' "battle readiness". However; this indicator falls when forces are engaged in combat which is a counter-intuitive result. Other current areas of research are personal social services, immigration and citizenship, employment services, national roads, culture, media and sport, and refuse collection and disposal.

Discussion: STD/NA(2000)26

108. The following issues were raised during the discussion:

- The Australian delegate said that the ABS had put a good deal of effort into deriving output measures for the non-market sector, and it was expected that some of these new measures - such as the ones for health - would be introduced into the national accounts in the near future. He then went on to argue that it was reasonable to derive output measures for the non-market sector by weighting together activity indicators. In the case of the police this included investigating and solving crimes as well as crime prevention activities. In the case of fire brigades this included attending fires and fire prevention activities. Unfortunately, there are insufficient data available currently in Australia to apply this approach to some sectors, such as police and education in schools.

- Finland has been putting a lot of effort into measuring public administration output but currently there are problems with the coverage of output indicators for public administration.

Presentation: STD/NA(2000)27 - *Volume measurement of education (Netherlands)*

109. The aim of this Statistics Netherlands project was to develop a better indicator for the output of education. Currently in the national accounts the value of output is equal to the sum of the values of input. As a result, productivity changes and quality changes are not recorded. The output of education is the quantity of teaching received by students, by type of education, and adjusted for quality changes. Volume indexes obtained this way should be weighted together using cost shares. The output measure is the number of hours spent by students in being taught. Adjusting for quality changes is a more difficult issue.

110. Using an input method (resource-cost approach) implies that using more resources will result in higher quality. Using an output method (user-value approach) means that the more knowledge is transferred the higher will be the quality. Indicators for the transfer of knowledge can be based on unadjusted pupil numbers (or hours) but this assumes no changes in quality. If the indicator is the number of pupils who graduate then the better the preparation for exams the more pupils will pass. While this seems sensible, one drawback is that not graduating shows up as no output at all for the students concerned. Other indicators examined included differences in the time taken to obtain diplomas, and variations in the time needed to graduate.

111. Data available for primary and secondary education are the "moving-up-classes" ratios per school year. Examination scores are also available for secondary education, but the level might change over time. Several sets of results were calculated based on various combinations of data. None of the output measures reflected the large jump in inputs in the last couple of years.

Discussion: STD/NA(2000)27

112. The following issues were raised during the discussion:

- The Danish delegate pointed out there were large increases in inputs in the Netherlands in 1997 and 1998 due to a move to reduce class sizes. If quality is increased when class sizes are reduced then the Dutch method will potentially understate the quality-adjusted output. The presenter agreed that a reduction in class size results in a higher intensity of education, but it is unlikely to be proportional and so should not all go through into a quality adjustment.
- The Canadian delegate commented that, in directly valuing output in the government sector, every example seems to increase the level of output. This could indicate a bias towards outcomes that feel best rather than are objective.
- Work by the UK ONS in this field has shown quality is very difficult to measure and people are generally happy to pay for smaller class sizes despite the lack of empirical evidence that this improves quality. The UK higher education sector has a higher drop-out rate now than previously and this would imply a deterioration in quality and possibly also productivity.
- The US delegate expressed some concerns about the lack of consensus and how politically-charged some of these measures are. He also queried if this area provides the best use of research resources. Areas like telecommunications may provide better value for money. In the USA, the type of output indicators being talked about for government administration were compiled for a while but they started to give implausible results after a time.

- Two delegates commented that output indicators should be confined to those outputs aimed at individuals rather than collective outputs.
- The Eurostat delegate said that the collective areas are the hardest ones for objective output measures, but this does not mean we should not attempt to do something here. A reasonable indicator of quality is shown by results (eg, higher graduation rates).
- The Australian delegate observed that deriving output measures for the non-market sector which reflect productivity change is generally quite difficult, but it is a challenge that must be faced because of the considerable size of the non-market sector and the extent to which productivity could be growing in it. He gave the example of health, where medical advances were no doubt leading to substantial growth in labour productivity. Quality change in education is very difficult to measure. Changes in examination results over time - as had been observed by the UK ONS and used to make adjustments to output growth - could be just as well affected by social changes and the quality of family life (e.g. higher divorce rates could lead to a deterioration in exam results even if the quality of teaching is going up).
- Some improvement can be obtained by refining input-price measures and methodology where development of output-based measures is too difficult.
- The Canadian delegate said that, while this subject is a very difficult one, it is too important to not continue with.

Presentation: STD/NA(2000)28 - *The OECD's Productivity manual (OECD)*

113. The OECD Productivity Manual was launched in 1998 by the Statistical Working Party of the OECD Industry Committee. The first draft was discussed in November 1999, and the second draft was considered by an expert steering group in June 2000. The third draft is being submitted to the Statistical Working Party in November 2000, with the aim being to have a final version by the end of 2000. The main objective of the manual is to provide an accessible guide to productivity measurement for statistical offices and applied productivity researchers, to foster international harmonisation in this area, and to identify desirable characteristics of productivity measures by reference to a coherent framework that links economic and index number theory, and the SNA93.

114. In the first instance, the focus is on productivity *growth*. It is possible that *level* comparisons will be included at a later stage. The manual describes productivity estimation at industry, sectoral and aggregate level. The SNA's production boundary is used but the focus is on market producers within the production boundary, although the possibility of expanding to non-market activities will be considered at a later stage. The structure of the manual is:

- Chapter 1 Introduction
- Chapter 2 Overview of productivity measures
- Chapter 3 Output
- Chapter 4 Labour input
- Chapter 5 Capital input
- Chapter 6 Intermediate inputs and valuation
- Chapter 7 Index numbers
- Chapter 8 Aggregation across industries
- Chapter 9 Use and interpretation of productivity measures.

115. The strategy of presentation in the manual is to have a brief overview at the beginning of each chapter, followed by the main text with numerical examples and examples of applications. There is an Annex with a more technical exposition. The statistical issues covered include measuring output, price indexes for deflation, labour input (hours worked, characteristics of the workforce), capital input, the empirical basis for service lives, age-efficiency profiles, and age-price profiles.

116. An advance version of the third draft was circulated as a room document with an invitation for comments before 1 December 2000.

Discussion: STD/NA(2000)28

117. There was no discussion as this was an information item.

Presentation: STD/NA(2000)29 - *Metadata on calculation of constant price value added for services (OECD)*

118. The OECD has twice published reports on sources and methods used by countries in measuring real value added in services in the national accounts. Reports were published in 1987 and 1996. The years from 1996-2000 have been a period of extraordinary and continuing change. Included have been the implementation of SNA93, a large expansion of surveys on services, extensive work on services PPIs in over half the OECD countries, greater use of input-output techniques in national accounts, a change in the industrial classification, some expansion of surveys of purchases of services, and a lower usage of narrow volume and input measures to proxy output.

119. The OECD proposes to set up a metadata database of country practices on measurement of real value added in services to be updated regularly and published. The aim is to improve understanding of services data, to assist countries in producing statistics in this field, and to improve international comparability. Work will commence in 2001.

Discussion: STD/NA(2000)29

120. There was no discussion as this was an information item.

Agenda item 9: Transfer costs

Presentation: STD/NA(2000)30 - *What is an asset worth? (OECD)*

121. The OECD paper started off by arguing that, in practice, there are different perspectives on asset valuations depending on which side of the transaction someone is involved with. They can be termed:

- the "acquisition price" or what it costs to take ownership
- the "disposal price" or what an owner would get if he sold the asset (excluding the costs of ownership transfer paid on acquisition)
- the "realisable value" or the amount an owner can obtain by selling the asset.

122. Conceptually these three valuations exist simultaneously with the following relationship between them:

	Acquisition price
less	costs of ownership transfer on acquisition
equals	disposal price
less	costs of ownership transfer on disposal
equals	realisable value.

123. The holding gain is equal to the disposal price at disposal less the disposal price on acquisition. The costs of ownership transfer are not subject to price inflation. Writing off the costs of ownership transfer in the year incurred is necessary to maintain the balance sheet identity that the opening balance plus acquisitions less disposals equals the closing balance. A question that needs to be asked is whether costs are a reduction in income or a use of saving? For financial assets, acquisitions and disposals are recorded at the disposal price only (assets = liabilities). The costs of ownership transfer are a reduction in income. However for non-produced assets a different approach is used. For example, the costs of ownership transfer on land improvement are treated as an asset separate from the land itself. SNA93 recommends that these costs should be written off "over a suitably long period".

124. For fixed assets, the consumption of fixed capital accumulated over the life of the asset equals the disposal price on acquisition less the disposal price on disposal plus the costs of ownership transfer on acquisition and disposal. In practice, the disposal price on disposal may be negative. The costs of ownership transfer should apply to the life time of the asset in the hands of the present owner, not the total life time. Assets identical in physical characteristics and age should have identical prices, which is true only if we set the NPV equal to the disposal cost of the asset. If we set it equal to the acquisition cost, the NPV for the new owner is higher than the NPV for the seller. This could only be so if the new owner expected to earn more capital services from the asset or to achieve a higher rate of return.

125. Do costs of ownership transfer represent a volume addition to capital services? Usually the answer is no for taxes; they are a price increase. If the answer is yes for other components though, then the greater number of transfers, the higher is the value of fixed capital for the same asset. Under present SNA guidelines with some of the costs of ownership transfer simply written off when ownership is transferred before the end of the asset's life, net national income will be higher over the period than if the asset remains with a single owner throughout, which is an anomalous situation.

126. There is a way in which the new owner may recoup his costs of ownership transfer and which would avoid these problems and which could be consistent with costs of ownership transfer on other assets. It is to value the asset as the NPV of the disposal price but to say that the new owner expects to (at least) cover his costs of ownership transfer from holding gains during the period in which he holds the asset. For financial assets and valuables, the gain shows itself in the amount received when the asset is sold. For fixed assets, the holding gain will be built into the increased value of the capital services rendered due to inflation during the assets' life. Costs of ownership transfer could then be seen as an offset to these holding gains; they would be written off in the revaluation account rather than in the other changes in volume of assets account.

Discussion: STD/NA(2000)30

127. The following issues were raised during the discussion:

- The Israeli delegate said that a similar sort of issue is encountered in trying to assess the appropriate value when transferring a "start-up company"? How should costs prior to the start-up be treated?

- The Singaporean delegate pointed out that treating transfers of residential construction during a property boom under SNA93 recommendations could be problematic. The SNA treatment of capitalising the transfer costs would result in a high increase in investment (GFCF) due to a large number of transactions even though no real capital formation had taken place.
- Transfer costs are not recoverable which is due to them being services consumed at the time they are produced (plus taxes). If transfer costs are capitalised then they should not be written off over the same period as the purchased asset. The normal national accounts view of transfer costs is by asset type; an alternative view which would enable different treatments to be adopted where appropriate would be by purpose (eg, own use of speculative).
- Should (potential) disposal costs be included in consumption of fixed capital which implies the purchaser can value these disposal costs when the property is initially purchased.
- The value to the seller should be the one in the balance sheet. It is necessary to distinguish between the value in use and the value in exchange. The SNA implicitly assumes we are in an equilibrium situation (ie, there is equal demand for houses for rental and for speculation). Buildings could be valuables when purchased for speculative purposes.
- Houses are to live in but are also used as a valuable, with holding gains, and so are not necessarily used in production.

Agenda item 10: Employee share (or stock) options

Presentation: STD/NA(2000)31 - *Employee share options in Finland (Finland)*

128. In Finland, as in many other countries, share option programmes are launched by companies to motivate their staff and encourage company loyalty. Granting share options gives the employees, usually directors or other executive staff, the right to purchase a certain number of shares in the company at a predetermined price within a certain time period. The employee who has an option can use it in two ways: either sell the option or buy the shares at a predetermined price. The option cannot be exercised before given time intervals, for example 3 and 6 years. In addition, if the employee leaves the company, he usually loses his share option.

129. In the year 1999, 1.9% of the total wages and salaries (FIM 5,2 billion) was due to the realisation of share options. Excluding the share options, household disposable income increased by 3.4%. If the income from share options had been included, household disposable income would have increased by 4.7%. The outcome would have been an increase in the household sector saving rate by 1.4 percentage points.

130. Income taxation treats employee share options as wages in kind at the moment when the options are exercised. The most important data sources that include the impact of share options are the preliminary wage data based on withholding taxation, the so-called Kela-wage sum calculated on the basis of social security contributions and the MAVA wage sum based on the monitoring system of withholding taxes. The options are not in business statistics because they do not affect the profit and loss accounts of the companies. ESA95 mentions bonus shares distributed to employees. They are included in wages and salaries in kind. In Finland this interpretation is now being reexamined and the estimated amount of option income has recently been removed from wages and salaries. From the cost side, if share options are defined as wages, they lead to errors in the companies' and national economy's operating surplus. Share options affect the company's balance sheet and are actually paid by other share holders if the shares are created to meet obligations under the options.

131. Share options increase the disposable income of households in the same way as sales profits or capital gains. Sales profits are however not included in the income concept. If the benefits received by the households from share options are regarded as income from a financial asset, they should be included in a revaluation account. According to SNA93 only instruments which are freely traded on the market and for which a market value can be defined can be classified as derivatives. If employee share options are classified as derivatives, when do they become derivatives? In addition, how should we define the value of the assets and when is the correct time for their recording?

132. The main questions which need to be answered are:

- Should employee share options be treated as wages and salaries? (If yes, wages in kind or in cash?)
- Can we decrease the operating surplus of the enterprise accordingly, although this is not necessarily true in reality?
- Could there be any element of property income (except dividends after buying and holding shares)?
- Could there be any element of capital transfer when starting the option programme or exercising the options?
- Should Finnish employee share options be treated as a parallel to the options classified in SNA93 as financial derivatives and when should they be regarded as tradable?
- If some option holders buy the shares instead of selling the option, what is the transaction in this case?

Presentation: STD/NA(2000)32 - *Employee stock options (Canada)*

133. In the Canadian System of National Accounts (CSNA), stock options are valued at the time they are exercised by the employees and this value is included in their labour compensation. There are 3 distinct times when the value of stock options can be calculated: (i) when they are granted to employees, (ii) when they are vested to employees, or (iii) when they are exercised by them. It is generally considered inequitable to impose tax on unrealised gains and this inequity is at the root of the government's attempts to deal with transactions related to stock options. These attempts inevitably affect the information that corporations provide to statistical agencies and these data underpin the entries made in their national accounts.

134. The intrinsic value of stock options has not been reported in compensation of employees in the CSNA. However, the value of stock options when exercised has been included, up to the taxation year 1999, as taxable benefits in the tax statement. In the February 2000 budget, the federal government changed this long-standing policy. The Budget introduced an amendment to the Income Tax Act to modify the way in which stock options are taxed. Generally employees can defer the unrealised income from exercising stock options for publicly-listed shares until the disposition of the shares but there is an annual limit of $100,000 subject to deferral. A serious discordance remains between the time when the employees actually earn the stock options and the time when they are compensated by means of them; and between the time when the stock options are granted and vested and the time when they are exercised.

135. Statistics Canada has decided the value of stock options will continue to be recorded when exercised and this value will continue to be included in labour compensation, even though it is not taxed.

Presentation: STD/NA(2000)33 - *Employee share compensation and its treatment in the national accounts (Australia)*

136. The ABS paper started with some background on share options. They provide a leveraged exposure to the share price and are classified as "financial derivatives". Employee share options give the holder the right, but not the obligation, to buy shares in the future at a given "strike" price either on a given expiry date (called "European options"), or up to a given expiry date (called "American options"). The strike price is normally the share price existing at the grant date. Conditions are often attached such as the options being non-transferable or requiring a qualifying period. They are of relatively minor importance overall in Australia (1% or so of employee compensation) but they are expected to increase in importance following recent changes to the Capital Gains Tax law.

137. There are disclosure requirements in Australian business accounting but no requirement to record an expense against profits. In the ASNA, share options are recognised as compensation of employees in principle. However, in practice, explicit estimates are not currently included because of insufficient data. Some amounts are expected to be included in data provided by foreign subsidiary companies where accounting standards in the home country require their recognition.

138. In valuing options as compensation of employees it is necessary to separate income from capital gains/losses. The timing of recognition as income is important; it can be any one of the grant date, the service date, the vesting date, or the exercise date. An option pricing model is required if market values are not available. In compensation of employees, the valuation date should be the date at which an actual (as opposed to a contingent) entitlement arises. The ABS supports the grant date as being appropriate where no conditions are attached to the exercise of options. However, where conditions apply then the ABS supports the vesting date. The exercise date would not seem appropriate as an asset/liability should have been recognised prior to this date.

139. Under the accrual basis of recording, the financial derivative asset/liability is recognised and valued at vesting date, but labour services are provided over a much longer period. It seems sensible to accrue employee compensation given a reasonable expectation that vesting will occur. Adjustments to earlier periods would be required to align accrual amounts with the value at the vesting date. The ABS recognises that the current estimates of employee compensation are understated by up to 1%, and operating surplus is correspondingly overstated. In addition, growth in employee compensation and labour costs could be understated. A full resolution will depend on developments in Australian Accounting Standards for business reporting. In the meantime further work will be done to examine possible data sources eg, stock exchange data for new share issues under employee plans. If evidence emerges that the use of employee share and option plans is increasing, ABS will consider conducting a pilot test with a view to collecting data in annual business surveys.

Presentation: STD/NA(2000)34 - *The treatment of stock options in the U.S. economic accounts (USA)*

140. The US BEA paper described how stock options give the right to buy company stock at a company-set price in the future in exchange for lower current-period wages. Normally the grant price equals the market price of the stock at the time of grant. There is usually a minimum time limit before the individual may exercise the option. In effect, the employee accepts lower wages in expectation of an increase in the market value of the company stock. The firm benefits by lowering its current compensation costs.

141. There are two major types of employee stock options: (i) incentive stock options (ISOs), and (ii) nonqualified stock options (NSOs). ISOs are not taxable in the hands of the employee but they are not tax deductible by the employer and there is a limit on the value of options that may become exercisable in any year. NSOs are less beneficial to an employee. When an option is exercised, the difference between the exercise price and the current market price of the stock is treated as wages. However, NSOs are beneficial to the firm. When an option is exercised, for tax purposes the company may record an expense for the difference between the exercise price and the current market price of the stock. For financial reporting, a company at the time of grant has two ways to value option grants. The first is an intrinsic value-based method but the value is usually zero because the grant price equals the market price at grant. The second is a fair value-based method in which the value is usually based on an option-pricing model, such as the Black-Scholes model.

142. In the USA, ISOs are not treated as part of compensation of employees. However, the exercising of NSOs is included in wages and is a deduction in the calculation of corporate taxable income. There is general agreement that stock options are compensation of employees. Data on the grant of options are not available and data on the exercise of options are not separately identified. Generally, data availability is limited to information from footnotes of individual corporate financial reports. The BEA recommends valuing options at the time of grant, based on fair value using an option-pricing model such as the Black-Scholes method. When exercised, the difference between the issue value and the exercise value should be recorded as a holding gain or loss by the employee and as a holding loss or gain by the company.

143. The major practical measurement and timing issues are that differences in the source data used lead to measurement differences between wage and salary accruals and profits, and that the timing of incorporation of tax-based data may lead to statistical discrepancies for the current period when the corporate profits expense and wage and salary accrual from the exercise of options do not offset each other.

Presentation: STD/NA(2000)35 - *Employee stock options and national accounts - using economic theory to clarify measurement issues (Harry Postner)*

144. Harry Postner introduced his paper by saying it is mainly a conceptual paper that attempts to deal with three principal issues. First, employee stock options (ESOs) are not recognised in SNA93, which could lead, directly or indirectly, to imbalances in estimates of national accounts. Second, ESOs are a special kind of financial derivative. Third, when and how should ESOs be valued.

145. The simplest and most common form of ESO is an American-style call option issued at the money for a fixed-term expiry date and without path-dependent conditions. Most economic accountants seem to agree that ESOs are a special form of employee compensation, but there is disagreement about details of their application in a system such as SNA93. There are two conceptual problems that give rise to this disagreement. First, ESOs are granted to employees free-of-charge; there is no premium price charged by the employer corporation. The absence of a premium price constitutes an implicit substitute for employee compensation, but the value of this substitute is unknown at the time of grant. Second, there is a problem concerning whether ESOs can be subject to valuation at the time of grant using one of the standard price formulas for American-style call options. If possible, this would mean that we do not have to "wait" for valuation until the time of exercising the option or expiry, which could be perhaps 10 years.

146. Standard option-pricing formulas are not applicable to ESOs without a series of adjustments that are often arbitrary and subject to errors of estimation and interpretation. There are now some generalised "supermodel" option-pricing formulas that may serve ESOs better than standard

adjusted formulas but further research is required. There are four basic alternatives with regards to valuing ESOs. Two of the alternatives, "minimum value accounting" and "vesting date accounting", are mainly of academic interest. "Grant date accounting" produces a present discounted value of ESOs based on an adjusted Black-Scholes option-pricing model with valuation at the time of grant. This yields option values that are the incurrence of the expected liability of options to the corporation (which is assumed equal to the acquisition of the expected asset value of ESO to the employee). Derived option values must be amortised over the expected lifetime of options from grant date which yields deferred compensation expenses for the corporation and compensation gains for the employee. The big benefit is recognition of ESO valuation beginning at the time of the grant. But the benefit is obtained at the cost of estimation adjustments and assumptions that could be seriously misleading. A version of "exercise date accounting" is built on an interim grant date accounting that is periodically corrected for estimation and formulation errors by eventually setting option values equal to their realised exercise date payoffs (the arithmetic difference between market price per share at exercise and strike price per share at grant). The ex post process, in effect, transforms estimates of deferred compensation into realised employee compensation.

147. Exercise date accounting based on interim grant date accounting appears to satisfy the conceptual requirements for recognition of ESOs in the national accounts. The process is consistent with recent updating of the SNA with regard to financial derivatives. However, the empirical implementation of the whole process is data demanding and statistically cumbersome in the absence of special administrative arrangements and special programming software.

148. Examination of national accounting procedures raises two potential problems. First, there is a problem with regard to the origin of shares transferred from option issuers to option holders at the time of exercise. If new shares are arbitrarily issued, there is a danger of share value dilution and associated insider trading based on misleading financial ratios. Second, there is no presumption that (newly) issued shares are immediately cashed by option exercisers. They might prefer to hold onto shares after exercise and expiry so the major economic gains from ESOs could then become realised capital gains rather than realised compensation gains. In any event, the SNA needs to recognise the existence of corporate treasury stock. This consists of shares of a corporation's own stock that have been repurchased from stock holders by the corporation and which could then be reissued by corporate treasury to satisfy the exercise of employee stock options. The two transaction categories, namely employee compensation and corporate treasury stock, then form the (basic) constituents of the quadruple entry mechanism needed to balance the accounts of the household and corporate sectors according to the rules of national accounting.

Discussion: STD/NA(2000)31, STD/NA(2000)32, STD/NA(2000)33, STD/NA(2000)34, STD/NA(2000)35

149. The following issues were raised during the discussion:

- The New Zealand delegate said the costs associated with a share scheme would appear in the balance sheets but they are not an operating cost in the production account. The cost is borne by the existing shareholders if new shares are issued but it is not clear how to record the other transactions involved.
- The Canadian delegate pointed out that, in effect, it is the existing shareholders who pay. The cost is passed directly to the balance sheet and not through the current accounts but it is really a hidden cost which should affect profits.
- The Australian delegate said that if employees are given shares as part of a privatisation then these should be shown as a capital transfer. In a normal situation, options are part of

compensation of employees. Valuation should be at the vesting date, preferably based on business' valuation. If valued at exercise date then it will include a capital gain.

- The Korean delegate pointed out that the overall value of a company is not affected by options.
- The South African delegate said that if options affect GOS then cash dividends versus scrip dividends would cause a similar type of problem.
- If the share option is shown as a reduced GOS then the wealth of the company is reduced.
- Options are treated as income in kind and must be valued at the cost to the company. What should go into income in kind is the administrative cost only and it should not affect operating surplus. It is basically a financial transaction.
- The Australian delegate said there is a real cost to business irrespective of whether the business buys the shares or simply issues more shares. The cost is the difference between the market price and the strike price at the vesting date.
- The IMF delegate said the correct method of recording depends on the point of view taken - that of the employee or the employer. Things are more complicated when viewed from the employers' side.
- The author of the Finnish paper said there is a problem with the valuation period and the exercise period. At present in Finland, about two thirds of options are currently worthless. It is not as simple as considering options as income in kind.
- Foreign subsidiaries of Swiss companies offer stock options which are paid by the Swiss head office. How should this be treated in the BoP? The answer is the company would have to buy shares from the parent (direct investment) with the reverse flow being portfolio investment. This would be an entry in the BoP capital account.
- Some employees in the US are paid almost entirely in options so they are obviously part of compensation. A key issue is how the company pays off the options - directly or via watering down their stock?

Issues arising

- No-one was able to answer the Finnish question about the accounting mechanism for GOS to be affected when new shares are issued to meet the options obligations. The OECD undertook to investigate this issue and to circulate the outcome to all participants at the meeting.
- The IMF will look into the issue of the BoP treatment of the foreign subsidiaries of Swiss companies offering stock options which are paid by the Swiss head office.

Agenda item 11: Technology - current issues

Presentation: STD/NA(2000)08 - *Direct impact of new technologies on economic growth (France)*

150. The work carried out by INSEE quantifies the role of the major ICT-producing industries in the French economy. In value terms, the share of the ICT industry has remained more or less unchanged, but volume growth has been significant. Several interesting aspects arose from the study. First, computed growth contributions of the ICT industry were strongly dependent on the

choice of the base year for the underlying price indexes. Second, the growth contribution was around 0.4% per year in the late 1990s but this contribution to growth was not exceptional, having already been achieved in the 1980s. Third, employment efforts were moderate except in ICT services.

Discussion: STD/NA(2000)08

151. The following issues were raised during the discussion:

- One delegate commented that the second-last slide shows a surprising drop in 1994 but the author was unable to give a reason for this drop.
- The Polish delegate commented that growth in computers leads to growth in employment according to the paper but he queried whether the links are genuine? The author responded that there is still employment growth even if computer services are excluded.
- The growth differences shown in slide 6 are very significant. There is also a spin-off effect to other "computer-using" industries (eg, banking) on the input side. The author agreed - slide 6 shows the effects of huge relative price changes in the longer term, but in prices of previous year there are quite different results.
- The Canadian delegate pointed out the production of computers and productivity are not exactly in sync (see graph 5). The author explained that the growth curve is based on only one part of the overall IT industry. The large drop in prices in hardware is not reflected in the constant price series behind these curves. There is very strong growth in current prices.
- The German delegate said he had some problems in identifying the direct and indirect effects and I-O may help in this respect. The author said there is no proposal to examine these issues in an I-O framework.
- With respect to the figure 4 issue, studies in the US have taken a multifactor productivity approach and have found that the direct and indirect effects are almost all due to broadly defined ICT.
- A large part of the growth in computer services in UK has been from contracting out. Has this been a factor in France?
- A UN expert group on classifications created a technical subgroup to update ISIC and CPC. An update of ISIC is scheduled for 2002, which will take new technology into account.

Presentation: STD/NA(2000)36 - *Measuring e-commerce in the U.S. economic accounts: What can we do? (USA)*

152. Electronic commerce (e-commerce) is "any transaction completed over a computer-mediated network that involves the transfer of ownership or rights to use goods or services". Transactions occur within selected e-business processes (eg, selling) and are completed when the agreement between buyer and seller to transfer the ownership of, or rights to use, goods or services occurs over computer-mediated networks.

153. The BEA delegate said the consensus in the USA is that most e-commerce transactions are covered in major economic surveys and the economic census. There may be some problems, however, in maintaining the representativeness of samples over time because e-commerce organisations change rapidly and move across industry classifications. The US Bureau of the Census has published quarterly estimates of e-commerce retail sales beginning with the fourth quarter of 1999. Estimates over the 3 quarters that have been estimated so far range from 0.63 percent to 0.70 percent of total

sales. Revisions have been proposed to the North American Industry Classification System (NAICS) to separately identify industries such as electronic shopping and electronic auctions.

154. The Bureau of the Census proposes e-commerce inquiries on other surveys, including wholesale trade, accommodation and food services, other services, and manufactures. It also proposes to measure e-business processes and infrastructure more generally. The Bureau of Economic Analysis proposes to develop a new index of investment in e-business-related and high-tech equipment, to improve its surveys of international trade in services, and to examine compensation (including stock options) in e-commerce industries. The Bureau of Labor Statistics is developing new price measures that reflect e-commerce activities, including a producer price index (PPI) for wholesale trade, and it also proposes to publish a PPI for information retrieval services (including internet service providers).

Discussion: STD/NA(2000)36

155. The following issues were raised during the discussion:

- Is e-commerce all retail or is part wholesale? The distinction determines if e-commerce measures influence the measure of GDP.
- How is the BEA going to handle international trade in e-commerce?
- The Singaporean delegate commented that, if establishments are missed out of surveys then there is a coverage problem. In addition, there are consumer-to-consumer transactions which are missed by traditional collections. International borders are being broken down. "Telephone-commerce" was never collected. Why treat e-commerce differently? There is a need for more conceptual work to be done on the impact of e-commerce on the national accounts as well as on the balance of payments. E-commerce is more than an additional channel of delivery. The sale and purchase of digital goods, for example, would not be captured in merchandise trade statistics.
- The IMF delegate expressed concern that, if e-commerce continues to increase, then it will be more important to look at implications for surveys and for cross-border trade.
- The US delegate said that respondents to e-commerce surveys may not know the residence of purchasers, particularly if products are sent electronically. Parts of exports could be missed at the moment. Some firms could be missed if they are non-employers but there should not be a major problem of missing employing businesses (at least in the medium term).

Presentation: STD/NA(2000)37 - *Software in the national accounts: recent developments (OECD)*

156. The OECD paper described how improved statistical information on software investment is useful for a number of reasons: (i) analysing growth processes eg, for the Ministerial mandate to examine recent patterns of growth in OECD countries, (ii) analysis of investment strategies and investment composition, (iii) improved measures of capital stocks and services, and (iv) productivity.

157. Software in the national accounts is an intangible, fixed, produced, non-financial asset. Software can be split into purchased software (sometimes with a breakdown into pre-packaged and custom software) and own-account software. Not all software is part of intangible assets, because the small tools rule applies. Software bundled with hardware is counted as a tangible asset. Software that is physically tied in with hardware is part of hardware investment in most countries, but the

treatment of software that is jointly acquired with hardware without being tied in physically is unclear.

158. Expenditure on own-account software is valued on the basis of the compensation of computer development personnel, but it is difficult to precisely define a software developer (minimum qualification etc). Also, given the hours worked by developers, what is the share of their time devoted to development and what is the appropriate average compensation. The most critical problem in estimating constant price expenditure is the choice of deflators.

159. The OECD intends to continue compiling methodological descriptions to complete the picture of country practices and to identify statistical issues for discussion. Ultimately a systematic data collection is envisaged. The OECD Secretariat will examine the possibility of extending the breakdown of the OECD/Eurostat national accounts questionnaire with respect to identifying 'computer and office equipment', and 'communication equipment' and 'purchased and own-account software'. A breakdown along these lines is also consistent with recommendations in the forthcoming OECD's *Capital Stock Manual* and should help improve OECD's information base regarding capital services and productivity.

Discussion: STD/NA(2000)37

160. The following issues were raised during the discussion:

- In France, the impact on growth in GDP is less than 0.1% per year but it is much higher in USA (up to 0.4%). Is this a genuine difference or one of statistical measurement, which could particularly relate to the split between gross fixed capital formation and intermediate consumption?
- The USA delegate responded that it is necessary to look at deflators and constant price estimates in examining the differences between countries. For example the USA uses a hedonic price index which falls significantly. Also the service lives for consumption of fixed capital could vary from one country to another. However, the differences between the USA and France seemed too large to be explained by these factors alone.
- Including software in capital stock requires a knowledge of obsolescence in this area.
- The Canadian delegate said a lot of the estimates are based on assumptions. It would be interesting to see the shares of capitalised software expenditure and consumption in each country.

Presentation: STD/NA(2000)38 - *Report on recording expenditures on the Y2K bug in the national accounts (OECD)*

161. The OECD sent a questionnaire on Y2K expenditures to all Member countries and responses were received from 20 of them. The aim was to investigate the treatment of maintenance and repair of existing software rather than all Y2K expenditure. This was not clearly specified in the questionnaire and as a result answers were not always easy to interpret.

162. Question: What is the theoretically correct treatment of Y2K expenditures? Treatment as gross fixed capital formation (GFCF) was favoured by some because they considered the production associated with the rectification will be used repeatedly and continuously for more than one year and extend the lifetime of the asset. Treatment as intermediate consumption (IC) was favoured by others because the Y2K expenditures were seen as being similar to other maintenance costs and not

extending the lifetime of the asset. The most common view was splitting the expenditures partly as GFCF and partly as IC.

163. Question: How are the Y2K expenditures treated in practice in the national accounts? The most common answer was that expenditures are partly included in GFCF and partly in IC. The answers were based on deducing how these costs would be treated by enterprises when applying existing bookkeeping practices.

164. Question: Has the availability of data affected the ability to adopt the preferred treatment? In most countries the answer was no. Data are not available and it is not seen worthwhile to collect data specially because business accounting practices are either interpreted as being close enough to SNA rules or it was considered preferable in any case to follow business practices in the national accounts.

165. Question: Estimate of the amount of Y2K expenditures? Several countries provided a rough estimate. However, the answers cannot be summarised because of many uncertainties. Often estimates were made outside NSOs, their quality was unknown and the coverage of expenditure was either not specified or also included hardware and software investments.

166. Question: Are any special fiscal measures implemented to facilitate Y2K compliance? In most countries the answer was no. Special tax arrangements were put in place in a few countries and there was a special depreciation scheme in one country.

Discussion: STD/NA(2000)38

167. The following issue was raised during the discussion:

- The French delegate expressed disappointment about the lack of consistency of treatment of the Y2K expenditures in national accounts.

Agenda item 12: Life insurance

Presentation: STD/NA(2000)39 - *A note on the calculation of FISIM in Korea (Korea)*

168. Allocating FISIM to users is one of the recommendations in SNA93. Korea is considering introducing an allocation of FISIM. The definition of FISIM is the total property income receivable minus the total interest payable by financial intermediaries, excluding the value of any property income receivable from the investment of their own funds. Insurance corporations and pension funds are in a sector which is principally engaged in financial intermediation as a consequence of the pooling of risks. While insurance corporations and pension funds are not included in financial intermediaries in a narrow sense, they still act to provide financial intermediation. In Korea, key features of life insurance companies are that they collect funds by issuing a "with-profits" insurance policy to the policyholder on the liability side, and provide loans to the general public on the asset side, which is a form of quasi-financial intermediation.

169. FISIM on life insurance has not been taken into consideration under SNA93 as insurance corporations are not classified as financial intermediaries. If the scope of FISIM were extended to those services accruing from the financial intermediation activities of all financial institutions, then a large part of the services of life insurance corporations would fall under the FISIM criterion. FISIM on life insurance would be equal to the interest receivable on loans of life insurance corporations less (loans outstanding times reference rate).

Discussion: STD/NA(2000)39

170. The following issues were raised during the discussion:

- The IMF delegate said that output for insurance companies is measured differently from other financial intermediaries and so it is not necessary for FISIM to be calculated.
- The underlying issue is the allocation of output. The Korean approach suggests that output produced by lending to people should be shown as FISIM. However, the fundamental issue is what insurance companies are producing - is the borrowing by people part of the insurance companies' output? The insurance companies' output is really the provision of services to the people insured.
- Banks are the financial institutions which borrow and lend. Insurance is the provision of protection against risk rather than lending.
- The Korean delegate said that life insurance in Korea is a kind of investment rather than just an insurance against risk.

Issues arising

- Given the Korean delegate's statement about life insurance being a significant form of investment in Korea, the OECD undertook to examine the issues more closely and circulate the outcome of this investigation to everyone at the meeting.

Agenda item 13: Other business

171. The chairman thanked all the participants for their active participation in the discussions and congratulated all the authors on the very high quality of the papers presented.

172. The best options for the next meeting seem to be in late spring (around May) or in early autumn. There was general agreement that autumn is preferable. The only dates available in autumn next year for a room sufficiently large to hold this meeting are from Tuesday to Friday 9-12 October 2001 so that can be considered a firm date for the 2001 meeting.

173. The chairman explained that the traditional request for topics to be discussed at next year's meeting will not be made as the final item of "other business" Rather, a new procedure would be used in an attempt to more tightly focus the topics for next year's meeting. A request for items for the agenda will sent out in a month or so. Delegates who put forward a topic should be prepared to provide a paper. Suggestions for topics will be required by around early January. A draft agenda will then be circulated asking for any additional contributors to particular topics. The aim is to sort out a reasonably firm draft agenda by mid March with formal invitations (including draft agenda) being sent out towards the end of March. It may also be useful to have a "position paper" to set out the issues. An example would be the Statistics Finland paper this year on share options. Any such paper would have to be ready by about the end of May to enable others to read it and then prepare their papers for the meeting.

174. This year the papers for the meeting were all available just over 2 weeks before the meeting, and some had been available for up to 2 months beforehand. The chairman said that a couple of people had suggested that 2 weeks was insufficient. He said that the issue of timing of availability of paper was really up to the participants writing the papers - he could set down any date the participants wanted and refuse to accept any papers received after that date. The meeting agreed

that 2 weeks is sufficient. This means that the cut-off date for receipt of papers by the OECD for next year's meeting will be Friday 21 September 2001.

175. The chairman also asked all participants to forward to the OECD's Statistics Directorate any national accounts sources and methods documents available in their countries. There is little updated documentation available on what countries are doing in their accounts since the move to SNA93 and it is often difficult to respond to queries from the economists in other parts of the OECD. The documentation would be used only internally and so their format or language did not matter (although English or French were preferred if there is a choice of language).