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FOREWORD

The European Union is facing the most important challenge in its history – the enlargement to Eastern and Central Europe. This process will have a major impact on European policies and the economy for the years to come. When countries enter the European Union, they must have the ability to take on the obligations of membership. That is why Eurostat, the Statistical Office of the European Communities, has taken the initiative to strengthen the ability of the Candidate Countries to produce the statistics needed for the European Union to conduct its economic, financial and social policies.

The subject of this publication, National Accounts, is one of the core areas of information needed by the Union. The main aggregates of the National Accounts are widely used both in the private and public sectors; Gross National Product has a growing importance in the determination of the Community budget and it is used as a reference indicator in the field of structural measures as well as in the context of Economic and Monetary Union. Therefore, comprehensive, reliable, comparable and up-to-date National Accounts data is essential for the European Union, and an important field of advancement in the Candidate Countries.

The project work undertaken to improve the coverage and reliability of the Candidate Countries National Accounts has been a success. It has given Eurostat a better understanding of the National Accounts systems and figures produced by the Candidate Countries. It forms a valuable basis for an accurate assessment of the conceptual and practical harmonisation work already undertaken by the Candidate Countries and for defining the further statistical work necessary to prepare for membership of the European Union.

Results and methods presented in this publication show that the Candidate Countries have made considerable progress in compiling National Accounts statistics in line with EU requirements. However, it also highlights that further work must be done to guarantee the same coverage, quality, comparability and consistency of data as in the Member States. Eurostat will continue to support the necessary progress.

Yves Franchet
Director General

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The National Accounts staff of the Candidate Countries devoted a considerable amount of time and effort to the activities described in this publication, even though the resource situation in many countries was and remains very critical. Apart from the work involved in preparing for the task forces, workshops and the experts' missions, the candidate countries also completed the project work agreed for each activity.

Contributing to the projects from the Candidate Countries were **Svetlana Andreeva** (BG), **Kazimierz Antonik** (PL), **Youlia Antonova** (BG), **Elena Bakalova** (BG), **Pavol Balaz** (SK), **Boza Benedik** (SI), **Agnese Bicevska** (LV), **Monika Błaszczuk** (PL), **Adriana Ciuchea** (RO), **Iljen Dedegkajeva** (EE), **Dimitar Dimitrov** (BG), **Tihomira Dimova** (BG), **Andrej Flajs** (SI), **Eugeniusz Fojcik** (PL), **Małgorzata Fronk** (PL), **Hanna Gembarzewska (**PL), **George Georgiou** (CY), **Dagmar Hanzlová** (CZ), **Helena Houžvičková** (CZ), **Antoaneta Hristova** (BG), **Radoslav Istatkov** (BG), **Clementina Ivan-Ungureanu** (RO), **Bożena Jakóbiak** (PL), **Jana Jakubekova** (SK), **Věra Jenčovská** (CZ), **Maria Jeznach** (PL), **Gailute Juskiene** (LT), **Janja Kalin** (SI), **Ilona Kallione** (LV), **Elita Kalnina** (LV), **Evi Kalogirou** (CY), **Zofia Kamola** (PL), **Stavros Karageorgis** (CY), **Ewa Karczewicz** (PL), **Viera Karoľova** (SK), **Yuliya Kirilova** (BG), **Andrzej Kościan** (PL), **Panayiotis Koukkoullis** (CY), **Maija Kurcalte** (LV), **Dora Kyriakidou** (CY), **Andres Lauba** (EE), **Aldona Lazareviciene** (LT), **Peeter Leetmaa** (EE), **Zofia Leśniak** (PL), **Olga Leszczyńska** (PL), **Ewa Łopuszyńska** (PL), **Mária Luhova** (SK), **Daniela Marešová** (CZ), **Daniela Marešová** (CZ), **Silvia Matei** (RO), **Kyriakos Michael** (CY), **Edite Miezite** (LV), **Grażyna Mitura** (PL), **Nadezda Morozova** (LV), **Barbara Moskwa** (PL), **Eleni Mossila** (CY), **Sandica Neagu (**RO), **Stefan Ogrodowicz** (PL), **Vítězslav Ondruš** (CZ), **Ain Paas** (EE), **Pille Palojärv** (EE), **Palojärv** (EE), **Lidija Pantina** (LV), **Sofia Pelagia** (CY), **Jiří Pelej** (CZ), **Damianos Pitiris** (CY), **Tatjana Rumianceva** (LT), **George Sarris** (CY), **Zita Serafiniene** (LT), **Felicia Serbanescu** (RO), **George Shiakallis** (CY), **Jurate Sinkuniene** (LT), **Erika Sisask** (EE), **Alenka Skafar** (SI), **Mojca Škrlec Šinkovec** (SI), **Silvia Stana** (RO), **Christina Stoyanova** (BG), **Alberta Suslaviciute** (LT), **Jasenka Sustaric** (SI), **Mihkel Täht** (EE), **Eva Tatranská** (CZ), **Peter Tatranský** (CZ), **Todor Todorov** (BG), **Ioanna Tsiappa** (CY), **Irena Tvarijonaviciute** (LT), **Jana Vajda** (SI), **Vladimir Varhola** (SK), **Lolita Varlamova** (LT), **Valentina Vasileva** (BG), **Valerijs Vdovins** (LV), **Ludmila Vebrová** (CZ), **Vija Veidemane** (LV), **Ruta Vitolina** (LV), **Maria Weselak** (PL), **Małgorzata Wojciechowska** (PL), **Sotiris Yiokkas** (CY), **Irena Zaucer** (SI), **George Zeitoutsian** (CY) and **Dalia Zygiene** (LT).

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This publication was prepared by **Richard Clare**, who was the project coordinator for the eleven activities over the whole period 1998-2000. **Jarko Pasanen** of Eurostat provided editorial assistance. The work programme was developed by **Silke Stapel** of Eurostat.

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PREFACE

This publication was needed for several reasons:

- To describe the results of the large number of activities undertaken by Eurostat units B-1* and B-2** with the Candidate Countries between October 1998 to March 2001; these activities represented a significant investment in technical assistance which was funded by the Phare multi-country programme;
- As a record of the achievements secured by the Candidate Countries over this period, recognising the very substantial efforts made by these countries in bringing their non-financial National Accounts closer to the requirements of the European System of Accounts (ESA95) and related EU legislation;
- As a tribute to the two dozen experts around Europe who provided the technical assistance to the Candidate Countries;
- Above all, to enable a wider audience to be informed and appreciate the nature of the work undertaken and the improvements achieved.

The layout of the publication is as follows. Chapter 1 provides an overview and sets the scene for the following chapters. It describes why the technical assistance was needed and lists Eurostat's objectives in launching the activities. It gives a brief summary of the activities carried out and the human resources mobilised in meeting those objectives. Finally, chapter 1 identifies the benefits that have accrued from the work on non-financial National Accounts undertaken by the Candidate Countries; there is every reason to think that these benefits will be sustained and built on as Eurostat takes the work forward.

The focus of Chapter 1 and this publication is on ***eleven*** activities all of which started from October 1998. These relate to the pilot project on exhaustiveness (PPE) and ten other non-financial National Accounts activities (Activities A1 to A10). Being the largest and most wide-ranging activity, the PPE is the subject of chapter two. Activities A1 to A10 are subsequently featured in chapters 3 to 12, respectively.

* Eurostat Unit B-1: National accounts methodology, statistics for own resources

** Eurostat Unit B-2: Economic accounts and international markets: production and analyses

CHAPTER 1
Background to the Work on non-financial National Accounts with the Candidate Countries

1. Introduction

In the Spring of 1996, Eurostat was requested by the European Commission to make all the necessary arrangements for the provision of adequate macro-economic statistics from the Candidate Countries (CCs), together with a quality assessment of the data and the underlying compilation methods and data sources.

In response to this request, from mid-1996, Eurostat Directorate B[1] started to collect non-financial National Accounts (nfNA) data from the CCs. The data collected serve as a basic statistical source for the work of several Directorate Generals (DGs) of the European Commission (e.g. DG Enlargement, DG Economy and Finance) and of the Court of Auditors. They are also included in the data set that is used for the European Commission's opinion in the framework of the enlargement preparations.

At the same time, steps were taken by Eurostat units B-1 & B-2 to assess and improve the quality of nfNA data in terms of reliability, exhaustiveness and correspondence with the European System of National Accounts (ESA95)[2] and related Commission Decisions. In the period to Autumn 1998, a number of major problems had been identified which required remedial treatment. These problems related to ESA95 concepts and definitions, to the methods used and to data quality and comparability. In particular, they concerned the following issues:

- The practical application of National Accounts (ESA95) rules and principles;
- Ensuring the exhaustiveness of the National Accounts (NA);
- Overcoming the lack of basic data and improving the reliability of existing basic data;
- Assuring consistency between the different parts of the NA; and
- Exploiting all possibilities for cross-checking and validating the results.

To address these issues, Eurostat units B-1 & B-2 jointly undertook the 11 projects listed in Table 1 below. All of these 11 activities were funded by the 1997 Phare multi-country programme between October 1998 and May 2000. All projects were coodinated by Richard Clare (UK).

Further work was possible under the Phare 1998 budget for the three asterisked activities in Table 1, which continued after May 2000 until March 2001. As described in Section 5 under Phare 1998, a fourth and entirely new project was started in May 2000.

2. Participating countries

The following CCs participated in most of the 11 nfNA activities: Bulgaria, Cyprus (which is not funded by Phare), the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia & Slovenia. In addition, Fyrom also participated, but only in the PPE.

Table 1: Projects conducted by Eurostat units B-1 and B-2

Activity	
PPE	Pilot project on the exhaustiveness of the NA in the CCs
A1	Private household consumption
A2	Estimation methods at constant prices
A3	General government and non-profit institutions serving households (NPISHs)
A4	Banking and insurance: financial intermediary services indirectly measured (FISIM)
A5*	Tourist expenditure and shuttle trade: feasibility study; pre-pilot investigations
A6*	Development of NA database and data transmission using EDI
A7	Changes in inventories; holding gains
A8*	Dwelling services
A9	Input-output tables
A10	Calculation of the capital stock and the consumption of fixed capital

* These three activities were funded by the Phare 1998 budget as well as the Phare 1997 budget.

[1] Eurostat Directorate B: Economic statistics and economic and monetary convergence

[2] Council Regulation (EC) No 2223/1996 of 25 June 1996 on the European system of national and regional accounts in the Community, OJ No L 310, 30.11.1996, p. 1

3. Characteristics of the activities

The nfNA activities varied, but typically included the following meetings:

- 2-3 meetings between Eurostat and the experts recruited giving technical assistance;
- 2 task forces or workshops organised by Eurostat with the participating CCs;
- At least one mission by the experts to each of the CCs.

4. Project objectives and outputs

The eleven activities each had their own objectives, but were collectively designed to improve the basis of the NA estimates in the CCs, thereby improving the GDP data provided for both the pre-accession process and for other national & international needs. Outputs of the eleven activities were similar. In general they included:

- Project work for each activity undertaken by each of the CCs;
- Expert training & technical support to the CCs on NA concepts, sources & methods;
- Interim and final reports by the experts of the NA strengths & weaknesses in the CCs;
- More solidly-based and comparable sets of NA figures for the CCs;
- Recommendations by the experts for CC work to secure further improvements.

Tables 2 and 3 below summarise the very considerable amount of work carried out.

5. Description of the sources and methods used in the NA of the CCs

Table 3 refers to an activity, which has not previously been mentioned. This project required the CCs to prepare a description of the sources and methods used in their NA, employing a structure similar to that adopted for the Member States' ESA95 inventories. Eurostat organised a kick-off seminar in May 2000 with the CCs and EU experts recruited to read the CC descriptions,

Table 2: Summary of activities done under the 1997 Phare multi-country programme

ACTIVITY:	PPE	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Total
Numbers of:												
Participating CCs[1]	12	11	11	11	11	10	11	10	9	11	9	-
Experts recruited to assist CCs	8[2]	2	2	1	1	2	1	1	2	4	1	24[3]
Numbers of meetings:												
Eurostat with the experts	4	3	3	3	2	2	2	2	2	2	2	27
Task forces/workshops	2	2	2	2	-	-	-	-	2	2	2	14
Missions by experts to CCs	14	11	22	11	9	2	11	-	9	20	9	118
Work produced by the CCs:												
Project work/questionnaires	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-
Work produced by experts:												
Interim reports for each CC	12	11	11	11	11	1[4]	1[4]	1[4]	9	11	9	88
Final reports for each CC	12	11	11	11	11	1[4]	1[4]	10	9	11	9	97
Synthesis report – over all CCs	Yes	Yes	Yes	Yes	NR[5]	Yes	NR[55]	NR[5]	Yes	NR[5]	Yes	7

Table 3: Summary of activities done under the 1998 Phare multi-country programme

ACTIVITY:	A5	A6	A8	Description of NA in the CCs	Total
Numbers of:					
Participating CCs	4	10	4	11	-
Experts recruited to assist CCs	1	1	1	9	12
Numbers of meetings:					
Eurostat with the experts	2	2	2	2	8
Task forces/workshops/seminar	3	-	3	1	7
Missions by experts to CCs	4	10	-	11	25
Work produced by the CCs:					
Project work/Description of NA	Yes	Yes	Yes	Yes	-
Work produced by experts:					
Interim reports/preparatory reports	2	1	1	11	15
Final reports	1	1	1	11	14

[1] Apart from the Phare-funded countries mentioned above, Cyprus also participated. FYROM participated only in the PPE.
[2] The pilot project on exhaustiveness (PPE) was by far the biggest activity and required 8 experts.
[3] Three experts each participated in two activities. The total also includes the project coordinator of the 11 activities.
[4] The report was an overall report covering all the participating CCs.
[5] NR: a synthesis report was not requested

prepare for and undertake a mission to each CC, and to write a final report on the NA strengths and weaknesses. This work will usefully assist Eurostat to update similar reports written in 1998 for each CC.

6. Results achieved

A range of sustainable benefits have accrued from the Phare multi-country activities:

6.1 Benefits of the CCs' project work

The nfNA activities involved project work by the CCs. This project work was part of the subject matter of the task forces/workshops and the experts' missions to the CCs. The purposes of the project work undertaken by the CCs were as follows:

- To implement a range of 'best practices', leading to more systematic, exhaustive and integrated methods of compiling NA estimates;
- To encourage more self-examination by the CCs – in order to identify and target deficiencies in CC sources & methods;
- To provide invaluable documentation, not only for CC and ESA95 purposes, but also for the purpose of updating earlier Eurostat NA assessment reports for each CC;
- To provide essential inputs for the experts' interim and final reports;
- To secure improvements in the basis of the CCs' NA estimates and the data provided every quarter by the CCs, and published by Eurostat unit B2 in "Statistics in Focus";
- To transmit the CC data electronically using an internationally recognised format (called GESMES) that is also used by the Member States[1].

6.2 Benefits of the experts' work and reports

The experts' interim and final reports had the following purposes:

- To assess the extent to which the CCs comply with ESA95 and other Regulations, Directives and Commission Decisions;
- To identify the strengths and weaknesses in the CC sources and methods;
- To promote a more integrated and coordinated NA approach;
- To make recommendations for improvements – in the short and longer term;
- To report on each CC in a standard and structured way, so that the individual reports were comparable and could be used to update earlier Eurostat assessment reports.

6.3 A valuable by-product: briefing notes by the experts on NA technical issues

Many questions and queries arose as a result of the 11 nfNA activities. The responses by the experts were often written up in the form of "briefing notes" for each topic. These briefing notes (which were approved by Eurostat unit B1 before being given wider circulation) represent another visible output of the nfNA activities.

6.4 Brussels Conference "National Accounts of the Candidate Countries 2001"

The results and improvements secured by the CCs under the Phare multi-country programme were presented at a conference in Brussels on 29-30 January 2001 to a wide range of NA data users. The proceedings on the conference were published after the event. This Eurostat printout[2] includes all the presentations held in the seminar.

7. The immediate future

The final reports by the experts for each activity and for each of the countries include recommendations for the further work required – in order to ensure that the CCs satisfy the statistical "Acquis Communautaire". The latter requires the CCs to implement the European System of Accounts (ESA95) and to ensure the coverage of all activity in the economy. It is well known that the Member States were obliged to make a heavy investment in recent years in order to comply with ESA95. In the CCs, the process of implementing ESA95 is still underway. As the experts' final reports show, the level of the harmonisation of the macroeconomic aggregates from the CCs varies country by country and topic by topic. Therefore the aggregates do not yet have the degree of harmonisation and hence of comparability that is standard for the EU Member States. A number of problems have been identified which will require technical assistance over the next few years.

Apart from the need for the CCs to comply with ESA95, much methodological development is necessary, e.g. for private household consumption, gross capital formation, the capital stock and capital consumption, banks & insurance and input-output tables. The CCs should also be kept in touch with developments and new methods being applied by the Member States as a result of Eurostat's on-going work programmes with the Member States, for example on constant prices. Finally, because the dwellings situation is very different in the CCs, it is necessary to further develop an alternative approach for making estimates for dwellings services in the CCs. This will mean that the work under Activity A8 will be taken forward later in 2001.

[1] A NA database has been developed by Eurostat unit B2 and implemented in each CC that enables the countries to store their NA data in a logical framework and to check the data for completeness & consistency. The process automatically creates the GESMES message to be forwarded to Eurostat.

[2] National Accounts of the Candidate Countries 2001: Confrence on the results to date of five years of co-operation with Eurostat – Full papers

To obtain the results envisaged, a combination of several activities is proposed. These include regular meetings of the participants, task forces or workshops covering the relevant subjects, the recruitment of EU and national experts, as well as the secondment of experts and of trainees from the CCs.

CHAPTER 2
The Pilot Project on Exhaustiveness (PPE)

1. Introduction

As indicated in the previous chapter, the single most important activity undertaken by Eurostat with the Candidate Countries since Autumn 1998 was the Pilot Project on Exhaustiveness (PPE), dealing with the measurement of the non-observed part of the economy as well as other elements of exhaustive accounts. Given the importance of the level of Gross National Product (GNP) and thus Gross Domestic Product (GDP) for the own resources of the European Union and for the allocation of EU structural and regional funds, this project clearly had priority for the work with the CCs.

This chapter presents the methods used to improve the exhaustiveness of the Candidate Countries' GDP as well as summary numerical results from the PPE.

The PPE was carried out from December 1998 to May 2000. To assist the CCs, seven experts from the EU Member States were contracted by Eurostat. These were Pier Ardeni and Antonella Baldassarini (Italy), David Caplan (UK), Esben Dalgaard (Denmark), Rob van Eck (Netherlands), Ana Leal (Portugal) and Pekka Lith (Finland). Additionally, a special advisor, Ralf Hein (Germany) was recruited to provide guidance and advice to the experts and the CCs with the aim of establishing a consistent approach and ensuring that the project work was undertaken at the same level of detail. The PPE activities consisted of two workshops with the CCs, four co-ordination meetings of the experts with Eurostat, visits by the experts to their countries for one or two bilateral meetings, project work by the CCs, hereafter referred to as the "Pilot Study (PS)", and the preparation of interim and final reports by the experts for each of their countries.

The Commission Decision[1] (CD) on Exhaustiveness of 22 February 1994 was the basis and the core element of the PPE. This CD is an important part of the so-called "Acquis Communautaire" in statistics, which embraces all EU legal acts with which the Candidate Countries have to comply at the moment of accession. Exhaustiveness in the EU framework is therefore not only a feature of good and reliable National Accounts, but also a legal requirement and a pre-condition for entry into the EU.

The CD provides that GNP and GDP are exhaustive when they cover not only production, primary income and expenditure which are directly observed in statistical surveys or administrative files, but also include production, primary income and expenditure which are not directly observed. The PPE therefore covered all types of GDP under-coverage. This included all types of Non-Observed Economy (NOE) as defined in SNA93 as well as other exhaustiveness issues, like reliability of data sources and their compliance with ESA95, income in kind, production for own final use, tips, valuation problems, the reliability of quantity-price methods and the use of cross-checking and verification methods.

A special part of the PPE dealt with illegal activities. ESA95 provides that certain illegal activities fall within the production boundary and, thus, should be covered in the National Accounts. For most of the CCs it was felt that illegal activities could be quite substantial. The PPE therefore provided a framework for the investigation of the most important types of illegal activities, for an assessment of the significance of these illegal activities in the CCs' economies, and in order to make objective decisions about their future treatment.

Under the PPE, each participating country carried out a Pilot Study on the NOE. The countries had to describe their procedures for calculating the NOE for the output, expenditure and income approach of GDP based on a systematic and consistent framework designed by Eurostat, the so-called «Tabular approach«, and had to provide the corresponding estimates. This approach will be described below. As, however, the output approach is the main approach in most of the countries involved in the study, this chapter will mainly focus on the output approach.

2. Concepts and methods of the tabular approach employed

The PS provided a detailed analysis of the current situation with regard to the NOE in each participating country. In particular, it dealt with:

- the coverage of the NOE and other kinds of GDP under-coverage in National Accounts using different estimation methods and verification procedures,
- gathering all information available about the NOE,
- the comparison of the different methods for estimating non-observed activities and their possible combination, and
- the consistency of the adjustments in all three GDP approaches.

The detailed analysis of GDP under-coverage and of the estimation methods for closing the gaps in National Accounts was done **systematically and consistently** in a tabular form. Each figure given in the tables developed by Eurostat had to be explained with regard to its content and the underlying estimation methods.

[1] Commission Decision of 22 February 1994 on measures to be taken for the implementation of Council Directive 89/130/EEC, Euratom on the harmonization of the compilation of gross national product at market prices (94/168/EC, Euratom), OJ No L 77, 19.3.1994, p 51

3. Classification of the different types of GDP undercoverage

To start with, it was necessary to **classify** the different types of GDP undercoverage and to propose methods for making estimates to fill the gaps.

In general, it should be noted with regard to the classification of NOE adjustments that it is not always easy, or even impossible, to classify or to allocate a certain adjustment to one of the types of GDP undercoverage. The reason for this is that it is possible to have different borderlines between the "observed" economy and NOE in different countries. Moreover, the different types of GDP under-coverage similarly appear in the production, expenditure and income approach of GDP. The borderline between the different types of GDP under-coverage, on the other hand, will not be the same in the three approaches.

From a practical point of view, however, Eurostat considered it to be more important to ensure complete coverage of all possible types of GDP under-coverage than to solve all classification problems. However, it should be borne in mind that classification problems affect the comparability of detailed figures on NOE adjustments between countries.

Looking at Overview 1, for the PS, the economy was divided into an observed part (by far the biggest) and a non-observed part. Then, statistical and economic reasons for non-observation, as well as the nature of certain units in the household sector, have been identified which all together lead to gaps (GDP undercoverage) in the basic statistical systems of the countries, and have to be filled in the NA estimation process.

Overview 2 looks at the gaps to be filled from a unit and a transaction point of view. This underlines that the intention of the PS was to cover all economic activity undertaken in all economically active units. The further breakdown of the reasons for the non-observation of units and the identification of certain transactions which tend to be non-observed, results in the types of GDP undercoverage (T1 to T8), which are described below in more detail:

T1: statistically non-observed (due to non-response)

This type of under-coverage includes missing units arising from non-response to statistical questionnaires (or non-coverage of active units in administrative data sources). Possible methods to ensure exhaustiveness usually include the following:

- use of data from similar units (industries, size groups), earlier years' data or similarly appropriate data;
- grossing-up methods (adjustment to the grossing-up coefficients);
- ensuring coverage with global verification procedures.

T2: statistically non-observed (due to registers which are not up to date)

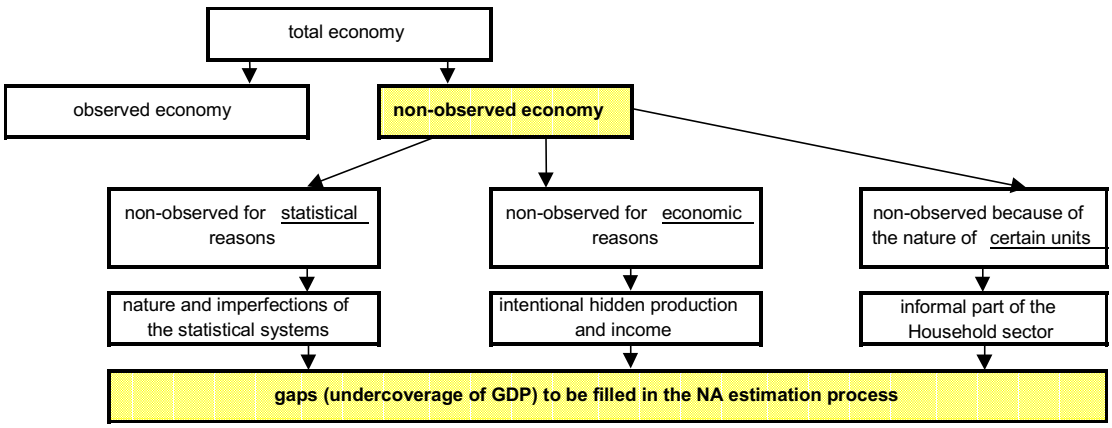
Registers which are not sufficiently updated can have a significant impact on the quality of statistical results. This relates mainly to:

- missing units because of out-of-date registers
  - when defining the population of units on which the survey is based
  - when creating the sample survey
- problems related to out-of-date information about production units on the register
  - dead and temporarily non-active units in register
  - changes in the size of the unit
  - changes in activity of the unit.

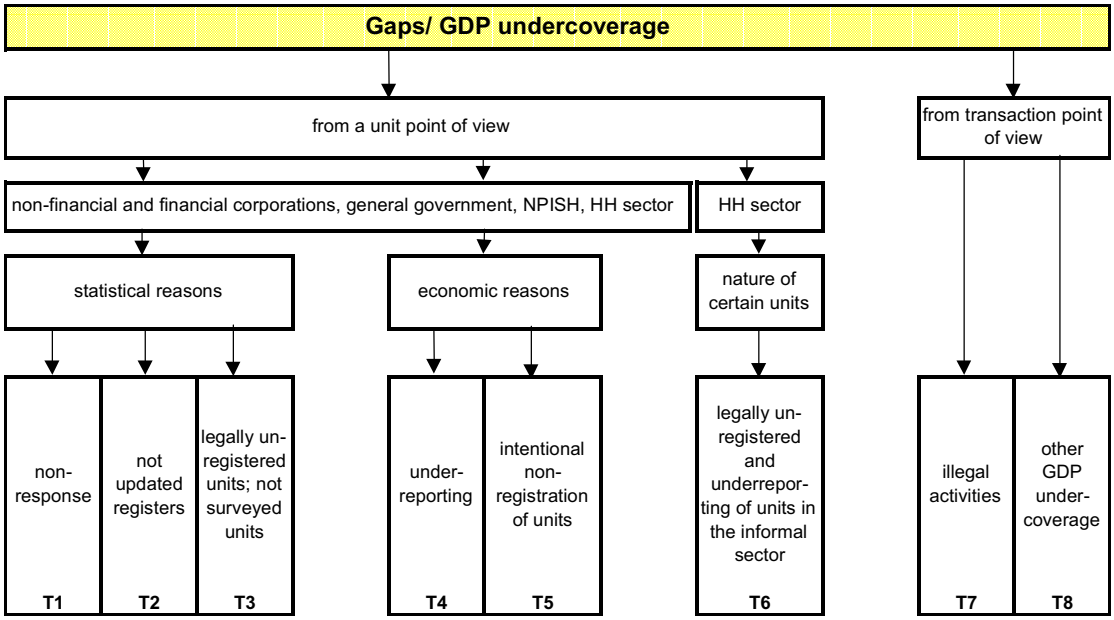
Possible methods to ensure exhaustiveness include:

- detailed investigation of the register quality and expert estimates
- comparison of different statistical and administrative sources (preferably at the unit level)

Overview 1:



Overview 2:



- ensuring coverage with global verification procedures
- information from other surveys.

T3: statistically non-observed (unregistered units, or units not surveyed)

There are two types of under-coverage:

- non-coverage of units in the statistical registers because of
  - legal thresholds for registration
  - legal non-coverage of certain activities in the register
- non-coverage of units in the survey because
  - they were newly created during the year
  - they disappeared during the year

To identify possible types of NOE, the coverage of the register (with regard to thresholds, industries, and sectors) was investigated in the PS, and the methods for defining the population for statistical or administrative surveys was checked against the updating procedures. Possible methods to ensure exhaustiveness include:

- adjustments for thresholds based on other sources or expert estimates
- comparison of different statistical and administrative sources (preferably at the unit level)
- estimates based on the number of newly created and closed (non-active) units
- ensuring coverage with global verification procedures.

T4: non-observed for economic reasons (under-reporting of turnover/income)

The text will mainly refer to “under-reporting”. But the NOE here relates to the over-reporting of intermediate consumption as well as the under-reporting of gross output.

As will be seen later in this chapter, in the PS results, under-reporting proved to be by far the most significant type of NOE. It can appear in all types of units (including large enterprises, budgetary units and NPISH). The PS required all types of units to be very carefully checked for under-reporting. Possible methods to ensure exhaustiveness include:

- The use of fiscal audit information
- Surveys of tax experts or bookkeepers (expert opinions about the scope and level of underreporting)
- The comparison of turnover in NA sources with turnover from VAT or other tax files
- The comparison of wages & salaries and mixed income per capita by industries, preferably by size group
- The comparison of the intermediate consumption ratio for different sub-groups of units operating in the same industry, e.g. size groups, public and private enterprises, legal and unincorporated units.

T5: non-observed for economic reasons (intentionally not registered)

Non-observed production as a result of ***intentional*** non-registration of production units (or parts of those units). In the PS results, this emerged as a significant type of GDP under-coverage, though much less important than T4.

Global procedures (mainly the employment method) can be used to ensure exhaustiveness. For some activities, demand data (e.g. household budget survey, capital formation, product balances) can be more complete and reliable than the output figures and can therefore be used for making adjustments to the latter.

T6: informal sector (not registered, underreporting)

With regard to the informal sector, the following possible reasons for GDP undercoverage were taken into account:

- missing productive units in the household sector because they are not required to register their activity under any kind of administrative act
- occasional and temporary activities, work on service contracts
- missing gross output for persons with secondary self-employed jobs
- agricultural production in non-agricultural households for own use (this could also be classified to T8, see below)
- production of (other than agricultural) goods in households for own use (this could also be classified to T8)
- own construction of residential buildings by households (this could also be classified to T8)
- missing units even if reported to fiscal authorities (this could also be classified to T5)

Possible methods to ensure exhaustiveness include estimates for the important types of informal activities by households using household budget survey data, data on construction permits or other administrative information, as well as global verification procedures, particularly the employment method.

T7: illegal activities

In many of the CCs, it was the first time that illegal activities were investigated in a systematic way. For the PS, it was suggested that the investigations should be limited to those types of illegal activities that fall within the production boundary and, therefore, affect the GDP figures. In this context, the following types of under-coverage were specified:

- production of goods and services whose sale, distribution or possession prohibited by law
- legal productive activities that become illegal the moment they are carried out by unauthorised producers
- illegal exports or imports
- trade with illegally produced or smuggled goods.

For the PS, particular emphasis was given to the trade in and production of narcotics, prostitution, smuggling of tobacco, weapons, alcohol, food and stolen cars and dealing stolen goods.

Possible methods for estimating the supply and use (S&U) of illegal activities include special investigations or surveys, crime statistics, administrative information (from customs, police etc.) and, finally, expert estimates.

T8: other types of GDP under-coverage

Other problem areas, which can lead to GDP undercoverage, include:

- production for own final use
- tips
- wages and salaries in kind
- valuation methods for the NOE adjustments
- taxes and subsidies on products
- reliability of quantity price methods and product balances.

With regard to **production for own final use**, the PS gave particular consideration to:

- production of agricultural or other products in the household sector for own final consumption (this concerns unincorporated units, e.g. farmers or self-employed, as well as the informal activities of households)
- dwellings, extensions to dwellings, capital repairs of dwellings produced by households
- own account construction including capital repairs in agriculture (all sectors)
- own account construction including capital repairs in other industries (all sectors)
- machinery and equipment produced for own capital formation, own account capital repairs (all sectors)

The related tax, bookkeeping and reporting rules were checked against ESA95 rules for all types of units (including non-market producers). In some cases, expert estimates were necessary. The PS also stressed the importance of consistency between the output and expenditure approaches with regard to own account production.

The CD on exhaustiveness requires that all **tips** should be included in GDP estimates. The investigation of tips was part of the PS, and all activities where tips usually appear were identified. In general, tips mainly feature in hotels and restaurants, repair services, personal services, hospitals and other health services, banks, insurance companies.

Possible data sources and estimation methods include:

- the use of household budget survey data
- special surveys and expert estimates
- comparison of wages & salaries/mixed income in similar branches
- rules for the taxation of tips.

In the PS, the CCs were asked to provide a precise description of the methods used to ensure that **wages and salaries (W&S) in kind** are correctly treated in National Accounts. This description included:

- a description of the relevant tax and social legislation, as well as the bookkeeping rules,
- a description of the information provided by the labour cost survey with respect to wages and salaries in kind,

- the identification of all types of W&S in kind, indicating which were covered and which were not covered in the National Accounts.

For types of W&S in kind, which were not covered, the PS required the countries to investigate possible data sources for the purpose of making adjustments. Examples of potentially significant W&S in kind included the private use of business cars and the expenditures of enterprises (including non-market producers) on behalf of their employees.

When analysing different types of under-coverage, it is worth thinking about the appropriate **valuation**. This relates, in particular, to the economic underground (non-registration of units as well as under-reporting). While for VAT fraud without purchaser's agreement a market price including VAT is assumed, for other types of under-coverage, different prices compared to that for the "observed" transactions can appear. This means that the valuation of NOE adjustments at basic prices would definitely underestimate GDP. Nevertheless, it must be expected that the prices used in NOE transactions include an element, which can at least be partly related to VAT and other taxes on products.

With regard to **taxes and subsidies on products**, the PS provided a description of the sources used and an explanation how compliance with ESA95 rules is achieved with respect to the level of GDP and the consistency between the output and expenditure approach. It was particularly important to look, in the framework of the PPE, at the complete coverage of taxes and subsidies and their valuation on an accruals basis.

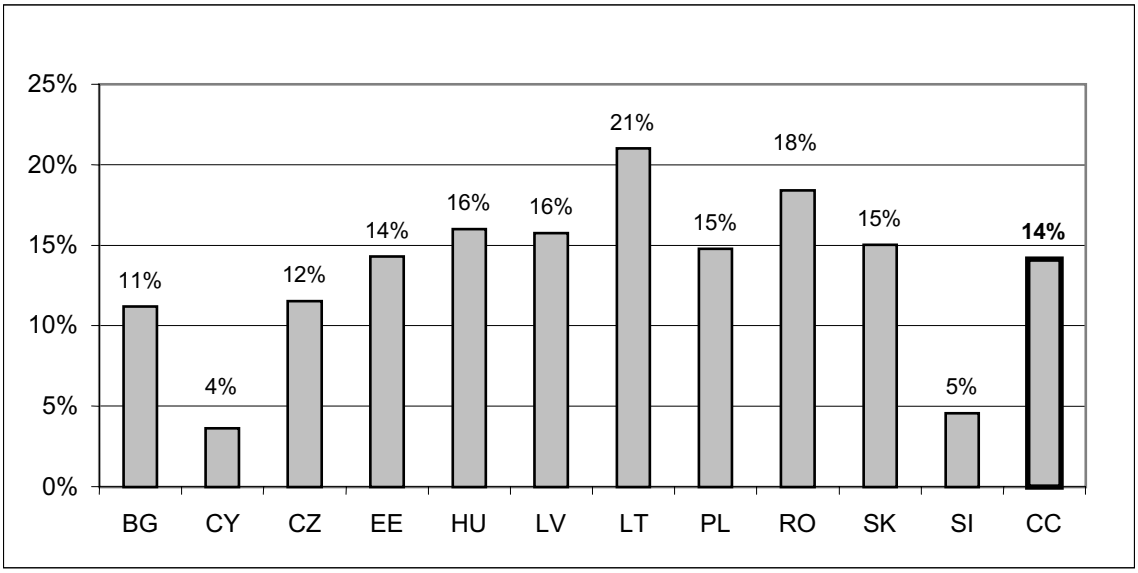
Quantity-price methods are often used for agriculture and construction, in some cases also for verifying estimates for electricity, gas and water supply. The reliability of the estimates depends on the complete coverage of quantities and the quality of the prices. A possible problem arises, for example, when prices for agricultural products are obtained only from processing enterprises and wholesale trade units. These prices could be very different from market prices. Additionally, the coverage of all kind of secondary activities (sales of produced secondary products and of goods for resale, production for own gross fixed capital formation and own final consumption) had to be investigated in the PS.

4. Exhaustiveness in the Candidate Countries (CCs) – the numerical results

In the framework of the PPE, the CCs improved their exhaustiveness estimates by preparing new adjustments for previously uncovered types of GDP under-coverage, or for the purpose of verifying existing adjustments. Most of these adjustments are now incorporated in the figures which the CCs report regularly to Eurostat.

Apart from the improved figures for the EU pre-accession process, there is another very important output of the PPE. This is that all the CCs used the **logical framework** of the PS tabular approach to ensure systematic and consistent exhaustiveness adjustments. The experience gained in this way can lead to **sustainable results**, as the tabular approach can be regularly repeated (and improved) in the years to come, i.e. when finalising the annual National Accounts.

Figure 1: Total exhaustiveness adjustments as a percentage of GDP



The figures in the table are mostly from 1997. Only for Romania, Slovak Republic and Slovenia the reference year is 1996.

Table 1: Summary: exhaustiveness adjustments by type as % of GDP

Type of adjustment	Number of countries making an adjustment	Average adjustment over all 11 countries	For those CCs who made adjustments	
			min.	max.
T1 : Non-response, for statistical reasons	10	2.3	0.1	3.8
T2 : Out of date registers, for statistical reasons	3	0.1	0.3	1.0
T3 : Unregistered units, for statistical reasons	4	0.4	1.1	3.1
T4 : Under-reporting, for economic reasons	11	7.2	0.3	15.7
T5 : Non-registered units, for economic reasons	7	2.7	0.1	8.7
T6 : Informal sector: non-registration, under-reporting	7	1.0	0.1	4.4
T7 : Illegal activities	8	0.1	0.4	2.1
T8 : Other types of GDP undercoverage	6	0.2	0.2	1.5

Before looking at some numerical results on exhaustiveness, a few words are warranted concerning the **comparability of NOE adjustments** between countries. Although efforts have been made to make the data comparable between countries, such comparisons should be treated with caution.

The size of exhaustiveness adjustments depends on two main factors. Firstly, it depends on the extent to which the economic activities of a country are covered by regular statistical observations. Secondly, it also depends on the extent to which the NOE has been adequately estimated. For example, a small exhaustiveness adjustment in a particular country may reflect the fact that the regular statistical and/or administrative observations cover most of the economic activities concerned. Alternatively, it may simply mean that the NOE is not properly estimated. Together with classification problems, such factors explain the considerable variation between CCs in the size of adjustments.

All CCs made significant exhaustiveness adjustments; some made very substantial adjustments. However, it is important to understand that the figures given in this chapter show the total adjustments made by the CCs and not the "net" effect of the PPE work.

Excluding illegal activities, the **total share of adjustments in GDP** from the output side varied between about 4 % and 21%. On average, the eleven countries adjusted their GDP by some 14 %. The adjustments made by the individual countries are given in Figure 1.

Table 1 provides a summary when these total **adjustments** are broken down by **type**.

When looking at the different types of under-coverage, it is clear that the quantitatively more important adjustments concern GDP undercoverage for economic reasons (T4 and T5). Under-reporting for economic reasons (T4) was by far the most significant adjustment for all CCs except one. On average, this accounted for 7.2 % of GDP. Smaller, but still significant adjustments for non-registration (T5) averaged 2.7%

Table 2: Exhaustiveness adjustments by industry as % of GVA of industry

Industry, NACE rev.1[1]	Number of countries with an adjustment	Average adjustment over all 11 countries	Minimum & maximum adjustments over all CCs	
			min.	max.
A+B	11	13.3	0.0	44.1
C+D+E	11	10.1	1.9	25.8
F	11	25.6	0.0	46.1
G+H+I	11	26.7	2.1	36.2
J+K	11	14.5	0.0	25.9
L to P	11	8.0	0.9	20.4

[1] A+B : agriculture, forestry, fishing, hunting
C+D+E : mining, manufacturing, electricity, gas and water supply
F : construction
G+H+I : trade, hotels, restaurant, transport and communication
J+K : Financial, real-estate, renting and business activities
L to P : other service activities

Table 3: Exhaustiveness adjustments by industry as % of GDP

Industry, NACE rev.1	Number of countries with an adjustment	Average adjustment over all 11 countries	Minimum & maximum adjustments over all CCs	
			min.	max.
A+B	11	0.7	0.0	3.8
C+D+E	11	2.8	0.5	8.6
F	11	1.6	0.0	2.6
G+H+I	11	6.1	0.6	9.0
J+K	11	1.8	0.0	3.7
L to P	11	1.1	0.1	3.7

of GDP.

With regard to undercoverage for statistical reasons, the adjustment for non-response (T1) is only significant in three out of the ten countries who adjusted for it. In these countries larger T1 adjustments are needed because their statistical surveys include small units which tend to have higher non-response rates. The other countries largely use administrative sources for small units so that non-response does not feature to the same extent.

Only three CCs made adjustments for registers, which are not fully up to date (T2); for three other CCs, adjustments were not needed because the registers are regularly updated. Most of the remaining countries implicitly cover this type of under-coverage using global methods.

In most of the CCs, register thresholds for the inclusion of units or specific activities do not exist. In addition, statistical surveys or administrative information tend to include all units. Therefore, only four CCs needed to make adjustments for this type of GDP under-coverage (T3).

Illegal activities were estimated to account for between 0,4% and 2,1% of GDP. However three out of the eleven countries did not attempt to estimate illegal activities at all. There is clearly a need for further investigations even among the countries who did estimate illegal activities, as their research was limited to those activities seen to be the most important.

Tables 2 and 3 show the **adjustments** made broken down **by industry**. Table 2 expresses the adjustments as a percentage of the Gross Value Added (GVA) of the industry concerned. Table 3 gives percentages of GDP. Table 3 therefore also allows for the weight that a certain industry has in the total economy.

The size and structure of the adjustments by industry vary a lot between the CCs. Adjustments to the GVA occur for all industries. However, most countries make the largest adjustments to GVA in trade, hotels, restaurants, transport and communication (NACE Sections G, H and I) and in construction (NACE F). In these two categories, on average, exhaustiveness adjustments account for more than a quarter of the GVA. In some countries, the adjustment for construction is nearly 50% of GVA. For two countries their highest adjustments are for mining, manufacturing, electricity, gas and water supply (NACE C, D and E); on average, however, GVA for this category is only adjusted by some 10%.

In terms of the level of GDP, the most important adjustments were made to trade, hotels, restaurants, transport & communication (6.1%), to mining, manufacturing, electricity, gas & water supply (2.8%) and to financial, real-estate, renting & business activities (1.8%)

The exhaustiveness **adjustments by sector** are presented in Tables 4 and 5. Table 4 presents the adjustment to the GVA of the sectors, while table 5 shows the adjustments to the sectors as % of GDP and, therefore, reflects the weight of the individual sectors in the total economy.

The tables show the very substantial adjustments to

Table 4: Exhaustiveness adjustments by sector as % of GVA of sector

Institutional sectors	Number of countries with an adjustment	Average adjustment over all 11 countries	For those CCs who made adjustments	
			min	max
Non-Financial and financial corporations	8	9.7	0.9	26.6
General government	8	0.2	0.0	0.9
Households and NPISH[1]	8	40.6	11.6	76.2

Table 5: Exhaustiveness adjustments by sector as % of GDP

Institutional sectors	Number of countries with an adjustment	Average adjustment over all 11 countries	For those CCs who made adjustments	
			min	max
Non-Financial and financial corporations	10	4.9	0.3	14.7
General government	10	0.0	0.0	0.1
Households and NPISH	10	9.5	4.1	15.5

households and NPISH; on average, 40.6% was added to the GVA of these sectors in the framework of the exhaustiveness project. On average, this accounted for 9.5% of GDP. Three countries adjusted the GVA of households and NPISH by more than 50% - two of these by more than two-thirds. Apart from classification problems, to a great extent this reflects the insufficiently developed statistical sources for these units and the tendency of small units to understate their income.

A substantial adjustment (9.7% on average) of the sectors' GVA was added for non-financial and financial corporations, most of it relating to small units. General government seems to be less problematic with respect to exhaustiveness; only one country made an adjustment, involving a minor amount for extra-budgetary funds.

The main focus in the PS was undoubtedly on the production side of GDP. However, it was also ensured that appropriate estimates were made for the expenditure side of GDP, consistent with the adjustments to the production side. Table 6 presents these adjustments in a summary way. It shows that the most significant adjustments, on average 6.1%, were made to private household consumption, the biggest expenditure component of GDP. For this aggregate, the adjustments were by far the most varied, ranging from 1.6% to 14.3%. Other more significant adjustments were made to gross fixed capital formation (2.6%, on average) and exports of goods and services (1.8%, on average).

5. The Pilot Project on Exhaustiveness – achievements and the outlook

Within the framework of the Eurostat PPE, the following achievements have been secured in the CCs:

- improvements in existing methods and the development of new estimation methods for types of GDP undercoverage which were not previously covered;
- the successful practical implementation of the tabular approach employed for the PS;
- more consistent and systematic exhaustiveness adjustments between the three GDP approaches covering the different types of GDP undercoverage;
- building up of invaluable experience about how to ensure exhaustive National Accounts – CCs have already indicated that they intend to update the PS work on a regular basis;
- Eurostat assessments and recommendations for each country for further improvements in the level of exhaustiveness achieved, particularly with regard to illegal activities.

The numerical results of the PS on exhaustiveness show that the most significant exhaustiveness problems are connected with small units. In descending order of importance, the largest adjustments by type of GDP undercoverage concern (a) deliberate underreporting of turnover and income, for economic reasons, (b) intentional non-registration of units, again for

Table 6: Summary of the exhaustiveness adjustments by expenditure component, expressed as % of GDP

Expenditure components	Number of countries with an adjustment	Average adjustment over all 11 countries	For those CCs who made adjustments	
			min.	max.
Household final consumption expenditure	11	6.1	1.6	14.3
Final consumption expenditure of NPISH	3	0.1	0.3	0.3
Government final consumption expenditure	0	-	-	-
Gross fixed capital formation	11	2.6	0.3	4.2
Changes in inventories	6	0.3	0.1	1.4
Exports of goods and services	8	1.8	0.1	3.7
Imports of goods and services	9	0.3	0.1	3.4

economic reasons, and (c) non-response to sample surveys, for statistical reasons. In terms of the industrial breakdown of exhaustiveness adjustments, the most important industries are trade, hotels, restaurant, transport and communication (NACE G, H, and I) and construction (NACE F). By institutional sector, exhaustiveness adjustments for households and NPISH are relatively much more important than adjustments for corporations.

Further work remains to be done. In Eurostat's judgement, special attention should be given to:

- under-reporting in all types of production units, not just small units;
- related to this, the separate investigation of under-reporting of output and the over-reporting of intermediate consumption;
- intentional non-registration of units;
- improvements in the way statistical non-response is treated;
- production for own final use, tips, wages & salaries in kind and the valuation of NOE adjustments;
- the investigation of all important types of illegal activities, where necessary developing appropriate estimation methods which can be repeated;
- the further exchange between the countries of the sources and methods used to ensure exhaustive National Accounts.

CHAPTER 3
Activity A1: Private Household Consumption

1. Introduction

Private Household Consumption (PHC) accounts for approximately two-thirds of GDP. Reflecting the importance of this GDP component and the request for technical support by the Candidate Countries, Activity A1, which was launched in 1998 aimed to significantly improve the basis of the estimates of PHC in the CCs, thereby improving the GDP data provided for both the pre-accession process and for other national and international needs. It gave particular emphasis to practical results. This chapter summarises the work done and the results achieved in the PHC project.

Two experts provided technical assistance to the 11 CCs participating in Activity A1. Knut Sörensen worked with Bulgaria, Hungary, Poland, Romania and the Slovak Republic; Ralf Hein worked with Cyprus, Czech Republic, Estonia, Latvia, Lithuania and Slovenia. Significant support was provided by the Project Co-ordinator, Richard Clare.

Activity A1 was carried out from December 1998 to May 2000. During this time, two Task Force (TF) meetings and three co-ordination meetings of the project experts and Eurostat took place. The project experts undertook one mission to each of their countries.

The experts prepared reports with detailed and critical analyses of the PHC estimates for each CC, including recommendations for work in the short and longer term, to secure further improvements. Sources, concepts and estimation schemes used for PHC were discussed in detail.

The project criteria and requirements

At the beginning of the project, a set of "criteria and requirements" (C & R) for complete and reliable PHC estimates was formulated.

The project criteria and requirements were as follows:

- the reliability of basic data and calculation methods
- conceptual compliance with ESA95
- the use of a framework for systematic estimation, showing how basic survey and other data is transformed into the estimates required for NA purposes
- exhaustiveness and verification of the PHC estimates
- the estimation of a really independent PHC figure.

In meeting these C & R, the emphasis was on the practical work undertaken by the CCs. This involved the completion of a set of analytical tables, for 1997, the latest year available.

2. The Analytical Tables Used for the PHC Project

The CCs agreed to complete a set of tables, subject to their available sources and methods. These analytical tables, which were specially designed for the PHC project, aimed to:

- ensure a rigorous and systematic tabular approach (that the CCs could regularly apply for estimating PHC in the future)
- encourage the exploitation of all possible data sources, and not to rely on one source, or a commodity flow approach
- use a "bottom-up" approach, that is, to derive estimates of total PHC from the sum of the individual COICOP items
- clearly identify the various steps and adjustments required to convert basic survey or other data into the PHC estimates required for NA purposes
- use a level of detail (in terms of COICOP) which enabled each CC to make comparisons between different sources
- compare the estimates from those different sources, making any necessary adjustments for differences in definition, concepts and coverage
- identify and make use of the "best" available source from among the alternatives
- obtain, ideally, final PHC estimates, from balancing within a supply & use framework
- in the absence of supply & use tables, to reconcile differences between the output and expenditure measure
- ensure that the PHC estimates are independent as possible.

The analytical tables used for the PHC project are given in **Annex I**. Rather than attach the blank tables, for illustrative purposes, the tables completed by Poland are given in Annex I. The Polish tables were among the best supplied by the countries.

For the PHC project, very detailed guidelines for the completion of the tables were given to the CCs. Here, **Annex II** contains only some brief explanatory notes.

The reader is very much encouraged to study Annexes I and II, in order to fully appreciate the detailed and systematic tabular work undertaken by the CCs for the PHC project.

3. Completion of the Analytical Tables

All countries, except Cyprus and the Czech Republic, completed the analytical tables. The Czech Republic provided other tables showing their estimation procedures. In the case of Cyprus, there was rather little point in completing the analytical tables because use

was almost exclusively made of a "Commodity Flow" approach for estimates of PHC. However, Cyprus are now making use of results from their Household Budget Surveys and will also investigate how Retail Sales data can be exploited or developed.

Table A gives a summary of the estimation procedures used by each of the CCs when completing the analytical tables featured in Annex I. Table A contains ten columns which identify ideal procedures when estimating PHC. These procedures, which were outlined at the beginning of Section 2, were built into the analytical tables used by the CCs.

As can be seen, the analytical tables for some of the CC were close to satisfying virtually all the desirable characteristics for soundly-based estimates of PHC. The tables produced by Estonia, Latvia and Poland were excellent. But several other CCs (Bulgaria, Lithuania and Slovenia) were not far behind. The remaining CC, for often quite different reasons, need to further exploit their PHC sources and to improve their methodology. There are already signs that significant progress is being made since the PHC project came to a close in May 2000.

Annex III gives the reader more background about each of the ten PHC estimation procedures featured in Table A. Annex III also provides a much more detailed assessment about the extent to which each of the CCs satisfied these estimation procedures.

4. The Benefits and Results from Activity A1

The completion of the analytical tables by the CC involved a lot of hard work. But many of the CCs regarded the work as an investment for the future, rather than as a one-off exercise. Several of the CCs have already adopted the same tabular approach for their regular estimates of PHC. Others intended to do so in the near future, albeit with some minor modifications.

Many CCs commented that the step-by step approach enshrined in the analytical tables was both helpful and logical. The tables had reduced a complicated subject to one where they now had a much better overall pic-

Table A: Summary of the PHC estimation procedures employed by each of the CCs

COUNTRY	HBS, RS (& other data sources) should be used. Which sources are not used to obtain absolute levels of PHC?	Is a bottom -up approach used, so that total PHC is obtained from the sum of the individual items?	Does the break-down of goods & services permit different data sources to be com-pared?	Is there a break-down of tourist ex-pend-iture?	Is more than one estimate actually calcul-ated for indiv-idual items, using different data sources?	Are there adjust-ments for differences in definitions and cover-age, before comparing different estimates?	Did the tables show the choice of the best estimate of PHC for indiv-idual items ?	Is there bal-anc-ing within a Sup-ply & Use frame-work ?	Are re-con-cilation adjust-ments made to obtain final PHC esti-mates?	Are the PHC esti-mates inde-pen-dent (from the output esti-mates)?
	1	2	3	4	5	6	7	8	9	10
BG	-	Yes	Yes	No	Yes	Partly	No	Yes, partly	No	Yes
CY	HBS,RS	Yes	No	No	No	No	No	Not yet	No	No
CZ	RS	Yes	Not really	Yes	No	No	No	Yes	Yes, high	Not really
EE	-	Yes	Yes	Yes	Yes	Yes	Yes	Not yet	Yes, small	Yes
HU		Yes	Yes	No	No	No	No	Not yet	No	No
LV	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT	-	Yes	Yes	Yes	Yes	Yes, but not clearly	Not clearly	Not yet	Yes, high	Yes
PL	-	Yes	Yes	Yes	Yes	Yes	Yes	Not yet	Yes	Yes
RO	HBS	Yes	Yes	Yes	No	No	No	Yes	Possibly, not clear	Not really
SI	HBS	Yes	Yes	Yes	Yes	Yes	Partly	Not yet	No	Not really
SK	HBS	Mixed	Not really	No	Yes (some items)	No	No	Yes	No	Not really

ture about how to more effectively organise their data sources and compilation procedures.

Importantly, all the CCs now appear convinced that they need to:

- use or more fully exploit the HBS, Retail Sales and all other data sources
- avoid relying on a Commodity Flow approach as their main PHC estimation method
- adopt a "bottom-up approach", using an appropriate level of COICOP detail
- make suitable adjustments to different sources for coverage, definitional & conceptual reasons - in order to obtain reliable and exhaustive ESA95-based estimates of PHC.
- obtain several alternative PHC estimates, choose a "best" estimate and then reconcile this estimate with the output approach, ideally through a supply and use framework.

The Polish results

The analytical tables completed by Poland (see Annex I) are an excellent illustration of the application of the tabular approach used for the PHC project.

The project resulted in upward revisions to the PHC estimates in Poland for 1995-97. The results led to the following net increases in PHC:

1995: +3.1%
1996: +3.0%
1997: +2.7%

These changes largely arose from exhaustiveness adjustments and from removing payments for medicines from PHC to government final consumption. The PHC exhaustiveness adjustments represented part of the work for the PPE project, described in Chapter 2.

Poland also improved their coverage of expenditure of residents abroad and of non-residents in Poland, together with a more detailed COICOP breakdown. Additional progress was reported concerning the treatment of social funds and the re-classification of expenses for maintenance of dwellings to intermediate consumption.

Other benefits of the PHC project

As part of their work, the EU experts prepared interim and final reports giving detailed and critical analyses of the PHC estimates for each CC, including recommendations for work in the short and longer term, to secure further improvements. A synthesis report was also written by the EU experts, which provides an overview of the project and comparative CC tables.

In addition, because many questions and issues arose during the task forces and during their missions to the CCs, the EU experts additionally wrote a number of documents or briefing notes on a variety of topics:

- PHC/99/02: Criteria and requirements for complete and reliable PHC estimates (Ralf Hein)
- PHC/99/05: Classification of military uniforms: income in kind or intermediate consumption? (Briefing Note, Richard Clare)
- PHC/99/06: Gross recording of package tours (Briefing Note, Knut Sörensen)
- PHC/99/08: Non-life Insurance, claims paid direct by insurance companies to providers of goods and services (Briefing note, Knut Sörensen)
- PHC/99/09: The treatment of meals and drinks provided to soldiers (Briefing Note, Ralf Hein)
- PHC/99/10: The borderline between private household consumption and intermediate consumption or gross fixed capital formation (Discussion Paper, Ralf Hein)
- PHC/99/11: Income in kind: A paper for the Candidate Countries (Richard Clare).

As part of their project work, the CC experts also gave a number of interesting task force presentations on various themes, to illustrate how problems had been identified and tackled:

- The compilation of an expenditure structure for rich households in Lithuania (Tatjana Rumianceva)
- The Latvian model of estimating purchases of cars (Agnese Bicevevska)
- The Slovenian sources and methods for estimating wages and salaries in kind (Mojca Skrlec)
- The Bulgarian sources and methods for estimating wages and salaries in kind (Svetlana Andreeva)
- Private use of business cars - the Hungarian estimates (Zsuzsanna Boros)
- Final consumption of own production: sources and methods used in the Romanian NA (Adriana Ciucheva)
- Expenditure of residents abroad and non-residents on the domestic territory: the Polish experience (Maria Jeznach)
- The distinction between intermediate consumption (IC), gross fixed capital formation (GFCF) in the dwellings branch and PHC: the Estonian experience (Pille Palojärv)
- The identification of business sales – the Slovak experience (Viera Mokrasova).

5. Particular problem areas

Over twenty different problem areas were identified by the PHC project. These were discussed during the missions and task forces – and featured in the experts' reports for each CC and in the synthesis report. The latter contained comparative tables showing the strengths and weaknesses in each CC for many of the following subjects:

- Wages and salaries in kind
- Final consumption of own production
- Dwelling services
- Tips
- Borderline between PHC and IC or GFCF
- Expenditures of residents abroad and of non-residents on the domestic territory
- Coverage and treatment of shuttle trade
- PHC directly financed by insurance companies

- Coverage and treatment of persons living in institutions
- Charity and gifts from abroad
- Consumption of illegal production and imports
- Meals and drinks provided by the army
- Clothes provided by the army
- Service charge concept for insurance service
- Net valuation of the use of lottery services
- Borderline between taxes and services provided to households by general government
- Car registration taxes
- Stamp taxes
- Expenditure on goods under a hire purchase agreement
- Second hand goods
- Government's payments to market producers (for medicines etc.)
- Package travel tours

As has already been indicated above, for a number of these subjects, briefing notes were specially prepared by the EU experts and presentations given by the CC experts.

6. Summary and recommendations

The completion of the analytical tables by the CCs involved a considerable amount of detailed work. However, the analytical tables were found to be an extremely useful instrument for verifying and improving the estimates and for identifying inconsistencies, weaknesses or gaps in different sources, and also for identifying the need for further investigation/research. The improvement of the PHC estimates in the CCs is an on-going process.

Eurostat recommends that the CCs adapt the tables to their national needs and that they incorporate them in their regular compilation procedures. There is already every indication that the CCs are increasingly adopting the recommended tabular approach for their regular NA estimates of PHC.

A very wide range of questions concerning sources, methods, concepts and particular problem areas were covered by the PHC project. At the same time, not all problems could be discussed in detail or solved in the time available. However, the picture about PHC estimates in the CCs is now much clearer, and many improvements have been suggested, including detailed recommendations for future work in each CC.

Further work is necessary, to obtain at least two independent estimates for individual commodity groups, because there is no single data source that satisfactorily covers the complete range of expenditure. Further work is also required to improve the adjustments to different data sources for the differences in coverage, definition and concept. "Best" estimates from among the alternative sources then need to be reconciled with the output measure of GDP. This is best done via a supply and use framework. All CCs already use or plan to use supply and use tables for balancing and reconciliation.

In most CCs, GDP estimates mainly rely on the output approach. The further improvement of estimates of PHC (which accounts for some two-thirds of total final expenditure) will help to provide an alternative independent measure of GDP, which is more exhaustive and reliable.

CHAPTER 4
Activity A2: Estimation Methods at Constant Prices

1. Introduction

Given the very different and often very high rates of inflation experienced in recent years by the Candidate Countries, it is vital to be able to express GDP in these countries in real terms, i.e. at constant prices. It is also important that the CCs should employ satisfactory methods for constant price estimation. Usefully, in 1998, a new Commission Decision[1] on constant prices came into force for the Member States. Technical assistance was required to help the CCs to implement this Decision with the ultimate objective of securing more reliable and comparable data, particularly with respect to growth rates.

The aim of Activity A2, which ran from October 1998 to May 2000, was to improve the basis of the estimates of constant price national accounts in the CCs. The focus of the work was on the annual constant price estimates, but excluded inventories, dwelling services, FISIM, and consumption of fixed capital. These topics were the subject of separate Eurostat projects.

The technical assistance for Activity A2 was provided by two experts: Ken Mansell, covered 10 of the CCs (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia). Erling Flottum assisted Cyprus. In the text that follows, Mr Mansell and Mr Flottum will be referred to as 'the experts'. In addition, invaluable advice was received from Eurostat unit B-1 which, following the 1998 Commission Decision, was engaged on a work programme with the Member States.

Two missions were undertaken by the experts to each CC who provided an on-line advice service to the CCs and kept in touch with the development of the project work.

Provisional and final reports were prepared by the experts for each CC, and all CCs attended a workshop at the beginning and towards the end of the project. The experts' reports describe the position on the calculation of annual national accounts at constant prices and the improvements needed to establish a system, which follows the principles and standards for measurement of such data in the EU.

2. Compilation of national accounts estimates at constant prices: the principles

Before considering the findings in the experts' reports and the CC results achieved, it is useful to provide some essential background about the principles governing the compilation of the national accounts estimates at constant prices. The key principles are contained in the 1998 Commission Decision on the measurement of prices and volumes in the national accounts.

The main principles

For convenience, the three main principles of the Commission Decision are repeated below.

Principle 1 says that:

"In the measurement of prices and volumes a detailed level of aggregation of products shall be used. This level of aggregation, which is referred to as the detailed "elementary level of aggregation", shall be at least as detailed as the P60 level of ESA95, for output as well as all categories of (intermediate and final) use."

Principle 2 says that:

"Volume measures available at the elementary level of aggregation shall be aggregated using the Laspeyres formula to obtain the volume measures of all national accounts aggregates. Price measures available for the elementary level of aggregation shall be aggregated using the Paasche formula to obtain the price measures of all national accounts aggregates."

Principle 3 says that:

"Volume measures derived at the elementary level of aggregation shall be aggregated using weights derived from the previous year."

What **Principles 1** and **2** mean in practice is that the constant price estimate of, say, total output, should involve, for each branch, deflation of (at least) the 60 commodity groups by the relevant price indices, and then the summation of the constant price estimates for each branch (industry).

Principle 3 essentially requires the use of **chain-linking**, rather than a fixed base, in compiling the constant price estimates.

The Commission Decision also includes a number of other principles related to estimation at constant prices. One of the main aspects is that, in deriving estimates of GDP based on production data, a **double deflation** approach should be used.

Another aspect is that the Decision classifies **estimation methods** into three groups: A - the most appropriate method; B - 'second best' methods, if A methods are not available; and C - methods which should not be used.

[1] Commission Decision of 30 November 1998 clarifying Annex A to Council Regulation (EC) No 2223/96 on the European system of national and regional accounts in the Community as concerns the principles for measuring prices and volumes (98/715/EC), OJ No L 340, 16.12.1988, p. 33

Other key principles

Of other key principles, the main ones relate to the price information used for deflation. The first to be considered is **consistency of valuation**. That is, where price data are used for deflation, the valuation should be the same as the valuation of the variable being deflated.

A further important aspect is **consistency in deflation**, that is, the need to deflate the same figures in different parts of the accounts by consistent deflators. In principle, the deflators are not necessarily exactly the same, since the relevant prices may not be on the same basis - for example, one component may require a basic price in one part of the account and a purchasers' price in the other.

Five main areas for consistency are considered. The first concerns export sales (both goods and services) which appear in output in the production estimates and in exports in the expenditure side of the account.

The second area concerns consistency between the figures for imports (both goods and services) and their inclusion as components of gross fixed capital formation (GFCF), intermediate consumption and inventories.

The third case covers the components of the changes in inventories in the use account, and the corresponding figures in output (changes in finished goods and in work in progress and goods for resale) and in intermediate consumption (changes in materials and supplies).

The fourth and fifth examples relate to production for own consumption and income in kind, two variables, which are included, identically, in the supply and use sides of the accounts. This is likely to be an issue, which affects both current and constant price data, and consistency should not be difficult to achieve.

Price data used for deflation in the national accounts also needs to meet four other main principles. First is the need to have an **adequate coverage** of the products under a given heading. In other words, the selection of items priced from a given heading should be adequately representative of the likely price movement for the heading as a whole. It is also important that the coverage of products is kept up to date. Secondly, the price data should be **consistent with the national accounts concepts**. This covers, for example, the treatment of taxes and subsidies; the need for a transaction price, rather that say a list or average price; generally, the use of a Paasche, rather than Laspeyres, index, and consistency in the base used - whether fixed or chain-linked. Thirdly, for **deflating** annual value data, the **price index** to be used should be derived as the **current weighted** quarterly (or monthly) price index, rather than the simple average of the quarterly price indices. Correspondingly, where annual constant price estimates are derived as the sum of quarterly data, the quarterly price index should be the current weighted monthly price index. Fourthly, price data should be **adjusted for quality changes** in goods or services.

A further important feature of the approach to constant price estimation is that, generally speaking, **deflation** is to be **preferred to volume projection**. However, there are certain variables or components of variables for which volume projection is the preferred method such as within non-market services and for taxes and subsidies on products. Further, some attention should obviously be paid to the relative quality of the value/price and the volume information. If the volume data are thought to be more reliable, then they should be used, in advance of improving the value/price information. As a final point, if both sets of data are available, then some validation of the preferred methodology is possible.

Finally, it is also worth mentioning, briefly, two other largely self-evident issues relevant to the estimation at constant prices. First, it is important to maintain consistent series, so that one year can be directly compared with the next in a **time series**. Secondly, and obviously, **current and constant price figures** should be **consistent**. Ideally, they should be compiled by the same people.

3. Constant price estimation in the CCs: an overview for each country

This section and the sections that follow make extensive use of the executive summaries in the experts' final reports for Activity A2 (which relate to the position in Spring 2000). The section contains a very brief overview for each CC.

Bulgaria

Constant price national accounts data in the Bulgarian National Statistical Institute (BNSI) are compiled for both the production and expenditure bases. Commendably, the data are calculated according to the Eurostat 'recommended' **chained approach**. Also commendably, the estimates have been compiled **within** the framework of **supply-use tables**, and **incorporate double deflation** for the production estimates. Despite these commendable methodological aspects, with the exception of the consumer price index (CPI), the **price information** used for deflating to constant prices **needs much improvement**, particularly the producer price index (PPI).

Cyprus

Constant price national accounts data in the Statistical Service of Cyprus (SSC) are compiled for both the production and expenditure bases. **Double deflation** is generally applied in the production approach. Cyprus has a **good range of price data.** The constant price data are derived using a **fixed base**, recently changed from 1990 to 1995. For the wholesale price index the base year as well as the structure of the index are currently under examination. Work on constructing supply and use tables (SUT) has just been

started, some preliminary results (at current prices, not yet constant prices) were expected by end-2000; **annual chaining is** likely to become **an issue** following this work.

Czech Republic

Constant price national accounts data in the Czech Republic Statistical Office (CSO) are compiled for both the production and expenditure approaches, according to a **fixed base** (1995). The initial annual figures have, hitherto, been compiled very much as a by-product of the calculation of quarterly estimates, and updating to a firmer annual basis has taken a long time. CSO have a **very good range of price data**, for deflation, but some improvements are needed. CSO is now establishing definitive and timely annual figures. The development of supply-use tables is an important part of this work.

Estonia

Constant price national accounts estimates in the Statistical Office of Estonia (SOE) are compiled for both the production and expenditure bases. The production approach is mainly deflation of value added. The expenditure series were published for the first time during 1998. The data are derived using a **fixed base**, currently 1995. SOE have a reasonable range of price data, for deflation, but some improvements are needed. Work is in hand to develop supply-use tables from which estimates based on double deflation will emerge. A further key priority will be to improve the recently-produced expenditure figures.

Hungary

Constant price national accounts data in the Hungarian Central Statistical Office (HCSO) are compiled for both the production and expenditure approaches according to a **fixed base** (1995). An approximate form of double deflation is used for the production figures. HCSO has a reasonable range of price data. There are some key improvements under way. The first part is now completed. HCSO has finished a current price supply-use table (for 1998). The second phase is planned: HCSO is going to start a project with Statistics Netherlands where one task is to compile SUT at constant prices.

Latvia

Constant price national accounts data in the Central Statistical Bureau of Latvia (CSBL) are compiled using both production and expenditure data. The estimates use the **fixed base** of 1995. The production-based figures of GDP are derived by projecting base year value added using mainly deflated output values. A key aspect of the work is the move towards using double deflation, which is being facilitated by the establishment of annual **supply-use tables**. CSBL have a reasonable range of price data, for deflation, but various improvements are needed.

Lithuania

Constant price national accounts data in Statistics Lithuania (LDS) are compiled from production (using projection of base year value added) and expenditure data, using the **fixed base** of 1995. The expenditure figures were published for the first time at the end of 1999, and further development is important. A second key development is the establishment of supply-use tables, which will improve the expenditure estimates and from which the double deflation approach for production GDP will emerge. LDS have a reasonable range of price data, for deflation, but various improvements are needed.

Poland

Constant price national accounts data in the Central Statistical Office of Poland (CSOP) are compiled for both the production and expenditure bases. The **production figures** use the **double deflation** methodology. Commendably, the data are already calculated according to the Eurostat 'recommended' **chained approach**. Supply-use tables have been prepared at current prices (the latest relating to 1996), but not much work had been undertaken on compiling constant price tables. CSOP have a reasonable range of price data, for deflation, but various improvements are needed.

Romania

Constant price national accounts data in the Romanian National Commission for Statistics (RNCS) are compiled for both the production and expenditure bases. Commendably, the data are calculated according to the Eurostat 'recommended' **chained approach**. Also commendably, the estimates have been compiled **within** the framework of **supply-use tables**, and **incorporate double deflation** for the production estimates. RNCS have a reasonable range of price data, for deflation, but various improvements are needed

Slovak Republic

The constant price national accounts data in the Statistical Office of the Slovak Republic (SOSR) are compiled for both the production and expenditure approaches, according to a **fixed base** (1995). An important feature is that the annual constant price figures have hitherto been compiled very much as a by-product of the calculation of quarterly estimates, with additional computation, such as more detailed deflation, being undertaken. SOSR is taking steps to establish definitive annual figures, which are also more timely, through the use of supply-use tables. SOSR have a reasonable range of price data, for deflation, but various improvements are needed.

Slovenia

Constant price national accounts data in the Statistical Office of the Republic of Slovenia (SORS) are compiled for both the production and expenditure approaches according to a **fixed base** (1995). The pro-

duction data are based mainly on the projection of base year value added, with some double deflation for the services sector. SORS have a reasonable range of price data, for deflation, but various improvements are needed. A key development for the accounts is the establishment of supply-use tables, from which the double deflation approach for production GDP will emerge.

4. Principles of estimation: summary of the position in the CCs

This section provides a brief summary of the extent to which the CCs satisfy the principles of estimation, described in Section 2.

On the various principles of estimation, as set out in the Commission Decision, Bulgaria, Poland, Romania and the Slovak Republic already largely follow the main principle on the degree of detail required for deflation. They also use double deflation and all but the Slovak Republic chain-linking. The calculations of the Slovak Republic are experimental at the moment and they will publish the data by the end of year 2001. The other seven CCs (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania and Slovenia) are planning or pursuing the adoption of (i) the main principle on the degree of detail required for deflation, and (ii) double deflation. In addition, these eight countries should consider the need for chain-linking and establish a timetable for the work.

For other principles, the CCs appear to cover in varying degrees the need for consistency in deflation of the same variables appearing in the different parts of the accounts, and also the need for consistency in the price basis used for deflation, as between basic and purchasers' prices. Both aspects require further work by all CCs.

Other principles, including the use of A, B and C methods and those relating to price data (including adjustments for quality) need to be further pursued by all the CCs, in line with future Eurostat recommendations.

5. Estimation methodology

This section describes the estimation methodologies employed in the CCs.

Production-based estimates

In Bulgaria, Cyprus, Romania, the **production-based** figures use the recommended double deflation approach. In Hungary and Poland, the **production-based** figures are based on the principle of double deflation, but the practice needs to be improved.

The Czech and Slovak Republics are moving away from the earlier quarterly basis of the figures to a definitive annual basis. Under the new system, the **production-based** figures will use the recommended double deflation approach.

In Estonia, the existing **production-based** figures are derived mainly by deflating data on value added, but with some volume projection. In Latvia, Lithuania and Slovenia, the existing **production-based** figures are derived mainly by the projection approach. In all four of these CCs, consideration is being given to the use of the recommended double deflation approach, some work having already been undertaken.

In all the CCs, one important improvement, required for both **output** and **intermediate consumption (IC),** is the need for deflation of the detailed, separate commodity data, with relevant component breakdowns. Deflation also needs to be consistent for the same components in different parts of the account; a main problem here is output/exports of services. There is a need to collect certain more detailed value data to permit proper deflation, essentially on the components, for example the import component of IC. Further improvements are also needed to **taxes and subsidies**.

A further key area is the need for improved price data in the CCs for deflating the production-based data, particularly prices for construction, market services, and for foreign trade in goods and services. Although a few improvements are still warranted, the Czech Republic has a very good range of price data for deflating the production-based data, including (exceptionally for CCs) market service prices.

Development of the estimates for non-market services, including the use of some output rather than input measures, also needs to be pursued by all the CCs (commendably, Slovenia have already undertaken some work in this area). For many of these essentially longer-term issues, Eurostat is carrying out research work, and recommendations, will emerge, which the CCs will need to follow.

Expenditure-based estimates

For the **expenditure-based** approach, improvements to **household final consumption** will come mostly from better current price data, though for some CCs (e.g. the Czech Republic, Estonia and Slovenia) some improvements are also needed to the CPI. Of the components, improvements should be attempted for resident/non-resident spending in all the CCs.

For all CCs, the improvement for **government final consumption** will come mainly from that for output.

For **GFCF**, in all the CCs, more detailed deflation is needed, particularly for machinery. This may require more detailed value data (e.g. for the import content of GFCF), and new or improved price (PPI and construction) data.

For **exports and imports of goods**, the majority of the CCs (Bulgaria, Cyprus, Hungary, Poland, Romania, Slovak Republic and Slovenia) makes use of unit value indices (UVIs) for deflation, including improvements to those UVIs. However, it is likely that Eurostat research work will suggest use of actual prices for some, if not all, commodities. Consideration in these seven CCs therefore needs to be given to the collection of export and import

prices. In the remaining four CCs (Czech Republic and the three Baltic States) some good developments have already been made, using actual prices. These should be continued, taking account of Eurostat recommendations.

For **exports and imports of services**, some interim improvements should be attempted in all the CCs, in advance of the Eurostat work. In Estonia, some progress has already been made.

6. Supply-use tables at constant prices

Background

The importance of establishing supply-use tables as a basis for improving the statistics was emphasised by the experts. A few CCs were already using supply-use tables in the accounts; others were in the process of developing such tables. It was suggested that supply-use tables should primarily be considered as a basis for reconciling the supply and use data, rather than as a means of making direct estimates. Although there was a separate Eurostat project (see Chapter 11) on supply-use tables, this focused wholly on the current price data. During the experts' visits, therefore, there was discussion on the important link between the current and constant price work, and possibly the need for simultaneous balancing of the current and constant price tables. The experts' assessment reports stress the importance of supply-use tables and how best they might be used for improving the constant price estimates.

Situation in the CCs

Commendably, Bulgaria and Romania have used supply-use tables in compiling the constant price estimates. The Czech and Slovak Republics have been developing supply-use tables for several years, as a basis for establishing new, definitive annual estimates. The work will also be useful in considering the move to chain-linking.

Among the Baltic States, Latvia had compiled a provisional table for 1996, and useful work had been undertaken on the price data. Estonia was proposing to establish a constant price supply-use table for 1998. This would be in prices of 1997, and would thus provide a good basis for considering the move to chain-linking. Lithuania would be compiling a constant price table for 1996 later in 2000.

Although current price tables have been compiled in Poland (for 1995 and 1996) and in Slovenia (1996), little work had been undertaken for the constant price tables. Both CCs should give some priority to deriving constant price tables.

Hungary were planning to establish a very detailed current price supply-use table for 1998, but no plans existed for deriving the constant price table. HCSO might usefully consider the need for such detail. In doing so, they should consider using the prices of the previous year (perhaps as well as the fixed base) as a means of providing guidance on adopting chain-linking.

Cyprus has started work on constructing supply-use tables, although a timetable for SUT at constant prices had still to be worked out.

In the case of all the CCs, they should ensure that their practices are in line with the recommendations of the current price work of the Eurostat supply & use project (see Chapter 11), and with the suggestions included in the experts' assessment reports on how best to compile the constant price tables. The CCs should also establish a timetable for compiling and publishing the tables.

7. Need for new and improved price data

The experts' reports stressed that a vital part of the work of improving the constant price estimates will be the need for new and improved price data. In addition to improving existing price information, the CCs need to ensure that sufficient detail is available and that new products are adequately covered, e.g. in the CPI and PPI. New price data are also likely to be needed for market services, construction and for foreign trade in goods and services. This will be particularly demanding on the division responsible for prices, and the CCs will need to consider a phased programme of work, and to ensure that aspects such as concept and coverage are in line with Eurostat recommendations. Finally, as a long-term development, consideration should be given to allowance for quality change

8. Project work successfully undertaken

In order to achieve practical results, all the CCs undertook project work. Subsequently, the experts sent written comments on the work; many issues were discussed in detail and further improvements suggested. This section gives a brief summary of the improvements secured by the CCs.

Bulgaria

The project work attempted a good number of improvements to the constant price figures, with reasonable success. The main areas covered were the PPI, and more detailed deflation of output, more consistent deflation, and improved deflation of GFCF.

Cyprus

The project work successfully attempted a number of improvements to the constant price figures, including the introduction of 1995 as a new base year to replace 1990. As an intermediate solution, until Eurostat recommendations are implemented in the future, weighted wage indices to deflate certain services were attempted to replace the practices of deflating using global indices (like the total CPI or the GDP price index) or extrapolating using indices of employment.

Czech Republic

The project work focused on establishing a definitive run of estimates for 1990 to 1995. The work, which was based on supply-use tables, should provide a good basis for deriving data for subsequent years.

Estonia

Estonia is to be commended on making good advances in a number of areas of the accounts, including foreign trade in goods and services (including non-resident spending in household consumption), and taxes and subsidies, double deflation and GFCF.

Hungary

The project work had included some mainly small improvements to the classification and coverage of certain price and value data, as well as to current price supply-use tables and construction prices.

Latvia

Latvia made some useful improvements with the supply-use work, particularly on prices, and on residents spending abroad.

Lithuania

The project work covered a good range of variables, including taxes and subsidies, GFCF and foreign trade in goods and services.

Poland

The project work covered a few specific areas of the accounts, including government and residents spending abroad.

Romania

The project work contained a number of improvements to the constant price figures, inconsistency, GFCF and taxes and subsides on products.

Slovakia

The project work focused on developing definitive estimates through supply-use tables, covering, in particular, taxes and subsidies on products, and the CPI and PPI.

Slovenia

The project work included non-market services, taxes on products and the new series for construction prices.

9. Management of the accounts

In improving the national accounts, the experts considered the "management of the accounts" to be as important as the statistical aspects. Management covers a range of aspects relevant to the compilation of the national accounts statistics such as liaison with suppliers and users of data, how work is organised, timetables, revisions policy, training, and resources. The experts' reports made suggestions for each of the CCs.

On liaison, there often appeared to be reasonable communication with Prices and Industry divisions, but improvement was frequently needed in liaison with the Ministry of Finance and the National Bank. A key organisational issue for all CCs was how best to integrate the work on the three areas of annual, quarterly and supply-use data. Some serious thought had been given to a revisions policy by many of the CCs. In Slovenia, steps had been taken to explain policy to users.

The experts felt that the CCs needed to give greater emphasis to management issues, if necessary with support at a high level within the statistical offices.

10. Recommended work programmes

With the conclusion of the project in May 2000 and with much further work needing to be done, Eurostat felt it was important to try to maintain the momentum of the work on constant prices in each of the countries. To this end, the experts recommended work programmes for the CCs for the short, medium and longer terms.

11. Documentation: technical notes; Eurostat handbook

One of the main recommendations of the experts was for greater central guidance for the CCs from Eurostat. One possible way of achieving this would be for Eurostat to establish a series of "Technical Notes" on key problem areas of the national accounts. These Notes (which may also benefit Member States) would not only clarify conceptual and definitional issues, but would also, importantly, provide some practical suggestions of implementation. Perhaps the main need for this kind of guidance is in respect of the collection of price data for deflation. The experts envisaged that the Notes could build on the Task Force reports, being prepared as part of the Eurostat research work, but should also embrace aspects such as the kind of information to be collected, including a draft questionnaire, and problems and issues related to collection, analysis and use of results. Information available on practices in Member States could be utilised for this purpose. Indeed, a scheme might be established in which Member States, with the relevant experience of a particular area, would be asked to write the Notes.

As a result of the work of the Task Forces undertaken since 1998, Eurostat intends to publish a Handbook on price and volume measures in the national accounts in the latter part of 2001. Drafts of this handbook, as it progresses, have been made available to the CCs together with copies of all the Task Force reports. These will obviously be of particular interest to the CCs as they continue their work on improving price and volume measurement.

The two experts themselves circulated various papers to the CCs on constant price estimation procedures. Their main purpose was to provide interim solutions, which might be adopted by the CCs, in advance of the definitive recommendations, which will emerge from the Eurostat work. The papers were very much appreciated by the CCs. The papers, which were cleared with Eurostat before circulation, covered the following four main areas - taxes and subsidies on products; household final consumption; foreign trade in goods, and foreign trade in services. A fifth paper, covering some miscellaneous issues, was also circulated.

CHAPTER 5
Activity A3: General Government and Non-Profit Institutions Serving Households

1. Introduction

The objective of this project (Activity A3) was to assist eleven Candidate Countries: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia) to improve the estimates in the sector accounts of general government and non-profit institutions serving households (NPISH). Reflecting their relative importance in the National Accounts (NA), most of this chapter relates to general government.

Technical assistance to the CCs was provided between October 1998 and May 2000 by the EU expert, Ted Doggett. Hereafter, Mr Doggett will be referred to as 'the expert'.

The *modus operandi* of the A3 project was contact primarily by e-mail, a mission to each country's statistical office and two task force meetings, one of which took place in January 1999, and the second in February 2000. During the visits to statistical offices, the expert also met with officials of the Ministries of Finance, who were principal sources of data for the general government accounts.

The terms of reference of the project required the CCs to produce:

- An institutional table, containing lists of the institutions within the general government sector;
- Bridge tables showing how the national accounts data for 1997 are to be derived from the conventional accounts;
- A matrix table showing how the national accounts data from the bridge tables adds up to the sector totals

For each CC, the expert was required to produce interim and final reports of the issues that arose, the errors and omissions in the accounts, the work that had been initiated and the work that remained to be done. The expert also produced a synthesis report on the whole project, summarising and bringing together the main threads of the project. This chapter draws heavily on the expert's synthesis report.

By the end of Activity A3, the objectives were:

- that each country would be able to produce reasonably accurate sector accounts for general government;
- the extent to which the sources and methods fell short of complete adherence to ESA95 would be documented;
- plans for eliminating the remaining deficiencies would be agreed with each country.

2. General government

Background and general approach

At the start of Activity A3, the countries were at varying stages of progress. Several were publishing national accounts already to some extent in the ESA95 format, while for others ESA95 was still at an experimental stage, and their published data related to an earlier system of national accounts. The eleven countries approach these accounts in different ways. Several countries had experience in producing Government Financial Statistics (GFS) for the International Monetary Fund (IMF), and some had produced accounts on the basis of the previous version of the ESA or SNA. It is reasonable for them to build on such experience in producing the ESA95 accounts. Where this was the case, the expert looked at the methodology with particular attention given to the changes needed to adjust their data on to the basis of ESA95. The expert also sought to advise on items of particular concern to the compilers – and embodied that advice in notes left with the statistical office. The main items of general concern were the availability of accruals data and the measurement of consumption of fixed capital.

Moving from GFS to ESA95

The GFS system was in the process of being revised to become more in line with ESA95, so that the building blocks were common up to a reasonably high degree of aggregation. The categories of the GFS system have a very close relationship to national accounts concepts. The institutional coverage of the sector general government is in principle very similar in both systems. The CC compilers are relatively experienced, and in many cases have received extensive training from the IMF. It therefore made sense for the CCs to derive the sector accounts from GFS categories. The main factors preventing a simple reconciliation were that:

- GFS is on a cash basis while ESA95 measures accruals (see further below)
- GFS excludes consumption of fixed capital
- GFS excludes transactions in kind
- GFS consolidates out government contributions as an employer for social security
- GFS reflects the former SNA in its treatment of various items, such as valuables, computer software and defence capital expenditure
- ESA95 requires certain taxes to be treated differently depending on whether they are paid by households or enterprises.

There were examples among the CCs where the GFS data produced did not meet the institutional coverage requirements of the GFS or of ESA95. In such cases, the statistical office had to supplement GFS data with reports in respect of these non-budgetary institutions.

Moving from ESA79 to ESA95

The main changes affecting general government non-financial transactions were:

- The concepts of actual final consumption, collective and individual consumption expenditure;
- Treatment of computer software and mineral exploration;
- Definition of defence capital expenditure;
- Financial leasing;
- Coverage of capital consumption extended to cover infrastructure;
- More specific procedure (the 50 % rule) for allocating bodies to general government.

In the early stages of the A3 project, and particularly during the expert's missions to each country, the above items were checked and the detailed responses were included in minutes of meetings and the expert's interim reports.

The four topics of most concern to the CCs were:

- Institutional coverage; in particular, the application of the 50% rule to classify institutions at the margin. The problems in general were in obtaining the necessary detailed information. Much guidance had been received through other Eurostat working groups, and the more important cases had largely been dealt with earlier.
- Calculation of accruals; where there was no general accounting on an accruals basis, the expert concentrated on the derivation of statistical methods for the most important series.
- Consumption of fixed capital; previously, most countries were using historic cost estimates; the detailed work on this topic was the subject of another Eurostat project (see Chapter 12).
- Wages and salaries in kind; goods and services provided to employees through income in kind were often subsumed within intermediate expenditure.

3. General government: the four topics in more detail

This section discusses the above four topics in more detail.

Institutional composition: sector boundary of general government

ESA95 defines general government by reference to the institutions within it and their activities; institutions that are non-market producers and controlled by government are considered to be within the boundary. For most government institutions their classification is self-evident. For others, where part of their output is disposed of in the market, ESA95 specifies a '50% rule': if less than 50% of production costs is met by sales, and the institution is controlled and mainly financed by general government then the institution is classified to general government. The CCs had previously received much Eurostat advice on the application of the rule, principally in the context of government deficit and debt, and the more important examples (generally relating to hospitals or educational establishments) had been resolved. The cases remaining undecided at the start of the A3 project were fairly individual cases, and usually of less significance in the accounts. Nevertheless, it would be wrong to suggest that the 50% criterion is being universally correctly applied in all the CCs.

Accruals data

Traditionally, accounts of general government have been compiled in cash flow terms, although some extra-budgetary funds or government enterprises may produce accruals-based accounts. Some countries indicated that accruals accounting was being considered or planned for public accounts in the near future, thereby improving accuracy for NA purposes.

In discussions with the Ministries of Finance, the expert stressed the policy importance of accruals data. Accruals data reflect the resources used by government more accurately than cash flows. Thus, in the situation of cutting budgets, government agencies are tempted to meet their cash flow targets by taking deliveries of goods and services but delaying payment until the following year. From the point of view of budgeting, this merely adds to the problems of future years. The build up of such debts can produce serious problems in management of the national economy. Deferring payments also reduces the liquidity of suppliers, a constraint on economic growth. Where there was no accounting data available on an accruals basis, the expert suggested that initially the statistical office should concentrate on making statistical estimates of accruals for key series such as VAT, taxes on employment income, social security contributions, subsidies, and interest flows. Most countries were able to make first estimates along these lines. The minutes of the second Task Force meeting, which took place in February 2000, detailed each country's practices for the key series.

Consumption of fixed capital

Estimating capital consumption implies estimating the value of capital stock, which was difficult for many of the CCs, which often did not have the required data. The expert discussed with each country how they might approach this with the information at their disposal. However, this topic was the subject of a separate Eurostat project. Chapter 12 gives much more detail about the work undertaken. At the end of the A3 project, Romania had yet to produce results on a current replacement cost. The other CCs had produced some results - albeit provisional, first estimates

Wages and salaries in kind

Under ESA95, the scope of this item was increased compared to ESA79. In GFS86 these were not regarded as part of remuneration. In Eastern Europe there had been a tradition of employers providing such remuneration in kind, although with the transition to market-based economies the trend has been to abolish non-cash remuneration. Nevertheless, the recording of these items was checked in detail. A session of the second Task Force meeting was devoted to income in kind. The expert prepared notes and prompted Eurostat guidance (e.g. concerning the treatment of military uniforms and the provision of meals). At the end of the A3 project, most countries had secured improvements in income in kind. Even so, omissions were still evident and further research was required in order to check that income in kind and intermediate consumption were being correctly distinguished according to ESA95, and to ensure that the coverage of income in kind was complete.

Defence

The four topics of greatest interest were described above, but it is worth including here a brief reference to another issue which exercised a few CCs. ESA95 introduced a change in gross fixed capital formation, which now includes structures and equipment used by the military (similar to those used by civilian producers) such as airfields, docks, roads and hospitals. Under ESA79, these were included in intermediate consumption. This raises problems because Defence Ministries are often unwilling to provide breakdowns of total expenditure. The justification, when given, is security. Such fears are unfounded and the expert encouraged statistical offices to make representations to the Defence Ministries. Only two of the CCs still had problems in this respect: Bulgaria and Slovenia.

4. General government: the progress achieved

Building national accounts tables from the conventional general government accounts

All the CCs produced the required general government tables (already listed in Section 1):

- An institutional table, containing lists of the institutions within general government;
- Bridge tables showing how the national accounts data for 1997 are to be derived from the conventional accounts;
- A matrix table showing how the national accounts data from the bridge tables adds up to the sector totals.

This represented a major achievement by the CCs, an investment that will stand them in good stead for the future. It provides a framework within which new institutions and new transactions may be treated consistently, and facilitates a critical examination of existing methodology, particularly in the context of the requirements of accession.

The four main topics: a summary over all the CCs

In order to give a summary of the progress achieved for the four subjects discussed in Section 3, the expert gave each CC a score (from 0 to 4) for each topic. Figure 1 represents a summary, that is, the overall state of play, showing the improvements in ESA95 compliance achieved by the CCs as a whole, between the start and end of Activity A3.

The progress achieved by individual CCs

Figure 1 shows the position over all the CCs combined. However, the position varied considerably between the CCs for each of the four topics. Table 1 below looks at the performance of the individual countries and compares the qualities of the data published before the start of the A3 project with the capability at

Figure 1: All Candidate Countries: A summary of the progress during Activity A3

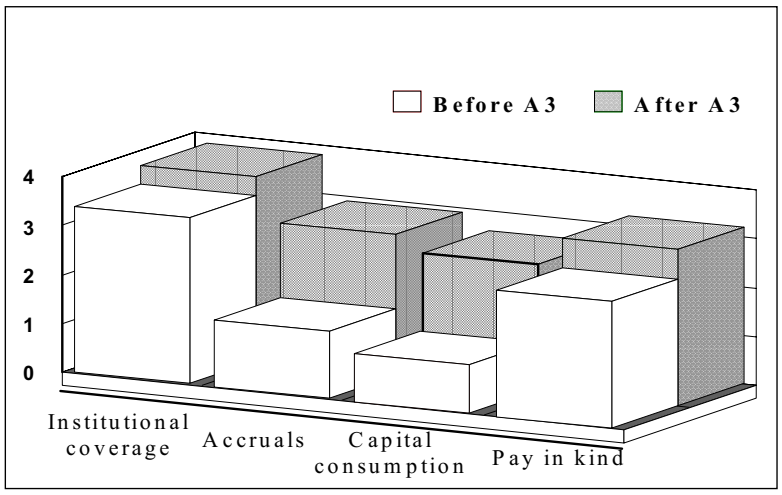


Table 1: General government accounts

Country	Published data before the start of Activity A3					Capability at the end of Activity A3		
	ESA95 deficiencies					ESA95 deficiencies (except for capital consumption at current replacement cost)		
	Cash basis instead of accruals	Deficiencies in the capital consumption estimates:			Other deficiencies, including deficient PIK	Cash basis instead of accruals	Capital consumption estimates attempted at current replacement cost: Yes or No?	Other deficiencies, including deficient PIK
		None made	At historic cost	Rough estimates				
BG	X			X	D		Yes	D
CY	X		X			X	Yes	
CZ	X		X				Yes	
EE	X		Gr		D		Yes	
HU	Lt			X	§	Lt	Yes	
LV			Gr		D,L		Yes	
LT	Int.			X		Int.	Yes	
PL	X		Gr				Yes	
RO	X	X					No	
SK	X		X		D	Int.	Yes	
SI			PPv		D		Yes	D

Notes:

X An 'X' indicates a deficiency in compliance with ESA95 (e.g. that VAT, taxes on employment income, social security contributions, subsidies and interest flows are recorded on a cash basis for NA purposes). The absence of an 'X' indicates that the deficiency generally no longer applies (i.e., that attempts are being made to record all or most of these items on an accruals basis for NA purposes).

Lt In Hungary, data was and is generally on an accruals basis, the only known exception being local taxes.

Int. In Lithuania, data was and is generally on an accruals basis except for interest payable on deposits, bank loans, short-term bills and long-term bonds. In the Slovak Republic interest flows are partially recorded on accrual basis. Accrualisation of taxes, social contributions and subsidies is being processed.

Gr Historic costs refer to values after the general revaluations in the first half of the 1990's.

PPv Production units revalue assets each year using indices reflecting general inflation; historic costs, therefore, refer to a valuation, which will be close to replacement costs at the beginning of the current year

PIK Estimates of 'pay in kind' generally improved as a result of Activity A3, but the complete coverage of income in kind and the accuracy of the estimates are still not assured in any of the CCs.

D Defence expenditure is split between current and capital expenditure according to ESA79, not ESA95.

§ In Hungary, only the production and generation of income accounts and part of the distribution of income accounts were produced before the start of Activity A3.

L Land transactions were missing.

Yes Is positive with respect to ESA95 because estimates of capital consumption at current replacement costs were attempted. However, some countries (e.g. Latvia & Slovak Republic) did not cover all general government assets. Further, not all estimates were robust (e.g. the Hungarian estimates need attention).

the end of the exercise.

At the start of Activity A3, some countries (Cyprus, Romania and the Slovak Republic) were publishing their general government accounts data on the basis of SNA68 or ESA79. Hungary was publishing some of the general government accounts in the format of ESA95. The remainder was publishing all the accounts of general government in the format of ESA95, but deficiencies were noted in their compliance with ESA95. The most common of the deficiencies related to the measurement of accruals and of capital consumption. Other issues related to the classification of units to the general government sector, the identification of wages and salaries in kind, and the analysis of defence expenditure between current and capital. Other topics examined during the exercise included finance leasing, mineral exploration, computer software, COFOG and NACE classifications, and the classification of revenue between D.29 and D.59 depending on the sector of payer[1]. These were all being addressed or dealt with satisfactorily. The expert's interim reports for each country covered these topics.

A general point that should be made is that most of the CCs are compiling their accounts with extremely limited resources. The process of compiling general government accounts is for the most part as much work for small countries as for large. It starts off with the public accounts. The number of budgetary or non-budgetary institutions and funds that need to be analysed separately may be the same or even larger than in some larger Member States, and the number of

[1] Certain taxes (for example on the use of motor vehicles) are treated as taxes on production (D.29) when paid by enterprises and as current taxes on income and wealth (D.59) when paid by households.

main series in ESA95 is the same for all countries. Despite this, many of the Candidate Countries have literally one or two people dedicated to the general government account. More substantial human resources are required in order to undertake the required work and achieve full compliance with ESA95.

5. NPISH

Previous sections dealt with the accounts of general government. By comparison, the NPISH sector is extremely small in all the CCs, often accounting for less than ½% of GDP. The expert checked that the coverage of the sector was adequate and that such plans as the CCs had for development were consistent with ESA compliance. Because it was considered that priority in resources should be concentrated on securing improvements in the general government accounts, the expert did not make any detailed recommendations in respect of the NPISH data except to ensure that there were reasonable sources of information available. Points that arose were covered in the individual country reports.

6. Recommendations to secure further improvements

Over 50 recommendations for further work in the short- and longer-term were made by the expert in each of individual CC reports. The recommendations varied depending on the particular circumstances obtaining in each CC. 18 of these related to the derivation and incorporation of accruals data. Another 10 related to the stocks of and consumption of fixed capital. A further 18 related to other aspects of the accounts of the general government sector. Only 4 related to the development of NPISH data and accounts.

CHAPTER 6
Activity A4: Banks and the Insurance Sector: Financial Intermediation Services Indirectly Measured (FISIM)

1. Introduction

For the Candidate Countries, estimates of activity in the banking and insurance sector pose particular problems. In many cases, the CCs did not have sufficiently developed sources and methods to accurately measure the contribution to GDP of these increasingly important sectors. In recognition of this deficiency, Activity A4 had the objective of securing more reliable and comparable output and intermediate consumption data for the CCs, and to obtain improved estimates of FISIM. The project covered the following subjects:

- Basic data for compiling output and intermediate consumption of banks and insurances, and for all NA adjustments.
- The cooperation between all bodies involved in collecting and compiling data for banks and insurances, exchange of data, the definition and content of the variables.
- The reliability of the basic data; coverage of the units involved.
- The compilation of output and intermediate consumption of the bank and insurance sector; estimation of FISIM (but not the allocation of the use of FISIM to the sectors).
- The treatment of financial leasing.
- Special questions concerning: the treatment of central banks, exchange offices, foreign currency & securities dealers' margins, credit & insurance dealers, the use of insurance services for intermediate and final consumption, and the handling of direct payments by insurance companies for repairs.

Technical assistance to the CCs was provided by the EU expert, John Walton (hereafter referred to as "the expert"). The work, which was undertaken between March 1999 and July 2000, was organised as follows:

- Initial visits by the expert to five Member States with the intention of identifying 'best practice' in compiling non-financial National Accounts for S.121 to S.125 (see below).
- Splitting the CCs into the following two groups:
  - Group 1: Cyprus, Bulgaria, Latvia and the Slovak Republic. These 4 countries had not previously received technical assistance from Eurostat.
  - Group 2: Czech Republic, Estonia, Hungary, Lithuania, Poland, Romania and Slovenia. These 7 countries had previously received Eurostat technical assistance.
- The expert's work for the Group 1 countries involved:
  - analyses of the CC responses to a standard questionnaire on their sources & methods;
  - one 2-day mission to each of the countries;
  - preparation of an assessment report, including recommendations for improvements.
- The expert's work for the Group 2 countries involved:
  - the development of country-specific questionnaires & analysis of the CC responses;
  - one 2-day mission to the countries (only Hungary & Slovenia were not visited);
  - preparation of an updated assessment report, including recommendations.

2. What is the output of a financial corporation?

The subject matter of Activity A4 is specialised. Before describing the project results, Sections 2 & 3 provide the definitions and concepts needed to better understand what is meant by the output of financial corporations and how this is measured under ESA95 (or SNA93).

The sector financial corporations (S.12) consists of all corporations and quasi-corporations which are principally engaged in financial intermediation and/or activities which are auxiliary to financial intermediation. *[See ESA95 para. 2.32.]*

What is financial intermediation?

Financial intermediation may be defined as a productive activity in which an institutional unit incurs liabilities on its own account, for the purpose of acquiring financial assets by engaging in financial transactions on the market. The role of financial intermediaries is to channel funds from lenders to borrowers by intermediating between them. They collect funds from lenders and transform, or re-package them, in ways which suit the requirements of borrowers. They obtain funds by incurring liabilities on their own account, not only by taking deposits but also by issuing bills, bonds or other securities. They use these funds to acquire financial assets, principally by making advances or loans to others, but also by purchasing bonds, bills or other securities. A financial intermediary does not simply act as an agent for other institutional units but places itself at risk by incurring liabilities on its own account. *[SNA93 para. 4.78]*

The sector is subdivided into five sub-sectors, S.121 to S.125:

a) the central bank (**S.121**);
b) other monetary financial institutions, most of which are known as banks (**S.122**);
c) other financial intermediaries, except insurance corporations and pension funds (**S.123**);

d) financial auxiliaries (**S.124**);
e) insurance corporations and pension funds (**S.125**) *[See ESA95 2.41]*

The primary function of insurance corporations (S.125) consists of the pooling of risks such as mortality or disability (life insurance) and risks such as accident, sickness, property loss & damage, etc. (non-life insurance). The pooling of risks is coupled, in the case of most life insurance and all pension funding, with providing policy-holders with a vehicle for the investment of their savings. Mutual funds and other investment firms (part of S.123) incur liabilities through the issue of shares etc and transform these funds by investment in financial assets and/or real estate. In this way they also act as a vehicle for the investment of savings, as with life insurance corporations, by pooling investment risks and acting as a channel through which ownership of the productive assets of an economy can be spread more widely. *[An elaboration of ESA95 2.35-2.36]*

The provision of services that are auxiliary to financial intermediation may be carried out as secondary activities of financial intermediaries or of non-financial enterprises, or they may be carried out by specialist agencies or brokers. The latter consist of agencies such a securities exchanges and brokers, flotation companies, loan brokers, insurance brokers, etc. *[SNA93 4.80, with additions.]*

3. How is the output of financial intermediaries measured?

The following passages explain the *rationale* underlying the definitions set out in *ESA95 3.63*.

Services not charged for explicitly. It is generally accepted that financial corporations do provide services, such as money transmission and account management, to their customers, who are mostly non-financial corporations and households. The various services or operations mean, evidently, that financial corporations incur costs, whether external or internal, and enable them to make an operating profit. Many of these operations, however, are not charged for explicitly. So their value cannot simply be measured as sales turnover with the usual adjustments. Nor is it usually possible to enumerate the quantity of each specific type of activity and to apply 'shadow' prices to the activities which are not explicitly charged for, based on those which are. For one thing, the announced prices often apply only to a small segment of the market. For another thing, the detailed activities themselves are often difficult to specify: for instance, the cost to a bank of offering a loan includes the need to provide a margin for the risk of future default.

Alternatively, the aggregate value of the services produced can be viewed from the 'bottom up' – as total costs plus profit. Usually, however, it cannot be measured in this way because the national accounts and commercial concepts of operating profit differ, for instance, in regard to the treatment of holding gains, and in other ways.

Financial intermediaries such as banks. These use the overall margin – between the interest etc. which they receive and the interest which they pay – as the means with which to cover costs and make a profit. Therefore, the convention has long been adopted in NA that the output of financial intermediation, in so far as not charged for explicitly, can be measured in a similar way. The output not charged for explicitly is now known as "financial intermediation services indirectly measured" (FISIM) and remains defined as the difference between all the flows of interest etc., in and out, having excluded – as non-operational – that part of the total interest or other property income received which is deemed to have arisen, not from the reinvestment of customers' funds, but from investing share capital and reserves ('own funds').

Other intermediation services have similar features – for instance, the service of intermediating (buying or selling) foreign exchange or securities is partly charged for explicitly, by commissions, and partly indirectly through using the simultaneous spread between the 'wholesale' buying and selling prices of foreign exchange or securities. This leads to difficulty when an intermediary has held such assets over a period, because then part of the overall gain or loss has arisen from holding the assets for this time.

Insurance. The indemnities paid are deducted in measuring output, which is often known as the "insurance service charge". Thus, in the same way as with banks, the value of the services produced is the amount available to pay the costs of providing the insurance service (indemnifying risks) and the balance is operating profit. But for the same reasons as with banks, output cannot usually be measured 'bottom up'.

In the case of non-life insurance, indemnities are regarded as transfers by policyholders (taken in aggregate) of the main part of their premiums to claiming persons (again taken in aggregate). Unfortunately, when using the 'top-down' approach to measuring output, it cannot simply be measured as premiums due, less claims paid or provisions for future claims.

With life insurance, output has long been regarded as including also the property income on the policyholders' funds held by insurance corporations; and this is now formally attributed to the policy-holders as their property income and is regarded as being returned by them to the insurance corporations. As in the case of banks, property income arising on the investment of own funds is excluded; but, if the assets representing the investment of policy-holders' funds are not specified, a rule of thumb has to be used to make the separation (ESA95 4.68).

In ESA95/SNA93, insurance output also includes the property income of non-life insurance corporations on assets representing the investment of policy-holders'

funds (e.g. premiums held in anticipation of claims), if need be using the same rule of thumb as for life insurance. Again, the income is attributed to the policy-holders and returned by them as if they were supplements to their premiums. In effect, because of the existence of this property income, actual premiums are lower than they otherwise would be. So there is a close analogy with FISIM – in both cases, part of the service provided is not charged for explicitly.

Output of financial intermediaries – **summary**. Measuring output 'top down' is complicated in the case of financial intermediation services by the fact that many of the services provided are not sold in the usual way, there being no explicit charge; and in the case of insurance, by the use of estimated investment income on policy-holders' funds as part of the pool of operating revenue which is used to service the cost of indemnities.

Output and intermediate consumption of financial intermediaries. In general, there are few conceptual difficulties in measuring the intermediate consumption of financial intermediaries. However there is a special feature in the case of insurance, because many risks accepted by insurers are in part reinsured, and not wholly with other resident insurance corporations. An insurance corporation which accepts risks from its customers makes a service charge which should not be affected, at the level of the individual corporation, by the extent to which responsibility for bearing the risks is transferred ("ceded") to reinsurers; the reinsurers' share of the service charge is part of the output of the first insurer's services to its customers, known as "direct insurance", and is also intermediate consumption, of reinsurance services, by the direct insurer. If all transfers of risk between direct insurers and reinsurers were within one economy, these amounts would disappear upon consolidation, but this has never been the case, as many risks are ceded to reinsurers resident in other countries. (In fact, ESA95 prefers full non-consolidation – see Annex 3, para. 40.)

The CCs, in particular, are major importers of reinsurance services provided by parent companies or joint venture partners abroad, or by specialist reinsurers. The measurement of the value of exports & imports of reinsurance services is fraught with difficulty.

Financial auxiliaries. Financial auxiliaries charge in full for their services. Often this charge is largely or wholly in the form of an introduction fee paid to the auxiliary by the intermediary whose product is sold (being part of its intermediate consumption). Charges can also be made to the customers who purchase the financial products recommended by the auxiliary. Therefore, there are few conceptual problems in measuring auxiliaries' output. The problems are more of register building and correctly documenting the main activity, and evaluating subsidiary activities, when an institutional unit combines acting as financial auxiliary with another activity such as intermediation proper or non-financial activities such as selling real estate agency services or travel agency services.

4. An outline description of the work undertaken for Activity A4

At the start of Activity A4, the expert, John Walton, visited a selection of Member States (MS) with the intention of identifying 'best practice' in compiling non-financial NA for S.121 to S.125 (see Section 2 for definitions). These visits proved to be most useful and the experiences gained were later documented for Eurostat[1]. However, one of the expert's findings was that there is considerable variation in practices among the MS. This made it rather more difficult to recommend 'best practices' to the CCs, as originally foreseen.

Following his visits to the Member States, the expert then gave technical assistance to the two groups of CCs.

The expert undertook a mission to each of the four Group 1 countries, analysed their responses to a standard questionnaire and wrote an assessment report (incorporating comments from the CCs), with a list or recommendations accepted by the CCs. Later, the expert summarised the reports, as updates of the previous assessment reports.

In the case of the Group 2 countries, the expert designed country-specific questionnaires for the CC to complete, carried out missions to five of the seven CCs, and prepared updated assessment and summary reports, again incorporating remarks from the CCs and a list of recommendations.

During each of his missions, the expert made a point of talking to the supervisory/responsible bodies outside the National Statistical Institute (NSI) as well as the relevant NSI staff. NA estimates for banks & insurance depend critically on close cooperation with these outside bodies and awareness of EU Accounting and Insurance Directives. The expert underlined the importance of a regular dialogue between the NSI and other bodies.

5. The results of Activity A4: the state of play in the Candidate Countries

The expert's assessment reports indicate that in most CCs the data sources now in place largely afford comprehensive coverage of the A4 activities. Likewise, compliance with the EU Accounting Directives is often complete, or is close to being complete. However, there are still substantial differences between the CCs, affecting the degree of ESA95 compliance, which is also affected by incompleteness, in some countries, of the adjustments needed to the basic statistics, in order to reach output and intermediate consumption, as defined in the national accounts.

[1] "Report on visits to five EU Member States aimed at studying 'best practice' in compiling the non-financial national accounts for S.121-S.125", submitted to Eurostat in February 2000.

The following are the main themes which emerged, as regards compliance with ESA95 of annual estimates at current prices:

a) In all countries, the main financial intermediaries, such as banks and insurance undertakings, are supervised. Occasionally, however, specialised intermediaries not dealing with the general public, within S.123, and others such as specialist reinsurers, are supervised less, or not at all, though the tendency is to embrace all. With one or two exceptions, the supervisor publishes detailed annual statistics, including the profit and loss account, for all supervised institutions; if he does not (e.g. insurance in the Czech Republic, for instance), a trade association usually does. This suggests that annual surveys by statistical offices of supervised financial intermediaries need only cover the same ground, to the extent that is needed to provide a framework for quarterly surveys – and then only when the supervisor's data does not cover the profit and loss account on a quarterly basis.

b) In addition, EU Directives on the publication in a common format of annual accounts exist both for credit institutions (widely defined) and for insurance undertakings. That for insurance undertakings is particularly detailed. The Directives cover both the profit and loss account and the balance sheet so that the data derived from aggregations are highly relevant to the estimation of output and intermediate consumption in the national accounts. Usually the data published by the supervisor are in the same format, perhaps with additional detail. The Supervisor may also collect additional detail without publishing it.

c) In consequence, administrative sources are largely sufficient to provide good estimates of value added for financial intermediaries, in the CCs, as in the MS. The only problem is with certain of the adjustments to the basic profit and loss account data which are needed for NA, in particular, the exclusion of holding gains, or holding losses (such as write-downs or write-offs of loans extended by banks); usually, most of this information can be securely estimated on the basis of the administrative sources. In addition, certain re-classifications are needed, for instance, the claims management expenses (claims handling costs) of insurance corporations are part of their labour costs or intermediate consumption, and should not be treated (as in the basic data) as part of claims due to policy-holders. Again, supplementary information is usually available to supervisors which enables good estimates to be made.

d) It follows that, the further advanced that CCs are in implementing the EU accounting Directives, the better placed they are to produce good estimates of output and intermediate consumption. Most countries are now well advanced with this process, but a few lag behind. Eurostat's parallel moves towards the development of a common system of 'meso' level data for financial institutions, in the form of Annexes adapting the common format of the Structural Business Statistics Regulation, will work in the same direction. (At present Annex 5 for insurance undertakings is in force; and there are drafts of Annexes 6 and 7, for credit institutions and pension funds, respectively).

e) Moves towards centralised supervision of all financial intermediaries (Estonia, Hungary, Latvia) will be helpful in improving the exhaustiveness of estimates for S.123, and the quality of the estimates for this sub-sector on the national accounts basis. Many CCs have investment firms of one kind or another, including "Units for Collective Investment In Transferable Securities" ("UCITS"), often as the consequence of privatisation, so the main thrust for centralised supervision is to cover this field better. Highly specialised intermediaries (such as those listed in ESA95 para. 2.55) exist as separate institutional units in only a few CCs, but often similar functions are carried out by non-separated divisions of banks. Likewise, specialist reinsurers are rare in CCs, though there are a couple of them in Slovenia.

f) CCs are major importers of reinsurance services, especially for non-life risks – even though a major element of non-life insurance in most CCs, motor insurance (sometimes compulsory for third-party risks), is usually reinsured to a lesser extent than other non-life risks. Life risks are reinsured even less; in many CCs, assets representing the investment of own funds are unusually high by comparison to assets representing the investment of technical liabilities (amounts insured by life policy-holders), so that there is a high degree of security in the ability to cover claims on the risks. It is important that imports (and exports) of reinsurance services should be measured on an accounting basis, rather than on the cash basis previously adopted in the balance of payments[1]. The expert has recommended ways of achieving this using data available to supervisors, and is (May 2001) preparing a report for Eurostat on practi-

[1] When reinsurance services are imported, amounts due from reinsurers in respect of claims arising on reinsured risks will exceed the cash received from them, whenever the value at current prices of reinsured business is rising; and in the same circumstances, the amounts of 'earned' premiums due to be ceded to reinsurers will fall short of premiums ceded in cash. So intermediate consumption of imported reinsurance services, if measured on the cash basis, will be overstated. When the value of transactions with reinsurers is rising, the difference between the figures on a cash basis and on accounting basis represents an increase of short-term financial assets (part of "prepayments of insurance premiums and reserves for outstanding claims", item F.62 in the financial account), and when the value is falling, an increase in a short-term liability.

cal lessons to be learned generally, including informal guidelines to improve estimates of both direct insurance and reinsurance, when they are taken separately.

g) Pension funding is in its very early stages in the CCs, though non-employer-based funds exist in the Czech Republic and were being contemplated in Poland. The Czech funds are supervised, so that good data are available.

h) As already mentioned, financial auxiliaries pose a rather different problem – not that of output measurement, but that of ensuring exhaustiveness and of separating output of main products from output of subsidiary products. In general, CCs seek to cover financial auxiliaries through their regular surveys based on their register of enterprises. It is sometimes possible to cross-check estimates of auxiliaries' turnover, at least as a minimum, by using the data of payments of commissions by financial intermediaries, for instance, insurance corporations' payments of commissions to independent selling agents (often known as "brokers"), which are a main part of insurers' "acquisition costs". Poland is following this route. However, not all sales revenue of auxiliaries is in the form of commissions from intermediaries; some may make direct charges to households for the advice which they give.

i) CCs face other problems which were not directly specified in the expert's terms of reference; mostly they were covered by other experts providing technical assistance for the other projects featured in this publication, but for financial corporations the problems in these areas are rather different from those for non-financial corporations. The expert gave informal advice, when asked, in the following areas:
   - Quarterly estimates.
   - Estimates of output and intermediate consumption revalued to constant prices. (Since the expert's visits, Eurostat has drafted a Handbook which gives advice on the application of price and volume concepts to financial service products.)
   - Links between the non-financial accounts for financial corporations and the financial accounts.
   - The allocation of FISIM to the users of the services. During Activity A4, the MS were preparing exploratory estimates following the requirements of Regulation 448/98[1], but CCs were under no obligation to do so. Nevertheless, the Slovak Republic decided to 'shadow' this process and produced some estimates.

6. Recommendations for each Candidate Country

The expert's reports for each CC contained recommendations for the further work required. **Annex IV** lists the recommendations that the expert considered to be the most important.

7. Eurostat's plans for further work with the Candidate Countries

The expert's reports identified that there was much still to do in complying with ESA95. In recognition of this, Eurostat proposes further technical assistance to the following countries:

- Hungary and Slovenia – as these two Group 2 countries were not visited by the expert.
- Cyprus, Romania, Slovakia, Bulgaria & Lithuania, as these CCs were clearly in need of further support.
- Missions to any of the remaining CCs who specifically request technical assistance

[1] COUNCIL REGULATION (EC) No 448/98 of 16 February 1998 completing and amending Regulation (EC) No 2223/96 with respect to the allocation of financial intermediation services indirectly measured (FISIM) within the European system of national and regional accounts (ESA), OJ No L 58, 27.2.1998.

CHAPTER 7
Activity A5: Tourist Expenditure and Shuttle Trade

1. Introduction

During discussions with the Candidate Countries (CCs) in 1997 and 1998, it became clear that estimates of tourist expenditure were not securely based and that "shuttle trade" activity was frequently not captured at all. The aim of Activity A5 was to assess if survey data could be collected in the CCs in order to provide improved estimates of tourist expenditure and also to investigate the possibility of providing estimates of 'shuttle trade'. This chapter describes:

- the results of an feasibility study undertaken between end-1998 and May 2000;
- the pre-pilot investigations undertaken between July 2000 and March 2001; and
- the proposals for a main pilot study.

The CCs participating in the project were: Bulgaria, Cyprus, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia. The technical assistance for the feasibility study was provided by two experts, Irene Rauta and Robert Beatty. Irene Rauta also provided technical assistance for the work on the subsequent pre-pilot investigations and the pilot proposals. Hereafter, Mrs Rauta and Mr Beatty will be referred to as the 'experts'.

2. The feasibility study undertaken between end-1998 and May 2000

During the feasibility study, a questionnaire was completed by the CCs in which information was collected about their current National Accounts (NA) and Balance of Payments (BoP) methodology, their experience of border surveys and general survey expertise, and their knowledge of shuttle trade and shopping across their borders. After an analysis of the questionnaires completed by the CCs and the submission of an interim report, the experts undertook study visits to Cyprus, Poland, Slovenia and the Czech Republic to assess the situation in those countries in more depth and to study the practicalities of undertaking a pilot survey. The experts then produced a final report covering the whole feasibility study; this chapter makes extensive use of the experts' final report.

2.1 Description of tourist expenditure and shuttle trade

Annex V provides much fuller descriptions of tourist expenditure (TE) and shuttle trade (ST), including their treatment for NA and BoP purposes.

Tourist expenditure, for NA and BoP purposes, comprises expenditure by residents of a country during visits abroad and expenditure by non-residents during visits to the country.

The term *shuttle trade* can be roughly defined as informal trading in goods, which are transported from one country, in which they are relatively cheap, to another country or countries where they are sold at a profit. It is the intention to generate income, which distinguishes shuttle trade from tourist expenditure.

Diagram 1 illustrates *shuttle trade* in the context of the total expenditure by travellers, including tourist expenditure. It can be seen that travellers of all types spend money on goods and services. Travellers' total expenditure on goods consists of purchases for their "**own use**" (i.e., goods bought for their own consumption, on behalf of others, or bought as gifts) and for "**resale**" (i.e. goods bought with the intention of making a profit when resold). Shuttle trade relates to goods, not services (see Annex IV).

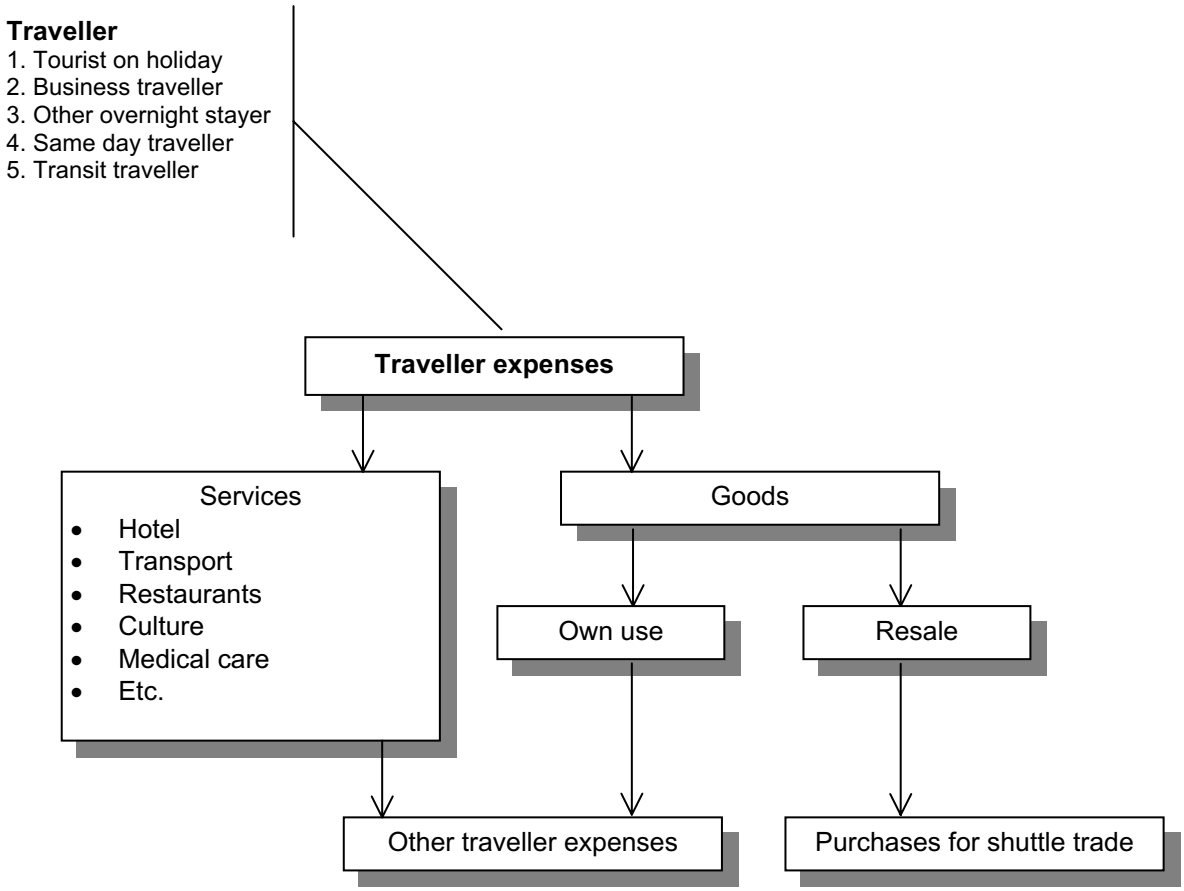
The most common form of ST is likely to be that in which residents of one country travel abroad and bring back goods which are cheaper in another country, for sale in their own country at a profit. In NA and the BoP, shuttle trade should be treated in the same way as importing and exporting and distinguished from the purchase of goods abroad for the traveller's own use. In practice, however, little is done to estimate the extent of shuttle trade. Shuttle traders take advantage of Customs regulations which allow travellers to bring goods from abroad up to a certain value without paying duty, provided they are for the traveller's own use or to give away so the profit from shuttle trading is very unlikely to be declared. For NA purposes, ST has two distinct parts; the action of bringing the goods into the country (this is relevant to both NA and BoP) and the further selling on of the goods with the intention of generating income (relevant to NA only).

Estimates of Tourist Expenditure (TE) in the CCs are commonly based on currency exchange information provided by the national Central Bank, in most cases supplemented by data collected in surveys conducted at border entry/exit points. These surveys normally cover foreign visitors on departure from the country but may or may not cover residents returning after trips abroad. An acknowledged weakness is the reliance on currency exchange information in that, in some of these countries at least, transactions in foreign currencies, such as US dollars, German marks or the currencies of neighbouring countries, occur frequently.

2.2 Questionnaire information provided by the CCs

The CCs completed the questionnaire designed by the experts. There had been little or no formal investigation of shuttle trade, so the CCs provided information on the basis of 'common opinion'. Both ST and purchases of goods for own use by travellers seem to occur across most land borders in these countries, often in both directions when some goods are cheaper in one country

Diagram 1: Distinguishing Shuttle Trade from Other Expenditure by Travellers



and some in the other. A certain amount of this sort of activity occurs by air and sea and goods may be brought from countries further afield than just across the border. The transactions described by the CCs involve a very wide variety of goods, most frequently food, clothing, cigarettes/tobacco, petrol/fuel and alcohol. Though people sometimes cross borders in order to make personal use of services which are cheaper abroad, there is no indication that this is done on behalf of other people for profit - almost inevitably the consumption of services is usually immediate and there is little scope for 'selling-on'. Further, there was no mention by the CCs of people crossing borders in order to offer services (informally) abroad. It was generally thought that because shuttle traders might be evading duty, falsely claiming unemployment benefit or possibly transporting goods illegally across the border, many of them would be unlikely to co-operate honestly in a border survey. There were indications, however, that because of the economic and social value of border trading and cross-border shopping, the authorities, including Customs, take a relaxed attitude towards shuttle trading. There was therefore a possibility that some shuttle traders would be willing to participate and acknowledge their trading activities, but this needed to be confirmed through field trials undertaken during the pre-pilot investigations.

2.3 Border surveys carried out in the CCs

Border surveys had been conducted in all the CCs except Bulgaria and Romania, those in Slovenia and Poland having done the most work in this area. The current border surveys carried out in the CCs varied in sample design. For example, the survey in Slovenia used a systematic two-stage probability sample with strict instructions on the selection of informants, while that in the Slovak Republic simply set quotas for the number of interviews to be conducted in a day, at whatever time of the day interviewers chose. Fieldwork for the surveys had usually been concentrated in a few short periods at different times of the year, with insufficient spread to give confidence that the samples were truly representative of the whole year. Some CCs acknowledged that this had been due to budgetary constraints.

2.4 The selection of Poland for the pre-pilot investigations

The wide variation in survey experience and expertise in the CCs suggested that it would be most cost-effective to concentrate the next stage of the project on a smaller number of countries and that, to avoid unnecessary duplication of effort, it would be sensible for one country to take

the lead. Poland appeared to be the most suitable in that it had conducted border surveys, which were specifically, designed to investigate cross-border shopping (though not ST). Poland, unlike Slovenia, which had also carried out well-designed border surveys, believed that ST across its borders was quite widespread. It was therefore recommended that Poland should be invited to take the lead in carrying out further exploratory investigations with a view to mounting a main pilot later. As a check on the methodology, it was suggested that countries bordering on Poland (in particular, the Czech and Slovak Republics) should be invited to participate with the view that they would later conduct pilot surveys on their borders with Poland for comparison with the data collected in Poland.

2.5 Objectives and proposals for the pre-pilot investigations

The ultimate objective of the main pilot was the development of border survey methodology which might be generally applied as a model in all CCs, albeit with appropriate adaptations. For this purpose, the methodology would be tested during the pre-pilot investigations on travellers using different methods of transport through land borders, and ideally, also on travellers through sea ports and airports.

It was proposed that, at the pre-pilot stage, investigations should be carried out at a variety of entry/exit points. It would be necessary to obtain permission from the authorities to carry out the survey at each entry/exit point and to investigate the physical conditions and traffic flow. Field tests would be needed to compare face-to-face interviewing with self-completion (the latter would be cheaper, but the former would give better results) and to test the sampling procedures and the length, content and general acceptability of the questionnaire. Field tests would also be conducted to ascertain the maximum number of selected contacts an interviewer could deal with per hour when traffic flow was at its heaviest. This would enable estimates to be made of the number of interviewers needed during busy shifts using a selection of 1 in n travellers; the sampling interval could be varied, but a fixed interval would have to be used throughout a shift.

3. The pre-pilot investigations undertaken between July 2000 and March 2001

The pre-pilot study was carried out in two phases. The first phase was concerned primarily with data collection, the comparison of self-completion and face-to-face interviewing, the development, testing and modification of questionnaires and an assessment of the success of the survey method in obtaining information about shuttle trade. The second phase was designed mainly as a test of field procedures for selecting travellers systematically for interview, but also continued to test the collection of data on shuttle trade and the modified field documents as a whole. In the event, it was decided not to attempt coverage of air traffic, which accounts for a very small proportion of foreign traffic in Poland.

3.1 Phase 1: the first field tests

The first test was carried out at four land border crossing-points on the borders with Germany, the Czech Republic, Belarus and the Ukraine. Both face-to-face interviewing, with a rather lengthy questionnaire, and a shorter self-completion questionnaire were tested. Direct questions on shuttle trading were included in both and the questionnaire used for the interview included a question to interviewers on their opinions about whether or not respondents were shuttle traders. Response rates were affected by the unusual heat of the day and traffic volumes were reduced at two of the sites because of a religious holiday. The test showed clearly that self-completion is inappropriate for a survey of this kind. Response rates were much lower than for the face-to-face interview and a very large majority of people who completed the self-completion questionnaire had to be helped by interviewers. Interviewers agreed that the face-to-face interview was much too long. Few shuttle traders identified themselves in response to direct questions, but interviewers judged that many more respondents were in fact shuttle traders.

3.2 Phase 2: the second field tests

A much shorter questionnaire was used for face-to-face interviewing in the second test, which took place at three crossing-points on land borders with Germany and the Czech and Slovak Republics and one sea-crossing between Poland and Germany. Travellers were counted with the help of hand tallies and selected systematically, using sampling intervals set in advance on the basis of estimates of traffic volumes and the number of travellers an interviewer could deal with per hour. The sampling procedures were carried out without difficulty though the sampling intervals used at one crossing-point were very much too small because the volume of traffic was much higher than usual, as many pilgrims were crossing the border for a religious festival. Response rates were very high, apart from the loss of interviews because of the inappropriate sampling intervals and very few respondents broke off interviews or failed to answer individual questions. A few Poles returning from abroad admitted to being shuttle traders but no foreign residents did so. Interviewers showed less confidence than in the first test in giving opinions about shuttle trading, particularly among foreign visitors.

3.3 Main conclusions from the pre-pilot tests

The main conclusions drawn from the pre-pilot field tests and from subsequent discussions were that:

- the appropriate method of data collection is face-to-face interviewing;
- systematic sampling of travellers can be carried out successfully at land border crossing points;
- before sampling intervals are chosen, as much information as possible about traffic volumes and unusual events like holidays should be collected;
- interviewers' opinions are likely to give only very rough indications of the extent of shuttle trade;
- the opinions of Customs officers are likely to be more reliable than those of interviewers;

- travellers are ready to give estimates of their total expenditure during foreign trips;
- travellers who buy goods to take home are willing to say how much they paid for them and to guess what they would have had to pay for them in markets in their own countries;
- although few shuttle traders identify themselves when interviewed, estimates of their expenditure on and profit from shuttle trade might be made from the information supplied by people who claim to have bought goods for their own use.

4. The proposals for a main pilot

4.1 Timing and location

Pilot work in Poland would have to be postponed until 2003 as the Central Statistical Office will be fully occupied for the whole of 2002 on the Census of Population and the Agricultural Census. Field work in other countries would be impracticable as the Central Statistical Offices of the Czech and Slovak Republics have no field or administrative staff with experience of such work and there is little or no shuttle trade in Slovenia.

4.2 Preliminary investigation of the possible participation of Customs officers

Because no sure way had been found of identifying shuttle traders in the survey itself, a main pilot would have to be preceded by exploration of the possibility of enlisting the help of Customs officers who, because of their day-to-day experience, would be better able to make reliable judgements than interviewers. If the customs authorities did not agree to participate, the possibility would remain of carrying out a pilot survey, which would provide most of the required information, but only very rough estimates of the extent of shuttle trade.

4.3 Cost constraints

Preliminary cost estimates provided by the Polish Central Statistical Office suggested that the cost of extensive fieldwork would be prohibitive. A pilot survey from which a quarter's estimates might be derived and compared with existing estimates, as envisaged at an earlier stage, would almost certainly be too ambitious.

4.4 Proposals

The following recommendations were made for further research:

- The Polish Central Board of Customs should be approached formally to discuss the possible participation of Customs officers in further research. Customs officers might carry out checks at land crossing-points on selected days and record the number of travellers crossing the border, which they judged to be shuttle traders. They would observe travellers and talk to any they thought might be shuttle traders before arriving at a final opinion. This would involve the use of extra Customs staff as checks for shuttle trade could not be combined with a Customs officer's normal duties. A second possibility would be for Customs officers at all crossing-points to be asked to keep regular counts of the numbers of travellers they judged to be shuttle traders; they would make regular estimates of the proportion of the total traffic accounted for by shuttle trade. The second method would have the disadvantage that Customs officers do not normally concentrate on potential shuttle traders during their official duties and do not stop them unless they suspect them of attempting to contravene Customs regulations. Customs authorities in the Czech and Slovak Republics might also be asked to participate. This would add confidence to the results if similar estimates were given independently on both sides of a border and, if the Polish Customs authorities were unwilling to participate, estimates of shuttle trade on a Polish border might be provided from the other side.
- Systematic sampling of travellers of the kind tested at the pre-pilot stage should be used in future pilot work. Improved coverage of time-slots over the survey period would also be necessary. In the present Polish survey, interviewing is concentrated in just seven days in each half-year, one Monday, one Tuesday, and so on, selected randomly. Resources should be concentrated on a spread of fieldwork over time rather than on full coverage of crossing-points. The sample design should allow for some investigation of the effect of clustering in a few time-slots on precision. For example, two sets of seven days might be selected in a quarter, by the random method used for the existing Polish survey, and the results for individual days of the week and the 'week' as a whole compared. If funding allowed it, this very simple test might be elaborated. If possible, different 'weeks' should be selected for different crossing-points and more than two 'weeks' selected for each. Comparisons might be expected to give an indication of the need for improvement in the spread of fieldwork over time.
- New questionnaires might be developed to serve the needs of the existing Polish border survey as well as those of a Tourist Expenditure and Shuttle Trade survey. The questionnaires used in the second field test could be shortened making it easier to include additional questions. Questions might also be included to cover the needs of the tourism industry which are at present served by a border survey carried out by the Polish Institute of Tourism, though the Central Statistical Office thought it unlikely that such a combination of surveys could take place in practice. Questionnaires might be developed to cover at least some of the needs of the tourism industry as these would enhance their usefulness as models for other countries. It was also possible that a multi-purpose survey of this sort might be more appropriate in Poland in the future, for example, if there were an increase in tourism by air and rail.

CHAPTER 8
Activity A6: Development of a National Accounts database and transmission of data using EDI

1. Introduction

Since 1996, Eurostat has been involved in the collection of National Accounts data from the Candidate Countries. From experiences gained in this process and from contacts made with the participating Statistical Offices, two conclusions emerged. First, databases for holding and maintaining this NA data varied greatly among the CCs, some countries having no database at all. Secondly, the collection of this NA data by Eurostat (and other international agencies) would benefit from a more automated, secure and faster means of transmission.

Since the mid-1990's, Eurostat had been promoting the use of EDI by existing Member States reporting to Eurostat - in particular, encouraging the use of GESMES for data transmissions. As there was no mechanism of transmission firmly established between the CCs and Eurostat, an ideal opportunity presented itself to benefit both from the existing experience and infrastructure from this on-going GESMES work.

The purpose of Activity A6 was therefore to develop and install a multi-user database to maintain NA data and produce the required GESMES format transmission of data. Apart from making the CCs more aware of the advantages of electronic data transmission, Activity A6 was therefore intended to provide a practical way of assisting the CCs in the day-to-day maintenance and consultation of their data.

This chapter represents a summary of the work undertaken with the Candidate Countries (CCs) under Activity A6. The participating countries were Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia. The technical assistance was provided by Vernon Staplehurst, hereafter referred to as the 'expert'.

The work under Activity A6 was carried out in two phases, the first in the period October 1998 to March 2000, the second between April 2000 and March 2001. As the second phase represented a development of what had been achieved in the first phase, this chapter provides a summary of the two phases combined. The work included a high element of software development followed by installation and the training of users in the CCs.

2. Documentation

An initial discussion document to introduce various proposals for the system was prepared at the start of Activity A6 and distributed to each CC. This document was used to give an overview of the proposed system and to ensure that no essential features were missing. The system functional specification was elaborated as the system developed and also included a user process description. All documentation was updated as the new system evolved. The expert prepared an interim and final report for each of the two phases mentioned above.

3. Missions performed

The expert undertook two missions to all of the participating CCs, who each received the current version of the software. Training was also given by the expert to all participating countries. A wide range of situations was encountered in the CCs, which were documented in the expert's mission reports, as well as the interim and final reports.

4. Software features

The following features were developed and are now present in the Access software system; the two phases of the A6 project are distinguished in highlighting the progress achieved:

4.1 Establishment and maintenance of meta-data

At the conclusion of Phase 1:

- The meta-data describing the time series and other associated data was completed and is easy to use.
- The system was delivered with a large number of ESA95 time series and tables already defined. At the conclusion of Phase 1, Tables 1 to 5 of the ESA95 questionnaire[1] had been introduced for current prices, 1995 constant prices and previous year's prices.
- The ESA95 texts describing the time series were already defined in English, French and German. To make the system more comfortable for users on a day-to-day basis, texts in the home language could be entered, and the user could then choose between the available translations while accessing the system, including his native language.
- Data was set up for non-financial National Accounts.
- By inputting user login ids for people who will access the system, a certain control was given as to who may access which data. Users could be given only read access to data, if required.

At the conclusion of Phase 2:

[1] COUNCIL REGULATION (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community, Annex B: Transmission programme of data.

- The system meta-data had been extended to include most of the ESA95 time series and tables. At the conclusion of Phase 2, Tables 1 to 7, 9 and 11 of the ESA95 questionnaire had been introduced for current prices, 1995 constant prices and previous years' prices.
- Data is now set up for financial as well as non-financial National Accounts; it is still possible to introduce other domains of data to the system, such as Transport statistics.
- The equations defining relationships between ESA95 series are now maintainable on a table basis, so that the user now selects the table, which is of interest, and sees purely the equations that relate to this table.
- User login for access to data may now be protected by password if required.

4.2 Input and maintenance of statistical data

At the conclusion of Phase 1:

- Loading of data into the system from existing data sources was automated, with users defining a conversion bridge between codes. The system also offered the possibility for users to update data interactively via an input screen. By inputting information on tables of interest to clients, the user is warned whenever a value changes of interest to a particular client. The user is reminded to retransmit the data to his client. If a time series is set up to be calculated from equations, then the input screen gives the user an on-line breakdown of how the value is derived from its equation components.
- The system allows for the possibility of having multiple versions of data, supporting annual, quarterly and monthly data. This affords the opportunity to store and refer to various revisions of data for comparison purposes. Versions may be locked, stopping users from changing values in versions, which might have been used in publications etc.
- The system delivered to each country was initialised with a version of data containing the last figures delivered to Eurostat.

At the conclusion of Phase 2:

- Two new methods for loading data automatically and easily into the database were established. The first alternative consists of setting up an Excel loading model, which describes for a particular set of data how the time series are held across the columns of a certain Excel spreadsheet. The system then reads directly from this file and transfers all the data into the appropriate time series. The second alternative for loading consists of using GESMES files, generated for example by the system in another PC. This means that the system may be able to hold data for several or all PC's, with various possibilities to make effective comparisons between the home country and other PCs.
- An additional option was introduced allowing the user to request the consolidation of quarterly data into annual figures. This means that as 4th quarter data becomes available, the system can be used to automatically derive first estimates for annual data.
- As current and fixed year constant price data are introduced, previous year constant price data are automatically calculated and maintained by the system. This data is then available for consultation in all the normal ways, and can be transmitted on to Eurostat. A simple rule of three is used, maintaining growth rates for the series. This automatic calculation of data can also be adjusted so that fixed year price data can be calculated from data at previous year prices, a useful feature for countries that only have constant price data in previous years' prices.
- Context information on the last table, period, version etc are also maintained on the system so that the user is automatically positioned at the data which he last consulted. This helps to make the user interface more convenient.
- When selecting the table a user wishes to work on, the system also allows for the selection of table by time series. Hence, a user can choose a particular time series and obtain a list of all the tables in which this time series is mentioned. This is particularly useful for users who are not so familiar with the ESA95 tables.

4.3 Data validation

At the conclusion of Phase 1:

- A comprehensive validation checking and reporting mechanism was in place allowing the user to ensure the consistency and quality of his data. A series of validation equations, which define the consistency, rules between time series may be input, and then drive appropriate reports which highlight problem values.
- All validation equations for ESA95 Tables 1 to 5 were defined on the system, countries being able to enter more equations as they deem fit.
- It was also possible to define calculation equations, which actively calculate and maintain time series values based on other time series values.
- To assist in the preparation and checking of quarterly data, there is a report, which compares the total of the four quarters (or the average) to the equivalent annual figure for the year. This helps to highlight inconsistencies within the user's quarterly and annual data.

4.4 Output formatting

At the conclusion of Phase 1:

- The aim of the system was to produce EDI messages in GESMES format for transmission to Eurostat, which the system already handles. In addition, the system can produce CSV files for loading into spreadsheets, HTML files for loading into ap-

Table 1: Results achieved at the end of Phase 2

Candidate Country (CC)	Successfully Installed?	On the Network?	Live GESMES transmission?
Bulgaria	YES	YES	YES
Cyprus	YES	YES	YES
Czech Republic	YES	YES	YES
Estonia	YES	YES	YES
Hungary	YES	YES	YES
Latvia	YES	YES	YES
Lithuania	YES	YES	YES
Poland	YES	YES	YES
Romania	YES	YES	YES
Slovak Republic	YES	YES	YES
Slovenia	YES	YES	NO

propriate web-browsers and screen or printer reports for supplying data to more ad-hoc enquiries from clients.

- To provide data on a more comparable basis such as percentage of GDP or expressed in euros, the system allows for unit conversion rules to be stored on the system, with the user then able to request output reports in these units. Each system has been supplied with 10 conversion rules, including growth rates.

At the conclusion of Phase 2:

- There are now two additional reports for multi-country data reporting. This allows users to receive data for all the countries, which have been loaded into the system. In addition, various output units have been added to the system as standard, with various growth rates and price deflators available.

5. Current situation - a summary

Table 1 gives an overview of the current situation at the end of Phase 2 (i.e. in March 2001), with regard to the software system and its installation and use so far in each CC. The details on the current situation for individual CCs is given in the expert's final reports for Phases 1 & 2.

All CCs except one have now successfully transmitted GESMES to Eurostat using the installed software. The received GESMES files have then been loaded into the Eurostat (unit B2) production databases and, after validation, loaded into the New Cronos reference database. As data deliveries become fuller, the importance of this efficient and automatic link between Eurostat and the CCs becomes more critical. Data for the CCs are now displayed alongside Member State data in New Cronos, thereby increasing their profile.

6. Project Conclusions

The software currently in place performs all the necessary functions for successful transmission of GESMES data to Eurostat for Tables 1 to 7, 9 and 11 of the ESA95 standard.

The software is now readily accepted in all CCs and there remains just one CC to transmit from the system, a situation which should change in the very near future.

Transmission of ESA95 National Accounts data from the CCs has become more regular and complete, the benefits of an automated data storage and transmission process are apparent to everybody involved in the data preparation and collection processes.

Data is also forwarded on an automatic basis to the OECD and the UN in Geneva, with the UN in New York about to start receiving annual data. The use of GESMES for these data forwarding procedures is essential, as the volumes have become too large for ad-hoc solutions.

CHAPTER 9
Activity A7: Changes in inventories, including the estimation of holding gains

1. Introduction

Changes in inventories represent one of the more volatile elements of final expenditure. The measurement of stock changes is critical, particularly during periods of high inflation. Their accurate measurement requires well-defined sources and methods. This is particularly important with regard to holding gains because windfall stockholding gains (or losses) due to changes in stock prices, do not add to (or subtract from) the level of economic activity. Activity A7 was therefore designed to collect information about the sources and methods used in the Candidate Countries to estimate changes in inventories (ΔI).

In many cases, the data available for the calculation of ΔI do not permit a 'perfect' estimation. Assumptions and approximations have to be made. The estimation methodology for ΔI (both at current and constant prices) is highly dependent on the kind of information on inventories that is available. In this chapter, section 2 provides the necessary ESA95 background. Section 3 then examines different data situations that can occur. The following sections describe Activity A7 and the results of the questionnaire completed by the CCs.

2. ESA95; some important definitions and relations

Changes in inventories are defined in ESA95 (paragraph 3.117) as follows:

"Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and the value of any recurrent losses of goods held in inventories".

ESA95 also distinguishes four categories of inventories: materials and supplies; work-in-progress; finished goods; and goods for resale.

Closely related to the calculation of changes in inventories are holding gains. Holding gains are the result of price changes during the period for which the inventory is held. Such gains are not part of output. Holding gains can be negative, in which case they are called holding losses. If there are no price changes during the accounting period, the holding gain is zero. Holding gains can be calculated using the following identity:

value of inventory at end of accounting period - value of inventory at beginning of accounting period
= change in inventory + holding gains.

Other important identities are:

- output = sales + ΔI of finished products + change in work-in-progress
- intermediate consumption = purchases – ΔI of materials and supplies.

where ΔI are positive if the inventories are growing, and negative otherwise.

Enterprises usually report on sales and purchases rather than output and intermediate consumption. Hence, the calculation of ΔI (and thus holding gains) goes hand-in-hand with the calculation of output and intermediate consumption.

3. Different data situations – from perfect information to no information at all

3.1 The ideal (and slightly less than ideal) situations: quantity data is available

In an *ideal* situation, data is available on the exact times and quantities of additions to and withdrawals from the inventory and the price of each product at those times. The calculation of ΔI at current and at constant prices in then straightforward. Additions and withdrawals have to be valued at the prices prevailing at the times at which they take place. The sum of all additions minus the sum of all withdrawals then gives the value of ΔI over the year. The mathematically correct method is therefore dependent on the path of prices and quantities over the year. This calculation should be done on a monthly or quarterly basis. The annual value is the sum of ΔI in the months or quarters. The ΔI at constant prices is calculated by valuing the quantities of additions and withdrawals at the average prices of the previous year.

A *slightly less ideal* situation is where only the levels of inventories (in quantities) at the beginning and end of the year are available (i.e. there is no detailed information on additions and withdrawals). In this case, ΔI (both at current and constant prices) is calculated by multiplying the change in quantity with an average price of the year (current year or previous year, respectively). If the price of the product has been constant during the year, this provides an exact estimation. The same is true if the quantities do not change or change at a constant rate. If the price and the change in quantity have fluctuated, however, this method provides only an approximation of the ideal. The degree of fluctuation determines the accuracy of the approximation. The more prices or quantities vary during the year, the more necessary it becomes to calculate ΔI and holding gains on a quarterly or monthly basis.

3.2 If only information of values of inventories is available

In many cases, enterprises are unable to give data on quantities, but only on the value of the level of their inventories at the beginning and end of the year according to their own bookkeeping systems, which generally do not value inventories according to ESA95 rules. Instead, they follow a historic cost system, LIFO system, etc. (see **Annex VII** for definitions of frequently occurring bookkeeping systems). Therefore, these values cannot be used directly in the national accounts. In this case, the change in volume has first to be derived, which can then be multiplied with an appropriate price index to arrive at ΔI at current prices.

In order to calculate correctly the change in volume of inventories, information is needed on the bookkeeping system used in the enterprise. Some countries ask for this information in their production or inventory surveys. If no information is available, an assumption will have to be made. On the basis of the known or assumed bookkeeping system, the values of the levels of inventories can be deflated:

- If prices are available, then the values can be divided by these prices to obtain quantity information. The change in quantity then has to be multiplied with the average price of the desired year to obtain ΔI (at current or constant prices).
- If a price index is available that describes the price development of the stock according to the known or assumed bookkeeping practice, the values can be deflated to arrive at ΔI at constant prices directly. This should then be deflated with an average price index according to national accounts valuation rules to determine ΔI at current prices.

The price indexes used should be in accordance with the kind of inventory in question. For inventories of finished products, producer price indices (PPIs) at basic prices and export price indices are the appropriate choice. For inventories of materials and supplies, similar indices as used for intermediate consumption should be used. These are preferably genuine intermediate consumption prices, but in practice mostly PPIs adjusted to purchasers' prices and import price indices. For inventories of goods for resale a PPI will usually be a good indicator (for retailers, strictly speaking, a PPI should be adjusted for wholesale trade margins).

As regards work-in-progress, ESA95 gives clear rules on the valuation (see para. 3.122). Deflation should obviously be carried out in a consistent way with the deflation of output, i.e. with output price indexes at basic prices. The problem here is that appropriate price indexes for the products concerned (e.g. large equipment, construction work) are often not available.

Often only data on the total inventory are available, not by product. For inventories of finished products and work-in-progress, the assumption can be made that the data relate to the main product of the enterprise. For inventories of materials and supplies, it should be investigated which are the main inputs in the production process of which inventories are held. For inventories of goods for resale, assumptions have to be made on the basis of the main traded products.

3.3 If no information is available at all

The worst case scenario is when enterprises provide no information on values or quantities of levels or changes in inventories at all. In the absence of direct data, ΔI is usually estimated in an indirect way. ΔI is then calculated – for a particular product – with the "commodity flow method" as the difference between total supply (output and imports) and total use (intermediate consumption, final consumption expenditure, gross fixed capital formation and exports). This procedure is flawed, since output and intermediate consumption can only be calculated *after* ΔI is known. The outcome of this method, therefore, will more likely reflect measurement errors in the various aggregates than the measurement of actual ΔI. The use of this "residual" (or other residual) methods are unacceptable and should be discouraged.

3.4 Summary

Ideally, good information is needed from enterprises. This can be either direct quantity information or value information combined with knowledge about the bookkeeping system. Furthermore, appropriate price information is required (which does not necessarily have to come from enterprises in an inventory survey but could come from price statistics). If prices and quantities vary considerably within the year, it becomes important to calculate ΔI and holding gains on a quarterly or monthly basis (either from information on additions and withdrawals or from levels at beginning and end of quarters or months), and calculate the annual total by summing the quarters or months.

The situation is not ideal (but still tolerable) if assumptions have to be made concerning the bookkeeping system, or if deflation is undertaken with less than appropriate price indices, e.g. that do not exactly relate to the products in question for the deflation of inventories of finished goods, etc.

If ΔI of a product is calculated with the commodity flow method without resort to any direct data, this is unacceptable. ΔI calculated as a residual at the macro-level is to be discouraged.

4. Description of the work undertaken for Activity A7

The start of Activity A7 commenced at the end of September 1999 with the distribution to the CCs of a questionnaire designed to collect information about the sources and methods used to make national accounts (NA) estimates of changes in inventories and holding gains. **Annex VI** contains the questionnaire use for Activity A7. **Annex VII** contains the definitions for the technical terms employed. Both Annexes made use of a questionnaire that had originally been designed by

OECD in 1998. Roger Akers (Eurostat unit B1) helped with the adaptation of the OECD questionnaire for Activity A7.

The questionnaire was completed in two stages. Answers to the majority of the questions were requested by end-November 1999. However, in order to give the CCs the opportunity to supply greater detail and more precise information, the deadline for some questions was end-February 2000; these questions are identified in the questionnaire with an asterisk.

Eleven CCs participated in Activity A7: Bulgaria (BG), Cyprus (CY), the Czech Republic (CZ), Estonia (EE), Hungary (HU), Latvia (LV), Lithuania (LT), Poland (PL), Romania (RO), the Slovak Republic (SK) and Slovenia (SI). Pier Ardeni was the expert recruited by Eurostat to assist with the collection and analysis of the CC responses.

5. Results of Activity A7; summary analysis of the questionnaire responses.

Responses were received from all the CCs; some of the responses were excellent. A few of the questionnaires were not entirely complete or clear and there were a few inconsistencies, but overall the standard of the answers provided was high.

In terms of results, there were considerable differences between the CCs in the sources and methods employed. None of the CCs have as yet an ideal basis for their NA estimates of changes in inventories (ΔI). On the other hand, many of the CCs are producing regular quarterly figures which already represent a very respectable attempt to make ESA95-consistent estimates of ΔI, including the important estimation of holding gains.

The following is an analysis of the responses received. Individual country responses are given where it is possible to do so briefly. It should be noted that the CC responses relate to their practices at the beginning of 2000, so sources and methods may have since changed.

Question 1: Periodicity of estimates

Do you calculate changes in inventories and inventory holding gains and losses both quarterly and annually or annually only? *Please tick one of the circle (a), (b) or (c).*

(a) ❑ Quarterly and annually for <u>all</u> industries and branches: ***CZ, EE, HU, LT, PL, SK***
⇒ GO TO QUESTION 2

OR

(b) ❑ Quarterly for <u>some</u> industries and branches and annually for some others: ***BG, RO***
⇒ GO TO QUESTION 2

OR

(c) ❑ <u>Annually only</u> for all industries and branches***: CY, LV, SI***
⇒ GO TO QUESTION 3

Comment: The ideal situation is monthly calculations. Situation (a) is better than (c).

Question 2: Relation between quarterly and annual estimates

Are annual changes in inventories and inventory holding gains and losses calculated as the sum of quarterly estimates? *Please tick one the circles (a), (b) or (c).*

(a) ❑ Annual estimates are calculated as sums of quarterly estimates in all cases: ***BG, EE, LT, SK***

OR

(b) ❑ Annual estimates are calculated as sums of quarterly estimates only in some cases: ***HU, PL***

OR

(c) ❑ Annually estimates are calculated independently from quarterly estimates: ***CZ, RO***

Comment: Situation (a) represents the preferred situation. Because CY, LV and SI calculate ΔI only annually, this question is not relevant.

Question 3: Direct estimation or residual estimation

Do you derive changes in inventories as a residual; or do you obtain values of the levels of inventories and then derive changes; or are details of changes in inventories collected directly from respondents?

(a) ❑ Changes in inventories are derived as a residual in all cases: ***None***
⇒ GO TO QUESTION 4

OR

(b) ❑ Changes in inventories are collected directly from respondents: ***RO, SK (for large enterprises)***
⇒ GO TO QUESTION 5

OR

(c) ❑ Changes in inventories are derived as differences between the inventory levels at the beginning and end of the reporting period***: BG, CZ, EE, HU, LT, PL, SI, SK (for non-large enterprises)***
⇒ GO TO QUESTION 5

OR

(d) ❑ Changes in inventories are derived as a residual in some cases and are collected directly from respondents or derived as differences between the inventory levels at the beginning and end of the reporting period: ***CY, LV***
⇒ GO TO QUESTION 4

Comment: (a) is the worst situation, but no CCs fall into this category; (d) is also unsatisfactory.

Question 4: Residual estimation

Which methods do you use to derive changes in inventories as a residual? *See 4(a) to 4(e) in Annex VI.*

Comment: This question only applies to Cyprus and Latvia (see their responses to question 3).

For Cyprus the response was 4 (c): inventories are derived residually in some (unspecified) way, annually in value terms. For Latvia the response was 4(b): inventories are derived as the difference between the output measure of GDP and the sum of the expenditure components, annually in value terms.

Question 5: Separate evaluation of changes in inventories by industry

For which of the following industries do you separately value changes in inventories? *See Annex VI for the complete list of industries.*

	ANNUAL		QUARTERLY	
	Stocks at beginning of year	Stocks at the end of year	Stocks at beginning of quarter	Stocks at end of year
Agriculture				
In value	❑	❑	❑	❑
In volume	❑	❑	❑	❑
Mining				
In value	❑	❑	❑	❑
In volume	❑	❑	❑	❑
Manufacturing				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Etc….				

Summary of the CC responses: CZ and SK measure stocks in value terms, at the beginning and end of the period, both on an annual and quarterly basis, for <u>each</u> industry. The same is true of BG, EE, HU and PL, with certain minor exceptions (concerning agriculture and/or government). LT separately values all industries, but only on a quarterly basis. CY, LV, RO and SI also separately value all industries, but only on an annual basis. However, RO measures stocks in volume as well as in value terms.

Question 6: Separate evaluation of changes in inventories by stage of processing (i.e., raw materials, work in progress, finished products and goods for resale).

For which of the following industries do you separately value changes in inventories by stage of processing?
See Annex VI for the complete list of industries

ANNUALLY and/or QUARTERLY	Raw materials	Work in progress	Finished products	Goods for resale	No separate evaluation by stage of processing
Agriculture					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Mining					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Manufacturing					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Etc…					

Summary of the CC responses: Most CCs separately value ΔI for each of the stages of processing for all (or virtually all) industries on both an annual and quarterly basis (BG, CZ, EE, HU, PL, SK). Other CCs do the same, but only quarterly (LT) or only annually (RO, SI). [RO is the only CC to separately measure ΔI in volume as well as value terms.] LV separately values ΔI for different processing stages, but only on an annual basis and for certain industries. CY covers all industries on an annual basis, but does not always make use of all the processing stages for individual industries.

Question 7: Assumptions about valuation methods, i.e. methods for "pricing" inventories

Do you have to make assumptions about the ways in which businesses value their inventories, or is the information you obtain on inventories from businesses on a basis consistent with NA requirements?

(a) Yes, assumptions have to be made, because of tax regulations and bookkeeping practices: *BG, CZ, HU, PL, RO, SK, SI*
⇒ GO TO QUESTION 8

OR

(b) Yes, assumptions have to be made, since our survey methods do not allow for greater details: *EE, LV*
⇒ GO TO QUESTION 8

OR

(c) No, it is not necessary to make assumptions: *CY, LT*
⇒ GO TO QUESTION 14

Comment: Most countries make assumptions. The responses from CY and LT should be confirmed.

Question 8: Valuation methods

Do you assume that businesses in all industries use the same method to value their inventories?

(a) Yes: ***BG, CZ, EE, HU, LV, PL, RO, SK***
⇒ GO TO QUESTION 9

OR

(b) No: ***SI***
⇒ GO TO QUESTION 10

Comments: most CCs assume that businesses in all industries use the same method to value their inventories. It is perhaps surprising that SI is the only country where more than one valuation method is used.

Question 9: Single valuation method used

Is there a single valuation method that businesses are assumed to use to value their inventories? *See Annex VII for definitions.*

(a) A ❑ Q ❑ Yes: historic cost: ***HU, RO, SK***
⇒ GO TO QUESTION 11

OR

(b) A ❑ Q ❑ Yes: current (replacement) cost: ***LV, PL***
⇒ GO TO QUESTION 11

OR

(c) A ❑ Q ❑ Yes: standard cost: ***None***
⇒ GO TO QUESTION 11

OR

(d) A ❑ Q ❑ Yes: average cost: ***BG, CZ, EE***
⇒ GO TO QUESTION 11

Comment: Practices clearly vary a lot between the CCs. The best situation is (b), where businesses value inventories at current replacement cost. For SI no response was possible here, given their response to question 8.

Question 10: Multiple valuation methods (see Annex VI)

Comment: Only SI was required to answer this question. In Slovenia different methods for valuing inventories are used both within an industry as well as between different industries. There is no hard and fast rule which applies to any particular industry.

Question 11: Sources of information on valuation methods (see Annex VI)

Comment: The CCs indicated that "one-off or occasional surveys of businesses" was the most common source of information. The other main source was the "valuation used in the bookkeeping of enterprises".

Question 12: Cost assignment (i.e. the underlying method of inventory accounting)

Which basis of cost assignment do you assume that businesses use? *See Annex VII for definitions*

	FIFO		LIFO		NIFO		Other	
	A	Q	A	Q	A	Q	A	Q
Agriculture	❑	❑	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑	❑	❑
Etc…	❑	❑	❑	❑	❑	❑	❑	❑

Comment: most CCs assume that the basis of cost assignment that businesses use is FIFO (first-in-first-out) for all industries – both quarterly and annually.

Question 13: Sources of information on cost assignment methods (See Annex VI)

Comment: Responses from the CCs featured each of the alternative sources listed in this question. However, the most frequently source cited was "one-off or occasional surveys of businesses".

Question 14: Estimation of stock-holding period

Do you usually estimate stock-holding periods?

(a) ❑ Yes, questions on stock-holding periods are explicitly included in regular industry questionnaires: ***None***
⇒ GO TO QUESTION 15

AND/OR

(b) ❑ Yes, stock-holding periods are estimated from replies to periodic surveys: ***None***
⇒ GO TO QUESTION 15

AND/OR

(c) ❑ Yes, stock-holding periods are calculated from data: ***BG, CZ, EE, HU, LV, LT, SK, SI***
⇒ GO TO QUESTION 15

AND/OR

(d) ❑ No, stock-holding periods are not provided, nor estimated: ***CY, PL, RO***
⇒ GO TO QUESTION 16

Comment: the situation in CY, RO and PL is clearly unsatisfactory. SK may also belong in category (d) given that they assume the average stock-holding period is 3 months (see the comments for question 15).

Question 15: Detailed estimation of stock holding periods

Are different stock-holding periods estimated for the following different types of stocks and industries?

	Raw materials	Work in progress	Finished products	Goods for resale	No dissection by type of asset
Agriculture	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑
Etc…	❑	❑	❑	❑	❑

Comment: different stock-holding periods are estimated by BG, CZ, EE, LV and LT for the different types of stocks for all (or virtually all) industries. SK assumes that the average stock-holding period is generally three months. SI has a breakdown by type of stocks only for restricted industries.

Question 16: Detailed estimation of stock-holding periods

Are different stock-holding periods estimated for different *specific* products?

(a) ❑ Yes: ***CZ, SI***

OR

(b) ❑ No: ***BG, CY, EE, HU, LV, LT, PL, RO, SK***

Comment: only CZ and SI attempt to estimate stock-holding periods for different products.

Question 17: Deflation methods

Are price indices the only means of deflation used in calculating constant price estimates of inventories, or are quantities used directly as well?

(a) For the most part, only price deflators are used: ***BG, CY, CZ, EE, LT, RO, SK, SI***

OR

(b) Both quantities and price deflators are used: ***HU, LV, PL***

Comment: The important issue is the level of detail and the suitability of the indices used for deflation.

Question 18: Price deflators and quantity data used

In broad terms, what are the sources of the price deflators used in deflating inventories?	
(a)	Consumer/retail price index: ***EE, HU, LV, LT, SK, SI***
(b)	Producer/wholesale price index: ***BG, CZ, EE, HU, LV, LT, PL, SK, SI***
(c)	Export price index: ***BG, LV***
(d)	Import price index: ***BG, EE, LV, SI***
(e)	Implicit price deflators from other NA components: ***BG, EE, HU, LV, RO, SK***
(f)	Wage indices: ***EE***
(g)	Other price indices: ***BG, HU, LT, PL, SI***
(h)	Quantity data: ***BG, HU***

Comment: as might be expected, the CCs make use of a wide range of different sources for deflation purposes, but there is considerable variation between the countries in the sources employed.

Question 19: Price or volume indices used for the purpose of calculating constant price estimates of inventories, by industry

For which of the following industries do you use the different price or volume indices indicated?

ANNUAL and/or QUARTERLY DATA	Consumer price indices	Producer price indices	Export price indices	Import price indices	Implicit price deflators	Volume indices
Agriculture	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑
Etc…	❑	❑	❑	❑	❑	❑

Comment: producer price indices (PPIs) are used by all the CCs to derive constant price estimates. Consumer prices indices (CPIs) and implicit price deflators (IPD) are also widely employed. Relatively little use is made of the other indices featured in the above table. Several CCs make use of two or more types of indices for individual industries. In contrast, some CCs rely on only one index (e.g. the PPI or CPI or IPD) for individual industries. In this respect, CZ and PL represent an extreme case as their responses indicate that they make exclusive use of PPIs for all industries.

Question 20: Methods used to obtain volume (constant price) estimates of inventories

Are your volume estimates for the most recent periods obtained using a fixed base (traditional Laspeyres volumes) or are annually-weighted chain series produced (mobile base indexes)?	
(a)	Fixed base (the traditional Laspeyres volume) estimates: ***CZ, EE, HU, LV, LT, SK, SI***
	OR
(b)	Chain Laspeyres volumes: ***BG, PL, RO***
	OR
(c)	Chain Fisher volumes: ***None***
	OR
(d)	Other (please specify): ***None***

Comment: Chain indices are preferred.

Question 21: Constant price data comparability (over time)

Are constant price data comparable over time, i.e. do price indices form "time series" (e.g. during the year, for months or quarters) so that data in constant prices are comparable over time, or do price indices simply reflect changes with respect to the same period of the previous year?

(a) ❑ Monthly or quarterly price indices are comparable over time: the base month or quarter is fixed and all price variations are compared to the initial base: ***EE, HU, LT, SK***

OR

(b) ❑ Annual price indices are comparable over time, i.e. the base year is fixed, but monthly or quarterly price indexes are not comparable over time: the base month or quarter is mobile and all price variations are compared to the moving base (e.g. the same month or quarter of the previous year, or the previous month or quarter): ***CY, CZ, LV***

OR

(c) ❑ Neither annual price indices nor monthly or quarterly price indices are comparable over time, i.e. the base year (month/quarter) moves over time, and all price variations are compared to the moving base (e.g. the same month or quarter of the previous year, or the previous month or quarter or year): ***BG, PL, RO, SI (SI seems inconsistent with answer to Q20 where they say they use fixed base)***

Comment: The SI response seems to be inconsistent with their answer to question 20 (a fixed base is used)

Question 22: Estimates of inventory holding gains

Do you calculate inventory holding gains and losses? With which periodicity?

(a) ❑ Yes, quarterly and annually: ***BG, CZ, EE, LT, PL, SK***
⇒ GO TO QUESTION 23

OR

(b) ❑ Yes, but only annually: ***LV, RO, SI***
⇒ GO TO QUESTION 24

OR

(c) ❑ No, we do not calculate holding gains and losses: ***CY, HU***
⇒ GO TO QUESTION 27

Comment: the situation in CY and HU is unsatisfactory.

Question 23: Method used to obtain annual estimates of inventory holding gains, given the availability of quarterly estimates

Are annual inventory holding gains calculated as the sum of the quarterly estimates?

(a) ❑ Yes, Annual inventory holding gains are the sum of the relevant quarterly holding gains: ***BG, EE, LT, PL, SK***

OR

(b) ❑ No, Annual inventory holding gains are calculated independently of the quarterly holding gains: ***CZ, SI***

Comment: Situation (a) is to be preferred.

Question 24: Which method do you use to obtain annual estimates of inventory holding gains in the absence of quarterly estimates?

Comment: rather few descriptions were received from the CCs in response to this question.

Question 25: Details on the estimates of inventory holding gains or losses

Are inventory holding gains estimated by industry, by type of inventory?					
	Raw materials	Work in progress	Finished products	Goods for resale	No estimates for individual types of inventory
Agriculture	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑
Etc…	❑	❑	❑	❑	❑

Comment: BG, CZ, EE, LT, PL, RO, SK and SI indicated that holding gains are estimated for all type of inventory and all industries (with the exception of Government in some cases).

Question 26: Adjustment for holding gains

Are changes in inventories, gross output and intermediate consumption adjusted for holding gains by the same amount?

(a) ❑ Yes, gross output, intermediate consumption and changes in inventories are all adjusted by the same amount: ***BG, CZ, EE, LT, PL, RO, SK***

OR

(b) ❑ Only changes in inventories are adjusted: ***LV, SI***

OR

(c) ❑ Gross output and intermediate consumption are adjusted differently: ***None***

Comment: Clearly, the inconsistent treatment of changes in inventories has an impact on the quality of the estimates - particularly value added; (a) is the correct treatment.

Questions 27-30.

Comment: Although some of the responses to questions 27-30 received were excellent, they do not lend themselves easily to analysis. These questions concerned the issue of exhaustiveness of the accounts, the general results of which are presented in Chapter 2 of this publication.

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6. Further work required

The results of the analysis of the Activity A7 questionnaire completed by the CCs has helped to identify the strengths and weaknesses in the sources and methods employed by the CCs to estimate changes in inventories for NA purposes. The improvements needed to put estimation procedures on to a firmer basis will form part of Eurostat's work programme with the countries in 2001 and subsequent years.

CHAPTER 10
Activity A8: Dwelling Services

1. Introduction

For the Candidate Countries, estimates of dwelling services (covering estimates of rents for rented dwellings as well as imputed rents for owner-occupied dwellings) pose particular problems. This is because, since 1990, the proportion of owner-occupied dwellings has grown significantly so that rented dwellings now represent a substantially smaller share of total dwelling services. At the same time, rents in the rented sector are very largely unrepresentative of those that would obtain in a free market and cannot be used for the purpose of imputing rents to corresponding owner-occupied dwellings (with similar characteristics in terms of size, location and facilities). In the Member States (MS), owner-occupied dwelling services typically constitute over 10% of GDP. In the CCs, however, the equivalent percentage is implausibly low. This is an important problem particularly for those concerned with the current price level of GDP and GNP.

Activity A8 was designed to examine the dwellings structure and situation in the CCs, to consider the theoretical and practical difficulties involved and to investigate what estimation methods are capable of being applied in the CCs. The ultimate objective is to secure more reliable and comparable data for the CCs and to obtain revised estimates of dwelling services, thereby significantly raising the quality of GDP data provided for both the pre-accession process and for other national and international needs.

This chapter reports on Activity A8 and the subsequent Dwelling Services Task Force, which was set up to take the work forward. Both were concerned with seeking solutions to the problem of measuring the output of owner-occupied dwelling services in the CCs.

Activity A8 ran between October 1998 and May 2000. It provided an overview of the sources and methods currently used in most of the CCs, considered various methodological problems and recommended improvements. Nine CCs participated in Activity A8 - Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Romania, the Slovak Republic and Slovenia. The EU expert, Tim Andrews, provided technical assistance to ten of the CCs; Knut Sorensen provided assistance to Cyprus.

The Dwelling Services Task Force (hereafter referred to as the 'TF') was set up in July 2000 to take the A8 project forward, in particular, to deal with fundamental conceptual problems that had arisen during Activity A8, and to recommend a suitable methodology for the measurement of dwellings services that is capable of being applied in the CCs. The TF membership consisted of Richard Clare (Chairman), Tim Andrews (Task Force leader), Silke Stapel, Roger Akers, Josef Auer, Ian Dennis (Eurostat), David Roberts, Seppo Varjonen (OECD), Serguei Sergueev (PPP expert), Peeter Leetmaa (Estonia), Jiri Pelej (Czech Republic), Vladimir Varhola (the Slovak Republic) and Mojca Škrlec Šinkovec (Slovenia). The TF met three times between August and November 2000. Tim Andrews, hereafter referred to as the 'expert', prepared the final TF report in December.

This chapter is based on a subsequent paper presented by Tim Andrews at the Conference on the "National Accounts of the Candidate Countries 2001" which took place in Brussels on 29-30 January 2001. The title of the paper was "*The Measurement of Dwellings Services in the Candidate Countries – Well-Organised Markets?*"

2. The acquis communautaire

The 'acquis communautaire' requires the CCs to comply with all EU legislation and this includes the Commission Decision on Dwelling Services[1] (CD). Some CCs had tried to implement the 'stratification' method recommended in the CD but it is unlikely that this will be generally applicable for two reasons. First, the stratification method requires large scale and expensive rent surveys which are not in most CCs' work plans at present. Secondly, and more fundamentally, the prevalence of free market paid renting is exceptionally low; rental markets simply do not exist in most CCs, or if they do they are very specialised. For CCs to comply with the legislation further guidance and interpretation of the CD was required.

The aim of Activity A8 and the subsequent Dwelling Services TF was thus to resolve that problem and to recommend an approach that would improve comparability of dwelling services statistics between both CCs and MS and within the group of CCs. The issue was also relevant in the context of the Harmonised Index of Consumer Prices (HICP) and Purchasing Power Parities (PPPs), as dwelling services have also been a problem there for much the same reasons. A further aim of the TF was therefore to provide a solution that attempted to accommodate the combined needs of NA, PPP and HICP.

Practically, the question was how to interpret the existing CD. Starting with statements contained in the CD, a criterion is proposed which specifies when a country may apply an alternative method to stratification. Al-

[1] Commission Decision of 18 July 1995 specifying the principles for estimating dwelling services for the purpose of implementing Article 1 of Council Directive 89/130/EEC, Euratom on the harmonization of the compilation of gross national product at market prices. (95/309/EC, Euratom), OJ No L 186, 5.8.1995, p. 59

ternatives were then considered of which there were only two - self-assessment and user cost. Self-assessment was considered but rejected by the TF as an alternative to stratification. The TF concurred with the CD in finding this a subjective approach and decided to rule it out. This left only user cost and a user cost methodology that is consistent with the requirements of the CD.

3. Exposition of the problem – the A8 project results

The aim of Activity A8 was to improve both the quality and the comparability of dwelling services estimates in the CCs. A8 began as a technical assistance project but it became clear during the course of the project that there were systematic reasons why CCs would not be able to comply with the CD.

The relevant concepts in the ESA95 and SNA93 were described in the A8 reports written by the expert. SNA93 says that households in owner-occupied dwellings should be treated as unincorporated enterprises. It claims that 'well organized markets' exist in most countries and a rent should be imputed for owner-occupied dwellings equivalent to that charged on the market for rented accommodation with the same characteristics. ESA95 restates the same principle and adds some clarification on special and borderline issues.

Neither the ESA95 nor SNA93 describe how the stated principles should be implemented in practice. The CD was passed in recognition of the fact that it is necessary to specify method in detail to ensure comparability of final results in the case of dwelling services. The CD describes the 'stratification method' in considerable detail. It mentions also self-assessment, user cost and use of capital values for imputation of owner-occupied dwelling services. Self-assessment is effectively ruled out as being too subjective and no detail is given on the other two approaches.

In most of the CCs there have been extensive programmes of privatisation and restitution throughout the 1990s. The result is that, except for the Czech Republic and Latvia, 80-90% or more of dwellings are owner-occupied. Private renting is a rare, specialised and often hidden activity. In some CCs its incidence is so low that it is barely measurable. There is little sign yet of this situation changing and indeed in some countries the level of owner-occupation is increasing. In SNA93 terms 'well organized markets' do not exist in these countries.

The methods used to calculate the output of dwelling services in the CCs were detailed in the individual country reports written by the expert. There are two basic approaches in use, high level price-volume grossing and a simplified form of user-cost. Most CCs use the former. Slovenia, for instance, uses the latter. No country uses the full stratification method as specified by the CD and none can be said to be in compliance with the CD.

Most CCs carried out a significant amount of research during Activity A8. However, this has not resulted in large-scale revisions to data. Partly this reflects a lack of basic data sources, but also uncertainty about which is the most appropriate methodological route to follow in the long-term. The potential changes in the level of GDP implied by the various options are so great that no statistical office would want to make them more than once. Some medium-term plans are described in the expert's reports and these largely consist of researching methods for a Census benchmark and/or alternatives to it such as user-cost or self-assessment.

In the expert's individual country reports for A8, 'long-term plans' were described - usually to make use of Census results, for example, to construct a stratification benchmark. The Census year in most countries is 2001 (2000 in a few cases). It will then take about another two years before results become available. At the commencement of Activity A8 (in January 1999) most CCs expressed an intention to move towards a stratification benchmark and to comply with the CD. After project work and discussions held in two workshops it became much less certain that attempting to follow the CD would ever be a viable possibility for most. There are two serious concerns, lack of rent data and the structure of the housing market itself.

The first problem faced in constructing a stratification benchmark is data availability. The participating CCs all had good quality sources of volume data. Although some improvements were recommended in individual country reports, existing estimates provide a sound basis for the volume side of the calculation. Estimates are generally based on the Dwellings and Population Census of 1990/1. Two problems may exist with these. In some CCs the annual updating of the stock may not cover all changes, for example, changes of use. The extent to which this is a problem will not be determined quantitatively until the next round of Census results become available. Secondly, the stock data usually do not contain any information on tenancy, only ownership. The plans in place for the next round of the Census however follow international guidelines and as such would provide a sound basis for the volume side of a stratification benchmark calculation. In nearly all cases tenancy will be measured.

To have any chance of constructing a satisfactory stratification benchmark though, a large-scale source of rental price data is also required. Placing a specialised rent question on the Census form is the ideal solution in terms of the narrow technical issue of collecting data of the correct format. However, there are sensitivities around Census questions that ask for monetary values. Such questions are perceived to affect response.

It was recommended to countries in Activity A8 that they consider the placement of a rent question on the

Table1: Ownership of dwellings in some candidate countries and member states, % of total.

Country	Year	Government	NPISH	Owner-occupied	Private Rented	Other
Bulgaria	-	3	-	91	6	-
Cyprus	-	-	-	93	7	-
Czech Republic	-	30	19	40	10	1
Estonia	1998	7	-	70	6	18
Hungary	-	7	-	90	3	-
Latvia	1999	29	-	53	12	6
Lithuania	1999	3	-	94	3	-
Poland	-	12	-	54	-	34
Romania	-	3	-	94	1	2
Slovak Republic	1999	5	-	78	-	17
Slovenia	-	12	-	83	5	-
Belgium	1999	8	-	63	30	-
Finland	1998	3	3	64	12	18
Netherlands	1998	1	35	51	7	6
United Kingdom	1998	17	5	68	10	-

2001 Census. The latest position indicates that only Hungary and Romania plan to include rent in the Census. The Czech Republic and Slovenia have positively ruled it out and Slovak Republic law prohibits it. Lack of availability of rent price data presents a major threat to the viability of stratification benchmarks in those countries that have not agreed to collect it from the Census.

If the rental values absolutely cannot be collected on the Census then a rent/housing survey with a very large sample size must be run in parallel with the Census. To give an example of the quantity of data required, it is useful to consider the specialised housing survey that was used for the United Kingdom 1991 stratification benchmark. The achieved sample size of this survey was 20,000 households annually and it was necessary to use two years' results to construct a benchmark of the quality specified in the CD. At the time, the UK had a private rented sector of around 7% and also a public rented sector of 23%. Both were used as reference for the imputation. For a housing market with a lower level of private renting, larger samples again would be needed to meet the quality standards set out in the CD. Few CCs have plans for renting surveys on this scale.

Considering the above, it seems highly unlikely that rental price data of sufficient quality and precision would be available to combine with the Census volume data to construct a stratification benchmark in most CCs.

A more fundamental problem, however, is that even with good quality rent data it may still not be possible for the CCs to construct a stratification benchmark according to the CD requirements and quality standards due to the structure of their dwelling markets. The private rented sector in each of the CCs is very small, but it is also not representative in any way of other parts of the housing market. **Table 1** gives some information on the structure of the dwelling stock in the CCs and some MS. It should be noted that the basic data on dwelling stock are generally expressed in terms of ownership and not tenancy.

Following the introduction of free market economies in the early 1990s most of the CC governments privatised the bulk of their dwelling stock. The stock was either signed over or sold at very low prices to tenants. In some other cases buildings which had been nationalised after the Second World War were restituted to their original owners. For all but two of the countries, 80-90% of the dwelling stock is owner-occupied, and in the extreme case of Romania, the figure is almost 95%. In some of the CCs, private renting is such a rare occurrence that it is hardly measurable.

Not only is it rare, but where private renting does occur it is a specialised activity, for instance, often targeted at foreigners in the capital cities. Private monthly rents will typically be several times the average monthly personal income. Nationals of the country with new money tend to live in newly built or newly converted owner-occupied dwellings. Where there is a strong demand for private renting, for instance in university cities, it may be met by spare room lodging. In rural areas, private renting may be almost unknown. Private renting where it exists is also highly likely to be a hidden economy activity, thus making measurement even harder. In some countries, e.g. in Latvia, government rent controls still apply which fix both public and private rents.

It is pertinent to the discussion which follows later, concerning the role of operating surplus in the dwelling services calculation, that in many cases the process of privatisation seems to have done little to change the housing conditions experienced by tenants. In many cases, the charges or 'rents' paid by householders are not at all changed in the transition from government tenant to owner-occupier.

In many cases, in the process of privatisation, the governments actually signed over to occupiers a considerable liability in terms of outstanding capital repairs. As a result, housing markets have often stagnated in the years since privatisation. Tenants do not have the financial means to invest in repairing the dwellings. As such, capital markets in dwellings, although theoretically free, are often not at all liquid. It is sometimes stated by observers that private renting in the CCs must increase in line with the freeing up of other markets, particularly the labour market, i.e. to avoid frictional unemployment there must be the means of moving to take up employment without always buying and selling. To date, there is little sign of this change actually occurring. In fact, in some of the CCs owner-occupation continues to increase from its already very high levels.

In conclusion, it is highly unlikely most CCs will be able to construct a satisfactory stratification benchmark of the output of dwelling services as specified in the CD. For some CCs the data are not available and in most the method is not applicable even where data will exist. An acceptable alternative thus needs to be put in place.

4. Conditions under which alternative methodologies may be applied

The CD, in the fourth paragraph of Section 1.1, sets out the conditions under which an alternative to stratification should be allowed. It states that "*Obviously this does not solve the problem [non-availability of comparable rent data] in the extreme case of all dwellings being owner-occupied. As an objective assessment for such a case the user-cost method could be applied.*" Clearly, high levels of owner-occupation are a problem before literally "all" dwellings are owner-occupied. A more realistic interpretation of the word "all" was thus attempted, based on available evidence.

The following criterion was proposed by the TF to allow any country to apply an alternative method to stratification on the basis of the level of private renting in that country's housing market. This criterion is consistent with the spirit of the CD.

"In the case of privately rented dwellings constituting less than 10% of the total dwelling stock by number and where there is a large disparity between private and other paid rents (say by a factor of three), as an alternative objective assessment, the user-cost method may be applied."

This proposal is not intended to override any of the requirements of the CD, only to interpret the conditions under which an allowable alternative to stratification may be applied and to provide guidance on the application of that alternative.

For consideration of the alternatives, including user-cost, see below. Under the conditions cited in this criterion, a country may still choose to apply the stratification method rather than user-cost providing only that the quality criteria specified in the CD are fully met in so doing.

5. The self-assessment option

The CD characterises self-assessment as a method historically used in MS under conditions of high owner-occupation, but rejects it as being subjective. In the absence of clear alternatives to stratification it is worth reconsidering this position. The first paragraph of section 1.1 of the CD states that "*...some countries use the self-assessment method for owner-occupied dwellings, asking owner-occupiers to estimate a potential rent for their property.*" The paragraph comments that the approach is based on subjective judgements that may be biased and variably so over time. It observes that the error margin of GNP (at the current price level) will increase in parallel with any increase in owner-occupation.

Later in section 1.1, self-assessment is ruled out by virtue of the fact that Principle 1 of the CD only recommends stratification or exceptionally, "*...other 'objective methods', like the user-cost method*". Given the particular conditions in the CCs, self-assessment was re-evaluated as a stopgap, or 'least worst' alternative to other methods.

Trial self-assessment estimates have since been made in Estonia and Slovenia. The conclusion was that self-assessment might have some value for cross-checking other approaches, but the method itself does not seem to be reliable. Indeed, it was concluded that self-assessment was an especially poor method in developing market economies. In the CCs, which have small and specialised rental markets, there is no yardstick by which the average household will be able to make an accurate assessment of the rental value of their dwelling. The results obtained by this method would be even more misleading than they are in the MS.

The conclusion was that self-assessment should continue to be excluded as a suitable method for estimating owner-occupiers' imputed rent. Thus, the only alternative to the so-called stratification approach is user cost and this should be applied using the following guidelines.

6. The user-cost option

Having considered the conditions under which stratification (including the use of capital values) was not appropriate, and having ruled out self-assessment, the Dwelling Services TF focussed on elaborating a procedure for setting the output of owner-occupied dwellings services, using a user cost approach. The CD specifies in considerable detail how the stratification method should be applied. However, whilst the CD allows user-cost as an alternative, it gives very little detail about its application. For user-cost, it says only that (Section 1.1, paragraph 4) "*[user-cost] consists of*

adding relevant cost items, like intermediate and capital consumption as well as some allowance for the net operating surplus, including the interest on mortgages. Details of this method should be established by the GNP Management Committee as soon as it is required." Details of this method have not been required up until now and have not been established. The TF thus set out to do this, with a degree of detail commensurate with that specified for the stratification method in the CD.

The normal accounting procedure used for dwelling services in the MS is to separately treat the three elements - private renting, public sector (including NPISH) renting and owner-occupation. Private and public sector renting are dealt with in the conventional way. For owner-occupied dwellings, the stratification benchmark method is used to determine imputed 'gross rentals', which are taken to be output for own final use (P.12). By deducting measured components of output one arrives at the balancing items, value added and net operating surplus. The same imputed 'gross rentals' figure is also taken to be the final consumption expenditure of households on owner-occupied dwelling services. In the CCs a more broad-brush approach is often taken. Dwelling services output is calculated for the entire dwelling stock by grossing up volumes and some average rental price; data on tenure are often scanty.

In applying the user-cost approach, dwelling services should be calculated in parts based on tenancy. Where a country chooses to apply the user-cost method, this should be applied for the owner-occupied sector only and conventional means should be used for the paid rental elements (although the procedure for government/NPISH rented dwellings will be similar to the owner-occupied user-cost procedure). Final consumption expenditures for government, NPISH and households should use the COFOG, COPNI and COICOP classifications to ensure consistent definitions of 'rent' are applied. The latter will facilitate construction of PPP volume comparisons.

The user-cost approach reverses the normal accounting procedure and builds up output from its component parts. The cost elements are defined by accounting identities. Gross rentals equal the sum of:

1. *Intermediate consumption (P2),*
2. *Consumption of fixed capital (K1),*
3. *Compensation of employees (D1),*
4. *Other (net) taxes on production (D29/39) and*
5. *Net operating surplus (B2).*

The user cost approach avoids the particular problem, inherent in stratification, of making comparisons between one type of dwelling and another to determine gross rentals. It will, however, involve other types of imputation.

To produce the best possible estimates of owner-occupied dwelling services via the user-cost approach, as many of the cost elements as possible should be valued by direct measurement. Where there are imputations rather than measurements, these should be based on standardised assumptions to ensure comparability of results.

To assist the CCs and for purposes of comparison, information should be collected, in the form of data and methodological explanations, from a number of CCs and MS, showing the breakdown of the output of dwellings services into the component parts above.

6.1 User cost – intermediate consumption

Four possibilities were considered for the estimation of the intermediate consumption (IC) component of the user-cost model:

a. by direct measurement from a survey such as the household budget survey;
b. using a supply-based approach, e.g. looking at construction output plus an allowance for materials used by households for own repairs.
c. by using average values for the paid rented sector based on administrative or survey data grossed up to the total for owner-occupied dwellings;
d. as a proportion of output or value added, set by expert estimate or from a similar activity;

Examples for each of these approaches and combinations of them were considered.

The first option, **direct measurement from the HBS**, is favoured as it satisfies the criterion stated above that user cost components should be directly measured wherever possible.

It should be noted that ESA95 paragraph 3.77 says that *'Household consumption expenditure excludes […] b) (2) expenditure that an owner-occupier incurs on the decoration, maintenance and repair of the dwelling not typically carried out by tenants (treated as intermediate consumption in producing housing services).*' It is not possible to determine a priori for an owner-occupier what maintenance and repair is not typically carried out by a tenant. This definition is slightly different to that in the CD, which predates ESA95.

A way round this problem is to take the average spend per household for a group of expenditure items most likely to be associated with maintenance and repairs. For owner-occupied dwellings this expenditure is a combination of final and intermediate consumption, but for tenants it is by definition all final consumption. IC for owner-occupiers is then simply the former minus the latter. The result is grossed up to give totals for all households.

A problem with this approach is that it assumes that repairs and maintenance can be equated across the two types of tenancy. In fact, owner-occupied dwellings may be maintained to a different standard and the levels of own repair could vary substantially across the two categories. The extent to which this is a problem will vary by country. If possible, some stratification of the HBS results, e.g. by type of dwelling, should be attempted to minimise this problem. Of course, if the

HBS is being used as the source for intermediate and final consumption, the relative partitioning between the two does not affect output or value added when a user-cost approach is being used.

A condition here is that a satisfactory household budget survey (HBS), with a sufficient sample size and response rate and preferably classified by COICOP, needs to be available. This is required anyway to construct a good estimate of household final consumption. HBS surveys are available in most CCs, but are of varying size and quality. CCs should take this additional potential use of the HBS into account when setting priorities for allocating resources to basic data sources.

An experimental current price **supply model** was also trialled for Slovenia. The calculation starts with output + turnover tax for a range of products for unincorporated enterprises and non-financial corporations. The structure of the commodities selected is based on the HBS. A range of shares to final consumers was modelled. For unincorporated enterprises, these shares are not based on much empirical evidence. Value added tax data (available by activity) were used to estimate the value of output going to final consumption for non-financial enterprises. The assumed value of total demand by households is then summed. This approach yielded a central estimate for IC of 44 bn. (Slovenia currency) in 1998. The current estimate of IC as used in the published accounts is 40 bn. and the estimate based on the HBS calculation (described above) is 36 bn. The HBS estimate is suspected to be too low because households fail to recall some expenditure. The conclusion is that the supply method should be combined with the HBS approach. This supply model approach is anyway implicit in balancing accounts via a supply & use framework. Again, in the user cost scenario, the split between intermediate and final consumption is not critical here.

In some CCs, IC is taken from enterprise statistics on the **supply of services to the paid rented sector**, expressed as a cost per dwelling which is then applied to the owner-occupied sector. This approach ignores the problem of non-comparability of repair work standards for owner-occupied and rented dwellings. In addition, some service units for which supply data are measured have secondary activities that are not related to dwellings. The services data do not separate out apartments and detached housing which have different patterns of repairs. It was concluded that the available data from the rented sector were not ideally suited for use in this way and that this approach should only be used after the two methods previously described have proved impossible to implement.

Examples of calculations where CCs had estimated **IC as a fixed proportion of output** were also considered. The proportion was generally based on an 'expert estimate'. The only justification for using such an approach would be the total lack of any alternative.

In summary then, it is acceptable to estimate IC either by direct measurement from a household survey such as the HBS, or from a supply model approach. Further, some benefit may be obtained from combining these two methods. Estimation must attend to the condition set out in ESA95 para. 3.77. If it is not possible to apply either/both of these approaches then owner-occupied IC may be based on IC reported by enterprises engaged in paid renting activities. Adjustments should be made if these enterprises are engaged in secondary activities or the standard of repair & maintenance differs between the owner-occupied and the paid rented sector. Taking owner-occupiers' IC as a fixed proportion of output, e.g. from an 'expert estimate', is not an acceptable method.

6.2 User cost – consumption of fixed capital

Consumption of fixed capital (CFC) is a specialised subject with general application across the accounts. Many countries have difficulty in calculating CFC and it is common practice for balancing items in the Production Account and Distribution and Use of Income Accounts to be recorded on a gross basis. However, the estimation of CFC takes on a special significance as one of the cost elements in a user-cost calculation of the output of dwelling services. Other development work in progress was taken into account here, in particular, the drafting of the OECD Capital Stock Manual.

Considering data and methodology currently used in the CCs for estimating CFC, two problems were raised, namely the means for valuing the dwelling stock and the estimation of a service life. Valuation is a problem, but the calculation is more sensitive to assumptions made about service lives. Few CCs have an established perpetual inventory model (PIM).

In the absence of a PIM model, it might be possible to arrive at the gross capital stock via an estimate of net capital stock. Net stock is equivalent to the market value of fixed assets. However, it was soon revealed that market valuation of capital values is as much a problem for the CCs as measuring paid rent. In many of the CCs, the market in buying and selling dwellings is not well developed and not liquid so prices are not representative of the stock as a whole. (Indeed, turnover is not all that high in some MS).

An alternative method for valuing dwellings has been developed by Slovenia and uses construction costs for new dwellings adjusted by quality factors to allow for the differences between new and existing dwelling stock. This is an attempt to arrive at a value of 'current replacement cost', which is equivalent to gross capital stock. Whilst this is not recommended by the draft OECD Capital Stock Manual it may be regarded as a useful intermediate measure.

The method starts with the area of dwellings broken down into three dwelling types and six quality standards. A vector of coefficients for each of the quality categories is used to reduce all of the areas for dwellings other than 'comfortable' – the common standard

for a modern dwelling. Average construction costs per m^2 are reduced by a factor ('expert estimate') which is designed to remove general quality differences and effects of specific market conditions, which apply only to current construction activities, but would not have applied to the construction of older stock. The total value of the dwelling stock is then arrived at as the product of area and construction cost per unit area. There is arbitrariness in the choice of the factors used in this calculation, but the final result is not unduly sensitive to it.

CFC is then arrived at by multiplying this value by a depreciation rate based on an assumed asset life and straight-line depreciation. The calculation is sensitive to the choice of asset lives. For most CCs, the asset life is based on an assessment of the age of the dwelling stock. There was some concern expressed about the extent to which these varied in both the CCs and the MS and it is difficult to know if these differences are justified. The draft OECD Capital Stock Manual gives some examples of the range of these differences. In Slovenia, the asset life is based on an 'Accounting Standard', which has recently been revised. One further point that was noted was that the asset life should not simply be based on the age of dwellings. The asset is actually a composite of the original dwelling plus all of the capital repairs and additions that have been made since it was built and the asset life is the average for all of this. The Task Force decided that the detailed issue of establishing asset lives, whilst crucial for the user-cost method, was best left to experts in the field and did not take it any further.

In summary, the CCs should establish as soon as possible perpetual inventory models for estimating the CFC for dwellings. The model needs to be partitioned into owner-occupied and public and private paid rented sectors. The decennial census of population and dwellings would be an ideal time to establish a survey-based benchmark for dwellings capital stock. In the interim, a valuation method based on adjusted current replacement costs may be used. Asset lives should be based on realistic assessments of the average life of the capital – not necessarily the age of the buildings.

6.3 User cost – compensation of employees

By definition, compensation of employees for owner-occupied households, in producing their dwelling services output, should be zero.

6.4 User cost – other taxes on production (net)

The numerical contribution of this element to the user cost calculation is relatively small. There are a few issues that need to be pointed out in relation to collecting data on the correct basis, but the impact of any problems with tax data will not be great.

All countries have some sort of tax which is applied to dwellings and some data, mostly administrative, on that tax. There can be variations however in the application of this tax from one region to another within countries and complex exemptions which make it hard to read the administrative data. An alternative source to the administrative data may be the HBS.

There appears to be a slight discrepancy between the SNA93 and ESA95 on this subject. However, ESA95, para. 4.23 says *' Other taxes on production (D.29) include in particular: a) taxes on the owner-ship or use of land, buildings, or other structures utilised by enterprises in production (including owner-occupiers of dwellings)'*. The interpretation of ESA95 seems straightforward enough – any taxes on the ownership or use of land and buildings by owner-occupiers should be included in the user-cost calculation of output for the owner-occupied sector.

The situation where tenants rather than a landlord pay this sort of tax was also noted. In some countries it seems that this does occur, e.g. Estonia and Slovakia. In principle, it should not be possible for a tenant to pay taxes classified as taxes on production; only a unit engaged in production should be liable for these. To be strictly correct, in this situation the tax should be added to the rent in the measurement of paid rents. This is a point to be noted also in the imputation of owner-occupied rents from paid rents via the stratification method. It is not mentioned in the CD.

6.5 User cost – net operating surplus

The net operating surplus (NOS) element poses two questions. First, should it be included at all in a user-cost estimate for the CCs and second, how should it be estimated? This issue crucially affects the level of GDP and GNP and the shares of owner-occupied dwelling services output in the total.

The question of whether or not an operating surplus should be included depends on the sectoral classification of the owner-occupiers' activity and also on whether owner-occupied rentals in the CCs should be likened to public or private paid rents. The primary intention of the SNA, ESA and the CD seems clear and is to treat owner-occupation as a private sector activity. SNA93 says, "*Heads of household who own the dwellings which the households occupy are formally treated as owners of unincorporated enterprises...*"

The CD states in section 1.2.3, para. 4 "Given that owner-occupied dwellings are mostly privately owned, in principle, only actual rents from the private sector should be used for imputation purposes. However, if not enough observations of actual rents of privately owned dwellings are available to constitute a sufficient basis for the imputation, exceptionally, rents of publicly owned dwellings may be used, provided they are increased for any subsidies paid only to public and not to private housing." Clearly, in the case of most CCs, where private renting accounts for only a very small proportion of all tenancies, the condition quoted in 1.2.3 is satisfied. Many have then interpreted this as meaning that public rents may be used directly and solely as the reference value for owner-occupied im-

puted rent. As a result, NOS for dwellings in most CCs is very low.

However, the Task Force concluded that, in principle, a NOS should be included in the estimate of output for owner-occupied dwellings. Although the CD allows for public rents to be used as a reference for imputed rents it must have been intended that this should only be as a means to establish the quality match between paid and imputed rents. Any difference in rent levels due to subsidy or purely to the fact that this was a public sector rent should be removed. Thus, when applying the stratification method, imputed rent is set at a level commensurate with private rents. This is done, for instance, in a regression equation by using a public sector dummy variable. Section 1.1 para. 4 of the CD (quoted above) is also fairly unequivocal and specifies that "*some allowance for the net operating surplus, including the interest on mortgages...[should be made]*" when applying a user cost model.

It was noted near the beginning of this chapter that much of the so-called owner-occupied sector in the CCs has recently been privatised and the experience of living in many of these dwellings is little changed from when they were publicly owned. It may seem perverse to some to substantially increase the value of dwellings output and value added by injecting an imputed NOS at the point of privatisation. If accurate time series were modelled back far enough, there would be a step increase in value added at this point in time. Such a result rather contradicts the whole purpose of including owner-occupied imputed rent within the NA production boundary – which is to provide for consistent inter-temporal and inter-spatial comparisons of GDP and GNP. At present, however, such time series have yet to be constructed in most CCs.

A number of options for estimating a net operating surplus were considered, these being:

a. setting NOS to zero (i.e. it exists in theory, but in practice it has a value of zero);
b. as a fixed proportion of output or value added. This proportion could be based on an 'expert estimate' using evidence such as the proportion in MS for dwellings, or industry K under NACE Rev.1 (other than owner-occupied renting), or for the most similar activity available in the CCs;
c. as a rate of return on capital, with the rate based on: an 'expert estimate', other activities, an average for the rest of the economy, or on the basis of alternative rates of return for financial investments of similar risk.

The first option, setting NOS to zero, was rejected as it seems to have no common sense interpretation. The assets are privately owned and if there were no return on them the owners would simply dispose of them and purchase the service elsewhere at the same cost.

The second approach is to take NOS as a proportion of either output or value added for a similar activity, or the same activity in another country; this has been used in some CCs. It was concluded that this also did not make any sense conceptually and was not acceptable. It may be informative to make such a comparison with other countries for information or validation, but not to compile the estimate. If it is not possible to compare the output of the renting and owner-occupying activities on a consistent basis through the stratification method, then it will equally infeasible to estimate NOS in this way. NOS is a concept related to return on capital and the Task Force focussed on that.

To estimate a return, the starting point is a valuation of capital to which some interest rate is applied. As discussed above in relation to CFC, market valuations are not available in most CCs and the only feasible method is to use adjusted replacement costs.

A value for the rate of return then has to be derived. In the user cost approach trialled in Slovenia, the rate is an 'expert estimate'. In this example, for non-profit institutions the value is set at zero, for private multi-dwelling houses the value is 2.4% and for individual houses the value is 1.2%. This gives a weighted average value of 1.8% for all dwellings. A value in the range of 2-3% seems reasonable and a rough calculation for the UK, Netherlands and Germany indicates this range is about typical for the Member States. The level of NOS, however, is quite sensitive to the precise setting of this rate.

The TF concluded that if 'expert estimates' are quoted for the rate of return, they should be based on some specific objective evidence and procedure. Basing the rate on other countries or industries may be acceptable if there is no alternative.

Another method for determining the rate is described in the OECD Capital Stock Manual, paragraphs 8.15 to 8.19. It involves calculating a 'property income', which is net value added less compensation of employees (and part of mixed income), and comparing this to the value of productive capital stocks yielding an average rate of return for the rest of the economy. This method requires that the "underlying production function exhibits constant returns to scale, that markets are competitive and that the expected rate of return equals the *ex-post* rate of return". For the usual reasons, i.e. that there is no real market in either rented or owner-occupied dwellings as yet in the CCs, those assumptions are most unlikely to be met. Secondly, even if one accepted the assumptions, in most CCs, income data, including compensation of employees, is most often arrived at by residual and so is not a sound basis for such an imputation. The CC members of the TF did not regard this approach as feasible.

A final option, comparing with alternative rates of return on financial assets, is theoretically attractive. However, in the CCs, measures of relevant alternative investments are not available. TF members felt that, as households hold very small stocks of financial capital, this approach would not have any real meaning nor seem convincing to users. An example of this approach had been tried in Norway. The calculations were noted to be complex and the results unstable so

that the approach was not in any case continued in Norway.

In summary, NOS should be calculated as a rate of return applied to a market valuation of the owner-occupied dwelling stock, based on the adjusted current replacement cost method. The rate of return should be based on as much empirical evidence as possible and ideally should represent an average rate typically obtained from the application of similar productive assets in the most similar activities.

7. Benchmark versus projection

The CD talks about benchmark and projection. However, whilst it specifies the benchmark procedure in some detail it says little about the projection method. The spirit of the CD was that estimation should be undertaken every year if possible and it sets minimum times for carrying out benchmarks. In practice then, the estimation should be done in as much detail as possible each year. Data availability in the four CCs represented on the Task Force was considered.

When the user cost method is being applied for owner-occupied dwellings: a fresh estimate of the current price series should be estimated annually; the constant price series should be projected annually, in as much detail as possible, using quality adjusted dwelling stock quantity data; and the implied deflator should be monitored as a quality check.

8. The non-observed economy

Activity A8 identified a number of examples of hidden economy activity in relation to paid renting in the CCs.

It should be noted that hidden economy activities are within the production boundary for ESA95. Exhaustiveness is an issue here as anywhere. For government this is not generally thought to be a problem. For private paid renting, however, there could be a big problem. For the user cost method, hidden economy activities may be less of a problem for the owner-occupied sector. There may be an indirect effect though in that reluctance to respond to the HBS may be due to the household having hidden economy activities. This leads to a bias and could effect estimates of intermediate consumption.

In estimating dwelling services output, the CCs must take account of hidden economy and exhaustiveness issues as for any other area of the economy. There is clear evidence in some CCs that private renting, for instance, is a significant hidden economy activity.

9. Further work

There are plans to carry out further work during 2001. This is necessary in order to refine the user-cost methodology described above and model its effects in detail for a range of CCs and MS.

CHAPTER 11
Activity A9: Supply and Use Tables

1. Introduction

Supply and Use Tables (SUT) and Input-Output Tables (IOT) represent important building blocks for the European System of Accounts (ESA). Indeed, under the ESA95 Regulation, Member States are obliged to compile SUT and later IOT, which have several important purposes. These include: the identification of gaps and inconsistencies in basic data sources; checking and improving the plausibility and completeness of the figures; and the estimation of figures for periods on which less reliable information is available. Additionally, the tables give a detailed picture of the composition of the supply and use of goods, services and labour and the primary incomes involved. SUT and IOT and the ratios that can be derived from them, such as productivity figures, are important for economic analysis purposes. Among the Candidate Countries (CCs), the level of SUT and IOT development varied enormously, with the result that many of the benefits identified above were not being secured.

The purpose of Activity A9 was therefore designed to assist the CCs to set up and compile SUT as part of the programme of work to improve the non-financial national accounts in the CCs. However, it would be entirely wrong to suggest that SUT were new to the CCs. Most of them had already some experience either in compiling SUT or in compiling (traditional) input-output tables (IOT). Nevertheless, for many CCs, the compilation of SUT was not a regular part of their statistical programmes. Also, the integration of SUT into the national accounts (NA) compilation process needed to be organised in a number of countries and improvements were required in the databases and the compilation methods applied.

In addition - and this was new for all CCs - SUT needed to be compiled according to ESA95 concepts. The switch from ESA79 to ESA95 was a laborious task not only for the CCs, but also for the EU Member States, as many conceptual and definitional changes needed to be analysed and transformed into data concepts and suitable compilation methods. Naturally, not all the new ESA95 features relate to SUT, but certainly many of these features also have consequences for SUT, one of the most important issues being that ESA95 incorporated SUT as integral part of the system, which was not the case in ESA79.

Partly because the CCs were not all at the same stage with respect to SUT and partly for other reasons, the technical assistance devoted to Activity A9 was divided between four experts and four groups of countries:

- Ana Barreno was the expert for Hungary and the Slovak Republic;
- Ivo Lavrac provided technical assistance to Slovenia.
- Norbert Rainer provided technical assistance to Estonia, Latvia, Lithuania and Cyprus;
- Reiner Stäglin was the expert for Bulgaria, the Czech Republic, Poland and Romania;

Activity A9 mainly occurred between end-1998 and May 2000. Each expert undertook missions to each of their countries, organised task forces for their group of countries and prepared interim and final reports for each of their CCs. The assistance to Slovenia was rather different, the expert being directly involved in helping with the SUT compilation.

To put Activity A9 into context, sections 2 and 3 of this chapter first provide some important general background about SUT, the compilation of SUT and derived IOT and the role of these databases for the compilation of reliable and consistent NA. The themes covered are relevant to the remaining sections of this chapter, which give an account of the work undertaken for Activity A9. Because it is not feasible to cover the range of activities of the four groups mentioned above, for illustration, this chapter concentrates on the SUT work carried out by Estonia, Latvia & Lithuania and the technical assistance provided by the expert, Norbert Rainer. This chapter makes extensive use of the individual country reports written by him for Activity A9 and also his paper entitled "*Introduction of supply and use tables for the first time*" which he presented at the Conference on the National Accounts of the Candidate Countries, in Brussels on 29-30 January, 2001.

2. The structure and role of SUT in the NA system

Both ESA95 (and SNA93) include an integrated set of SUT, as well as symmetric IOT. SUT provide a detailed analysis of the process of production and the use of goods and services and the income generated in that production. The SUT provide a more detailed basis for analysing industries and products through a breakdown of the production account and the generation of income account. The SUT also form the basis for the derivation of symmetric IOT by applying certain analytical assumptions. Symmetric IOT are the basis for input-output analysis.

SUT provide a **framework** for checking consistency of statistics on flows of goods and services obtained from different sources. They also serve as a framework for economic statistics, both conceptually for ensuring the consistency of the definitions and concepts used and as an accounting framework for ensuring **numerical consistency** of data obtained from different sources. The SUT framework also provides a basis for **con-**

stant price calculations. As prices are properties of products, a breakdown of output and intermediate consumption by products is needed.

The SUT framework consists of **two types of tables**:

- Supply table
- Use table

The **supply** table shows domestic production by industries (classified according to NACE Rev. 1) and products (classified according to CPA) and the supply of imports by products. Domestic output is valued at basic prices and imports are valued c.i.f. As each industry might produce not only products characteristic for that industry (primary output) but also other products (= secondary output), the domestic output table has more data entries than those in the main diagonal. In the supply table, the number of products can be greater than the number of industries. If the number of products equals the number of industries, the table has a square format; if the number of products exceeds the number of industries, the system is called rectangular.

The **use** table is subdivided into three tables:

- Table of intermediate use
- Table of final uses
- Table of value added

The **table of intermediate use** shows intermediate consumption by industries and products, the **table of final uses** shows final uses by products and categories of final demand (consumption, capital formation, exports), and the **value added table** shows the components of value added by industries (compensation of employees, other net taxes on production, consumption of fixed capital, and operating surplus). The table on intermediate consumption includes both the goods and services needed for the production of the primary and the secondary outputs. In the intermediate use table, the number of products can again exceed the number of industries distinguished. Use data are valued at purchasers' prices and have to be transformed into basic values.

The framework satisfies the following two **identities:**

- For each industry: total output = total input
- For each product: total supply = total use

The SUT thus form the core of the NA system with respect to the goods and service accounts and the related macroeconomic aggregates. SUT show for the economy as a whole and for groups of products the total resources in terms of output and imports, and the uses of goods and services in terms of intermediate consumption, final consumption, gross capital formation and exports. The SUT system provides the adequate **accounting framework** for compiling consistent and reliable NA data and allows statisticians to enter basic economic data into the system in exactly the same structure in which the basic data can be surveyed and observed.

3. Selected issues when compiling SUT

3.1 Knowledge of concepts and methods

If SUT are compiled for the first time, a thorough knowledge of the concepts of the system and the compilation methods are needed. The framework of a SUT is principally very easy to understand, but the implementation is a difficult task. ESA95 itself provides the basic concepts and defines the requirements of the resulting data structures, but is not of much help as concerns the **compilation methodology**.

The **compilation process** needs to be subdivided into various steps, such as the compilation of the supply table, the compilation of the intermediate use table, the compilation of the final demand table, the compilation of the valuation tables in order to transform the product data into a homogeneous valuation (basic prices). Further steps relate to the balancing of supply and use, the transformation into basic prices, the estimation of the import matrices, and lastly the transformation of the SUT into symmetric IOT by using technology assumptions. The **balancing process** is an especially important step in order to detect inconsistencies in the data as well as in the compilation process, and helps to assess the methods applied and the plausibility of the resulting data.

Knowledge is also necessary about the best compilation methodology for each of the different steps: how to apply the commodity flow-method, how to make estimates without having available the appropriate data, how to make best use of indirect data, and so on. Furthermore, knowledge is required of the **institutional settings of the economy**, including the taxation and bookkeeping systems, and of the specific structures of the various industries and branches. It is often necessary to obtain specialist advice, by contacting experts in government ministries, related institutions and research institutes, but also by contacting enterprises. It is, of course, important that the compilers have an excellent knowledge of the statistical system, not only of economic statistics, but also of various other statistics that might directly or indirectly be needed for the compilation process. Further considerations need to be given to the structure and organisation of the **data management** procedures, including the basic data structures required and the software used in the compilation, calculation and publication process. A last requirement refers to the **documentation** of the compilation process. It is very important that all the individual compilation steps are thoroughly documented both for internal uses and also for external purposes, e.g. published data.

Unfortunately, there are not many guidelines provided at the international level with respect to the compilation of SUT. Two years ago the United Nations published a handbook which deals mainly with the basic concepts of the ESA/SNA system and provides an introduction to input-output analysis, but does not offer much help on compilation. Approximately a year ago, Eurostat took the initiative to start writing an **ESA In-**

put-Output Manual in order to complement the UN handbook and to fill the gaps. First drafts of some of the chapters of this Eurostat manual were presented in a special session at the 13th International Conference on Input-Output Techniques that took place in August 2000 in Macerata, Italy.

3.2 Integration of the SUT approach in the NA compilation system

As explained in Section 2, the main strength of the SUT approach lies in the balancing of supply and use, the resulting data system having a higher reliability as concerns the production and goods and services accounts. Compared to traditional NA, the main difference is the product dimension in the SUT accounts. The production and expenditure approach of traditional NA only allows statisticians to balance supply and use at a total level. The discrepancies observed at the global level usually do not highlight the inconsistencies in the accounts which will therefore not be addressed or treated adequately; further, the use of arbitrary 'residual' or 'balancing' items to eliminate the global output-expenditure discrepancy, may be both misplaced and in the wrong direction.

Modern NA should therefore make use of the **SUT approach** - either directly, by using the SUT framework for the compilation of NA data, or indirectly, by basing NA compilation on the results of the SUT calculations of previous years. The first (direct) option would mean a simultaneous compilation of SUT and NA data in one single data compilation process. Consequently, NA and SUT would have the same numerical results and the same degree of consistency and quality. This approach can be called the “integration approach” and can be undertaken both for the current and constant price calculations. The requirements for such an integrated model are of course quite high, as concerns the practical compilation steps, the organisation of the work and the EDP tools.

However, there are also various “softer” (indirect) models of the "integration approach" which may be easier to implement. Such models do not attempt to compile SUT and NA aggregates simultaneously, but base the NA compilations of the results of previous SUT data which replace the former NA estimates. So, for instance, the NA, while using the last available SUT results, would concentrate on the estimates for current years, while the SUT compilation would relate to a period two or three years earlier for which final and comprehensive data were now available. These SUT results are subsequently used to revise the NA data, final NA estimates then being based on and identical with the SUT data.

It is up to each country to choose the appropriate integration model and to implement it in practice. Usually, when SUT are compiled for the first time, a special group of people will be assigned to such a task in order to gather experience with the specific SUT compilation methods and problems. However, the question of integration needs to be considered as soon as possible, so that the main **strength of the SUT approach** will be incorporated in the NA data system of the country.

3.3 Extensions of the SUT data system

The SUT framework can be extended in several ways by either including additional indicators or by subdividing or cross-classifying parts of the accounts. Important additional indicators concern data on **employment** (labour input) by industries. Such data can refer to the number of jobs, the number of full-time equivalents or the number of total hours worked. The last of these is the best measure of labour inputs and can be used to derive appropriate employment related multipliers. Other supplementary information concerns gross fixed capital formation or stocks of fixed assets.

Subdivisions of certain data structures of SUT are sometimes already established in the compilation process, where data needs to be compiled and estimated in detailed form. So, for instance, the estimation of **gross fixed capital formation** may need to subdivide capital formation into subcategories, such as buildings and constructions, transport equipment, machinery and valuables. It may also be advisable to subdivide gross fixed capital formation by industries and types of producer. It is clear that such additional data structures would enhance the analytical possibilities of the data system. Similar subdivisions can be considered for changes in stocks or for exports (by regions or countries).

Other examples relate to the introduction of the **functional classifications** for private household consumption (COICOP) and government consumption (COFOG) so that the final demand vectors would not only show the structure of household and government consumption by product, but also by purpose. Consumption data by purpose are usually part of the NA data programme and their integration into the SUT framework would not only enlarge the analytical uses of the system (consumption expenditures by products and functions), but also reduce the workload when both dimensions are compiled in one step. Another aspect is the breakdown of the industries by **institutional sectors** which links the SUT to the sector accounts. Many of these subdivisions and cross-classifications should be considered when SUT and NA are to be integrated.

3.4 Databases

SUT compilation needs specific economic databases, especially data providing information on products. Usually, traditional foreign trade statistics represents one of these databases, which are available in all countries on a regular basis. However, **data on products** are needed that provide information on domestic production, on intermediate consumption and on certain categories of final demand. Production statistics like the PRODCOM system provide data on the production of industries by products. However, such production statistics usually only cover manufacturing and

perhaps construction, but not the other service industries for which data only on total output might be available. The level of product detail should be quite high so that the commodity-flow method to estimate certain use flows can be applied.

It is usually easier to collect **production** statistics than cost structure statistics as enterprises have better knowledge and documentation on what they have produced. Also, each enterprise is usually concentrated on a certain (small) number of products whereas the inputs may cover quite a long list of different products, from raw materials to office supplies, from repair services to business travels. For the materials directly used in the physical production process, the internal documentation of the enterprises might be quite good, but this would not be the case for all the overhead costs. Statistics on **intermediate consumption** might thus concentrate on products used in the physical production process and may cover the other inputs only in broad (cost) categories. Clearly, the SUT statistician has to make estimates of the product structure of these inputs for each industry.

As concerns the final demand categories, the data situation is usually quite good with respect to private consumption expenditures because of regular household budget surveys. Total data on capital formation are available from structural business statistics, as well as total data on changes in stocks. Foreign trade statistics together with the balance of payments statistics deliver information on exports and imports, foreign trade statistics also in sufficient product detail. In the case of missing product information for either private consumption or capital formation, the commodity flow-method can be applied if detailed data on domestic output (and foreign trade) are available.

Furthermore, data that supports the compilation of the **valuation matrices** (trade and transport margin matrices; matrices on product taxes and subsidies) and the components of value added are also needed.

It follows that the system of economic statistics required in any country for NA and SUT purposes needs to be of a comprehensive and consistent nature. Ideally, it should cover both market and non-market production and as many industries as possible. It should include information by products for the supply side as well as for the use side. For constant price calculations, **price data** for supply and use by products are also needed.

It is self-evident that the data should be in line with the appropriate **definitions of ESA95** or at least be very close to these concepts and definitions. This is also important for the observation of the required statistical units which for SUT purposes should be the **local kind of activity units** (local KAU) rather than enterprises. Clearly, the statistical data should be of high quality as regards coverage, reliability and timeliness.

The statistical system actually in place in a country is always a compromise between the wishes of the different data users, including the national accountants, and the available resources. An important aspect is also the burden on respondents. In many of the CCs, the system of economic statistics is in the process of change and improvement. This offers an opportunity to address and secure the specific needs of NA and SUT. National accountants should not only seize the opportunity to contribute to these developments by requesting additional information, but also by helping to design the basic economic statistical system.

In designing the **national economic statistical system,** priorities have to be set. Only in an ideal world are all desirable data requirements fulfilled. Consideration has to be given to which data are necessary on a regular basis and at what level of detail, which data can be gathered more infrequently, which data can be surveyed on a sample basis and which data can be surveyed on a voluntary basis. The survey system needs to be flexible so that additional items can be obtained if necessary, or any other improvements incorporated. Other aspects to be taken into account relate to the fulfilment of ESA95 requirements - in terms of coverage, definitions and concepts. It is important that survey concepts are clearly explained for respondents and that questionnaires are designed to facilitate data reporting.

Improving the basic data system is a never-ending task, but is as critical as improvements to the NA compilation methodology. NA depends heavily on reliable and timely data.

3.5 Analytical use of SUT and IOT

Long before the integration of SUT into the international systems of NA was developed, input-output data systems were used in analyses of the inter-industry flows in an economy. The invention by Nobel Laureate Wassily W. Leontief of **input-output techniques** gave the economic profession a powerful tool for analysing the relationships between industries in an economy.

The use of input-output techniques is nowadays a widespread and indispensable tool in economic analysis and forecasting. The main types of analysis are the calculation of multipliers, the analysis of price changes, the analysis of import and export dependencies, the effects of changes in final demand on domestic production and factors of production, the analysis of structural changes over time and geographical area (regional/multi-regional or international analysis). Input-output methods can be used in economic modelling of all types. Such analyses can be performed at national, regional and international levels. The input-output system can be enlarged with physical data, such as energy consumption or the use of environmental resources. Input-output techniques are thus not restricted to traditional economic analysis and modelling, but also provide a tool to link the production processes in an economy with other factors related to the supply and use of products and resources.

Even if only traditional input-output methods are used, valuable indicators with respect to the relationships between industries can be calculated, such as different kinds of multipliers or the content of imports in final demand. If employment indicators are also available, employment multipliers can be calculated. Given modern EDP resources and software programmes, only a small investment is required to develop a system to regularly calculate the main input-output analytical indicators.

All statistical institutes should develop a system of analysis that provides them with the main **input-output indicators and multipliers**. These not only provide indicators of the structure and development of their economy, but also provide insights and feedback in connection with the data compilation process. It is also recommended that these indicators be disseminated in statistical publications, along with the SUT. Furthermore, the regular availability of SUT and derived IOT enable economic researchers and model builders to make use of this new tool. Contacts with academic researchers, researchers in institutes and government ministries should therefore be established to promote the use of these new databases.

4. Activity A9: the work undertaken in the Baltic States

As indicated in the Section 1, the description given here of the work undertaken for Activity A9 concentrates on the three Baltic States - Estonia, Latvia and Lithuania. The expert, who provided technical assistance was Norbert Rainer, hereafter referred to as the 'expert'.

The main aim of Activity A9 was to help the countries to compile SUT/IOT according to ESA95, by "teach-ins" on conceptual and methodological issues and by giving practical advice. The expert provided this technical assistance during three Task Force meetings (in March & October 1999 and in July 2000) and during two missions each of three days to each of the Baltic countries (in June-September 1999 and March/April 2000).

The first Task Force (TF) meeting was mostly devoted to presentations by the expert on concepts and methodological issues relevant for the elaboration of supply and use tables under ESA95. In these presentations, emphasis was given to the practical work on compiling supply and use tables. For their part, the Baltic States each gave an overview of the state of art in compiling SUT in their countries. Work programmes were agreed for each country.

The second TF meeting was organised rather differently. In addition to presentations by the expert, much emphasis was given to presentations by the Baltic countries themselves. In addition to individual reports on progress achieved, the three countries also gave presentations concerning their particular experience with certain conceptual or methodological issues. The TF agenda also included a round table presentation on the structure of basic statistics and the plans to improve the information basis. The expert presented the different models to integrate supply and use table work into the national accounts. Another important topic on the agenda was the presentation by the expert of the structure for an inventory for completion by the Baltic countries, the purpose being to document the work done under Activity A9.

The third TF meeting took place after the end of Activity A9 and provided the opportunity to summarise the experience gained during the project. As with the second TF meeting most of the presentations during the third TF were given by the Baltic countries themselves. Their presentations included progress and résumé reports, reports on the further implementation of ESA95 and the presentation of the Estonian and Latvian contributions to the 13th International Conference on Input-Output Techniques, where a special session on the compilation of supply and use table in transitional countries had been organised by the expert together with Reiner Stäglin. The expert presented models for the transformation of supply and use tables into symmetric input-output tables. The general conclusion of the third TF meeting was that much had been achieved under Activity A9 – but there was much still to do.

The expert's missions afforded the opportunity to discuss all aspects of SUT compilation. Specific conceptual issues requested by each country were discussed, followed by the work done and the further steps required under the work programme. The countries presented written progress reports together with the actual data they had compiled before each mission.

Many other issues related to the SUT work were also were dealt with during the missions. These included the basic data system, the relations between SUT and NA estimates, the analytical use of input-output and the further steps needed to implement ESA95.

From the beginning of Activity A9 it was clear that certain issues were outside of the scope of A9 because of the limited time available. These issues included the transformation of SUT into symmetric IOT and the elaboration of constant price tables.

5. Compilation of SUT in the Baltic States: the results

Estonia

Preparations to compile a SUT for Estonia had already started prior to Activity A9, but most of the compilation work was done during the project. The first Estonian SUT (with reference year 1997) was finalised shortly after the end of Activity A9. In many respects the SUT is in line with ESA95 requirements, but certain specific ESA concepts remain to be incorporated. The methodology applied is generally of a good standard, which should ensure the resulting quality of the data is satis-

factory. Having said that, further improvements to the database and methodology are needed. This is a never-ending task. Importantly, Estonia has accumulated invaluable experience in compiling SUT. Estonia also prepared comprehensive documentation on the database, the concepts and methodology used for their SUT work.

Latvia

For Latvia, the first experimental version of a SUT was calculated for the year 1996, at a very aggregated level. Following improvements in the basic data, the second SUT was elaborated for 1997. By the end of the Activity A9, a SUT for 1998 had been finalised. The SUT for Latvia are of a high methodological quality and are fully integrated with NA. Supply and use are valued at basic prices and import flows are recorded in separate import matrices. The activities in the SUT are separated by institutional sectors so that the cross-tabulation of activities by institutional sectors is also supported. The Latvian tables also largely comply with ESA95 requirements. Full compliance is scheduled to be finalised by 2003. Like Estonia, Latvia submitted good documentation on the database, concepts and methodology employed.

Lithuania

Lithuania undertook much compilation work during Activity A9, but the first SUT had not been finalised by the end of project A9. However, it was completed later. The SUT, with reference year 1996, is broadly in line with ESA95 requirements; further concepts needed to be incorporated. The methodology applied is mostly standard. Improvements in the methodology and the database are necessary. Further experience will be acquired as work on SUT progresses. Like the other countries, Lithuania prepared the suggested documentation.

6. Recommendations with respect to SUT work in the Baltic States

6.1 Improvements in methodology

Considerable progress has been achieved in the Baltic States. However, some weaknesses in the methodology employed are evident which need to be addressed. Certain improvements in methodology – for instance, the application of the commodity-flow method – are only possible if certain data become available (e.g. data on domestic production by products).

6.2 Extensions of the supply and use system

Such extensions relate to employment data, which are also part of the data delivery programme under the ESA95 Regulation. One extension concerns the integration of the functional classifications (COICOP, COPNI and COFOG) which represents a necessary step for the integration of SUT with the NA. Another extension concerns data on employed persons by industry which could first be compiled, followed by data on employment in volume terms (hours worked) - or at least in full-time equivalents.

6.3 Transformation of symmetric input-output tables

The transformation of SUT into symmetric IOT by applying certain technology assumptions was from the beginning outside the scope of Activity A9. The requirements of ESA95 are demanding in that ESA95 requests that product technology be used. From the theoretical point of view, product technology may be the appropriate assumption. However, in practice, the application of the product technology might result in some negative coefficients and flows. In such cases, a thorough analysis and changes in the data need to be undertaken in order to make the data better fit the model assumption.

6.4 Analytical use of input-output tables

While the supply and use system is a statistical instrument for the elaboration of balanced and high quality NA data, the derived input-output tables are an important tool in economic analysis. Traditional input-output analysis provides valuable indicators with respect to the interdependence within the national economy and between the national economy and the rest of the world. Latvia has already undertaken some experimental work in this area. Today, EDP tools facilitate matrix calculations and it is quite easy to derive the various multipliers and to calculate impact analysis indicators. Such multipliers can be published together with the supply and use data itself.

7. Recommendations with respect to the broader NA perspective

7.1 Organisation of SUT work

Work by National Statistical Institutes (NSI) on SUT often starts as a separate project with a separate team being set up inside the NSI. Some organisational aspects are important. First, the resources devoted to SUT should be adequate; in practice, these are often underestimated. Further, the SUT workload is not constant over time, so the resources available need to be flexible. Secondly, to ensure compliance with ESA95, close co-ordination between the NA compilers and the SUT staff is required. This can best be achieved if a 'masterplan' is drawn up which defines the milestones and the division of labour between the SUT and NA staff.

7.2 Integration of the supply and use framework into the NA compilation system

SUT represent the core of NA in the area of production and product accounts. SUT should therefore be an integral part of the NA data system, or in other words, NA should be based on detailed and balanced product accounts. On the conceptual side, there are no differences between SUT and traditional NA. How-

ever, aggregates derived from SUT will in practice differ from NA data as traditionally compiled because the supply and use framework permits the detailed balancing of supply and use, which is not a feature of the traditional NA framework. It is usual to find that there are differences between the final results of a SUT and the NA estimates already compiled and published for the same reference year. Such differences have to be analysed and explained, and revisions made, if required.

Section 3.2 underlined the desirability on integrating the supply and use framework into the NA compilation process. However, it should be recognised that this is a complex and time-consuming task that needs to be carefully planned. The elaboration of constant price SUT should be included in such plans.

7.3 Improvements in the basic data system

In all three Baltic countries, a process of securing gradual improvements in the basic data system is underway. It is clear that a comprehensive, regularly available basic data system (which is in line with, or can be adapted for ESA95 requirements) is vitally important for the compilation of SUT.

The basic data and survey system in the Baltic States, especially in Estonia and in Lithuania, is currently at an intermediate stage. Many changes have already been implemented, yet much more needs to be done, not only with respect to ESA95 requirements. This is especially the case for the data structures needed for SUT compilation. As an example, in Estonia and Lithuania specific sample surveys have been undertaken to obtain cost structures, as these were not part of the regular survey system.

It should be noted that the European system of basic data (especially PRODCOM, structural statistics and business indicators) is sometimes insufficient for NA purposes. The implementation of these basic economic statistics in national systems have thus to go beyond EU requirements, and an ongoing dialogue between NA experts and the NSI staff responsible for basic statistics is clearly essential in order to improve the structure and quality of the basic statistics needed for NA purposes.

7.4 Full compliance with the ESA 1995 requirements

As ESA95 definitions and concepts have not yet been fully implemented in the NA of the Baltic States, it follows that ESA95 has not yet been fully incorporated in the SUT. Some of the necessary changes are easy to implement; others are more complex and need specific research and data inputs. This takes time. From a practical point of view, it was seen as initially more important to create a supply and use database (thereby gaining experience in dealing with the complexities of the diverse submatrices and balancing procedures), even if the resulting SUT does not comply with ESA95 requirements in every respect. All the Baltic States have now successfully compiled one or more supply and use tables. Latvia that has made most SUT progress to date, expects to comply fully with ESA95 by 2003.

CHAPTER 12
Activity A10: Capital Stock (CS) and Consumption of Fixed Capital (CFC)

1. Introduction

Good estimates of the capital stock and the consumption of fixed capital (at replacement cost) are important for National Accounts (NA) purposes. However, for the Candidate Countries (CCs), these estimates had been found to be inadequate. In particular, the consumption of fixed capital was often recorded at historic rather than replacement cost; given the impact of inflation on replacement costs, the use of historic costs results in a significant understatement of capital consumption, and hence of GDP for non-market activities.

Estimates of the capital stock in the CCs also needed to be substantially improved. The value of many items of the capital stock had often been written off (i.e. valued at zero) even though such items (e.g. of plant and machinery) continued to be used. A proper valuation of the capital stock needed to be undertaken. Similarly, appropriate assumptions needed to be made about the service lives and hence the annual consumption of fixed capital.

In recognition of the theoretical and practical difficulties involved, work under Activity A10 was undertaken between end-1998 and May 2000 with the ultimate objective of securing more reliable and comparable data for the CCs, and to obtain revised estimates of the capital stock and of capital consumption. Because of its direct impact on GDP, priority was given estimates of the capital stock (CS) and the consumption of fixed capital (CFC) for non-market producers.

Technical assistance to the CCs was provided by the EU expert, Leila Pathirane (hereafter referred to as 'the expert'). Nine countries participated in Activity A10: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia.

Activity A10 included two workshops in Luxembourg - in February 1999 and January 2000. It also involved project work by each of the CCs in order to improve the basis of their CS and CFC estimates. The expert played a leading role in the two workshops and supervised and analysed the results of the CC project work. In addition, the expert undertook missions to each of the CCs and wrote interim and final reports on each of the countries. The expert also wrote a synthesis report summarising the results of Activity A10. This chapter draws heavily on that report.

2. Short summary of the general approaches for calculating the CS and CFC

During the first workshop in February 1999, it became evident that it would not be possible to harmonise the approach and the methods of compiling CS and CFC in the CCs. The situation regarding statistical data sources was different in each country. Three groups of countries could be distinguished for the general methodological approach to be adopted:

a. One group (Estonia, Latvia[1], Lithuania and Poland) would ***continue compiling the balance of fixed assets (BFA)*** in a modified form; the data would need to be converted to replacement prices.
b. A second group (Czech Republic, Hungary, Slovak Republic and Slovenia) would make ***benchmark estimates of the CS, to be extrapolated backwards and/or forwards in time using the perpetual inventory method (PIM)***.
c. Cyprus would use a ***pure PIM*** for its calculations.

Within the first two groups of countries there were great differences. The improvements in the existing methodology or the development of new benchmark estimates focused on different aspects of the basic methodology, which differed, from one country to another.

2.1 Continuation of the balance of fixed assets

For the Central and Eastern European countries, the term 'balance of fixed assets' (BFA) related to the regular collection of data on the stock and depreciation of assets; this represented an integral part of the Material Product System (MPS). Under the MPS, data was reported annually by enterprises on the stock of fixed assets at the beginning of the year, the acquisition during the year (including new assets), withdrawals (including liquidation of fixed assets) and the value of the stock at the end of the year. The BFA was compiled both at full and depreciated replacement values.

After 1989, the three Baltic countries and Poland continued to collect annual data for the compilation of the BFA, but modified to take into account the asset definitions, coverage of units and other recommendations of ESA and SNA. Other changes were introduced to diminish the burden of data reporting by limiting the detail and scope of the questionnaires, etc. This sometimes led to a lack of consistency between CS and GFCF estimates. In the first half of the 1990s, enterprises re-valued their assets by government decree to compensate for high inflation rates. In the Baltics, the introduction of national currencies also required a revaluation of assets. These revaluations were not continued when the rate of inflation slowed down. The changes introduced in the data collection to decrease the reporting burden and the non-continuation of the re-valuation of assets to some extent diminished the usefulness of the BFA. In the expert's opinion, if the data collection is improved, it could still provide a set of basic data, which could serve as a basis for the CS and CFC compilations. The expert felt that it is

[1] In the case of Latvia, however, the expert later questioned whether the BFA method was the most suitable general approach. Instead, the "Benchmark + PIM" approach was recommended by the expert. See the footnote to Table 3 for an explanation.

Table 1: Valuation of assets: Practices in the Baltic States & Poland.

	Historic prices		Depreciated assets included?	
	Full	Net	Yes	No
Estonia	✓			x
Latvia		x		x
Lithuania	✓	x		x
Poland	✓		✓	

Explanatory Notes:
In Estonia assets are recorded at full historic prices. Fully depreciated assets are not included even if the assets are physically still in use.
In Latvia assets are reported at net historic values, i.e. after deduction of accumulated depreciation. Latvia intend to start collecting data at full historic values, at least for a benchmark year.
Lithuania collects data on assets at both gross and net historic values.
In Poland, the assets are reported at full historic prices. Completely depreciated assets are included; their value is also reported separately.

worth trying to improve the BFA rather than abandon it and introduce a new system.

The Baltic States and Poland proposed to use the BFA method for non-financial and financial corporations. The method would also be used for types of assets or kinds of activity in the general government and NPISH sectors, where no other method or data source is found.

Valuation of assets

The reported data on the value of assets in the four countries are all at historic prices. As can be seen in Table 1 below, there are differences between the countries.

In Poland, fully depreciated assets constitute an important share (in physical terms) of the total capital stock, indicating that the assumptions about service lives (which determine the depreciation rates) underestimate the economic life of assets. Because the Baltic States completely exclude depreciated assets, one might therefore suspect that the actual CS used in production is underestimated in these three countries.

Revaluation of assets

As indicated above, all four countries re-valued assets during the first half of the 1990s. However, the frequency and the detail differed. The last general revaluation of assets occurred in 1993 for Latvia and in 1995 for the other three countries. None of the four countries continued the general revaluation of assets after 1995. Poland used the annual price evolution for 8 groups of assets. Enterprises could also use changes in market prices. In the other countries, coefficients were established by the government according to the type of assets and year of installation. Estonia continued to revalue assets after 1995 to current replacement prices, but only in an approximate way.

In all four countries, the statistical offices need to **revalue all assets to current and constant average replacement prices**, following the latest general revaluation of assets. The revaluation is facilitated by the fact that the period over which it should be done is short and that price indices according to western standards are to a great extent available, although more detailed price information would be desirable, especially on price changes of imported capital goods, which at least in the Baltic countries constitute an important share of the stock of machinery and equipment. In the conversion to replacement prices, the statistical office should try to apply price indices, which reflect the structure and types of assets of the individual sectors and/or activities. In Estonia, for example, the same conversion factors are presently used for all assets and activities in the financial and non-financial sectors.

2.2 Benchmark estimates, combined with PIM

As stated above, four countries (Czech Republic, Hungary, Slovak Republic and Slovenia) are using benchmark estimates of the CS which are then extrapolated backwards and forwards using the PIM. However, the practices between the countries vary enormously.

The *Czech Republic* has estimated the CS and CFC for the period 1994-96 using the accounting statements of reporting units. At the same time, preliminary CS and CFC estimates were prepared based on the BFA for 1992 was extrapolated using PIM to obtain preliminary CS estimates for the years after 1992. A structural transition survey for 1997 has provided data of the stock of assets of reporting units at historical acquisition prices. A survey was also made of the age and acquisition price of disposed assets. Various options on how this data source could best be used were discussed with the expert, and experimental calculations were being made to see which gave the most satisfying result. The length of the period over which assets need to be **revalued** depends on which option is used for the compilation.

In the *Slovak Republic*, the BFA had not been compiled since 1991 and the collection of data on the stock of fixed assets was stopped in 1993. It was resumed for the year 1995 with definitions of assets,

Table 2: Producers, Activities & Sectors covered, together with the years

Country	Producers, Activities & Institutional Sectors	Years
Czech Republic	All producers	1997
Cyprus	All producers	1990 - 1999
Estonia	General government	1995-1997
Hungary	General government (based on the existing estimates)	1993 -1998
Latvia	Public administration, Defence, Social security Government road services	1998
Lithuania	General government, NPISHs	1995-1998
Poland	General government, NPISHs	1994-1998
Slovak Republic	Producers of housing and related services in all sectors Government road services	1993-1998
Slovenia	General Government, producers of collective services, except R&D, and producers of individual services, except NACE O	1995-1998

units, etc. in line with ESA95 recommendations. Further extensions and improvements were introduced for the year 1998, the data being valued at historic prices. Data on vintages of assets were also requested in order to convert the data at historic prices to **replacement prices**. In the Slovak Republic, the last revaluation of assets was made in 1977. It should be noted that in both the Czech and Slovak Republics, capital repairs were not capitalised between 1966 and the year when ESA/SNA were introduced. This implies that the data on stock of assets were underestimated during that period.

In *Hungary*, all collection of data on stocks of fixed assets was abandoned in 1991. In 1999, a new programme to collect data for CS and CFC compilations was adopted. Data for a benchmark year is to be collected and extrapolated using PIM. Initially, the data collection was going to be spread over some years, with different benchmark years for different parts of the economy, starting with 'industry' in 1999. If this plan has not been changed, CS estimates might not be available for all the sectors covered until 2003-4. Data will be reported at historic prices for all assets. For 'essential assets', constituting 80 per cent of the assets used by enterprises in production, enterprises will try to estimate values at **replacement prices** (using price indices provided by the Statistical Office or changes in market prices).

In Hungary, a separate system is being created for the government sector. It will be based on two databases of government assets. The first is an administrative database of assets of central government, social security and extra-budgetary funds. The second is the Local Government Real Asset Register.

In *Slovenia*, a project to collect data for CS compilations is under development. It started in 1998 with experimental data collection for the government sector for the years 1995-97, mainly for collective services; the experimental calculations were mainly based on data in value terms, but also on quantity and price information. The project has been extended to individual services. Collection of data on the stock of assets of all sectors started in autumn 2000. In Slovenia, all economic units are obliged to re-value their assets each year. Enterprises and units producing non-market individual services use the overall retail trade price index for this revaluation; other government units use the producer price index for manufacturing goods. The assets are therefore not expressed in **replacement prices**, but rather in some sort of purchasing power values.

2.3 Perpetual inventory method (PIM)

As already mentioned, Cyprus is the only country, which will entirely base its CS and CFC estimates on the PIM. The Department of Statistics has been able to create sufficiently long time series back to 1950 for machinery and equipment and back to 1925 for building and construction. They are based on experimental calculations made in the 1980s for CS estimates for 1985. A major problem in creating the time series of the assets was how to split the stock of assets before 1974 between assets in the government-controlled area and the part of Cyprus occupied by Turkey. A 60:40 split was adopted. It will be necessary to introduce into the compilations the ESA95 classifications for activities (NACE Rev.1) and for institutional sectors, as well as a 1995 base year for **replacement values** at constant prices.

Table 3: Methods used by type of assets

Country	employed	Quantity x price approach	Values at historic prices converted to current replacement prices
Czech Republic	Benchmark + PIM	Residential buildings Roads	Non-residential buildings Structures (expect roads) Transport equipment Other machinery & equipment
Cyprus	PIM for all assets		GFCF in all assets
Estonia	Annual direct estimates	Residential buildings	Non-residential buildings Structures (incl. roads) Transport equipment Computers Other machinery & equipment
Hungary	Benchmark + PIM	No new estimates yet made.	
Latvia	Annual direct estimates starting with 1998 ***or*** Benchmark + PIM[2]	Residential buildings Non-residential buildings Roads	
Lithuania	Annual direct estimates	Residential buildings	Non-residential buildings Structures (incl. roads) Transport equipment Computers Other machinery & equipment
Poland	Annual direct estimates (BFA)	Roads	Residential buildings Non-residential buildings and structures (except roads) Transport equipment Other machinery & equipment
Slovak Republic	Benchmark + PIM	Residential buildings Garages, Week-end houses Roads	
Slovenia	Benchmark + PIM	Residential buildings Roads	Residential buildings Non-residential buildings Transport equipment Hardware and software Other machinery & equipment

3. Conversion to replacement prices

As already indicated in sections 2a to 2c, all the CCs needed to convert historic prices to **replacement prices**, or to revise the existing conversions. The quality of the results depends in all cases on the availability of price indices in sufficient detail. Price indices are largely available for the 1990s (even earlier in the case of Cyprus), although more detailed price information would be desirable, especially on price changes of imported capital goods. The statistical offices have been advised to combine price indices to reflect as far as possible the structure of assets in each activity or sector, instead of using global indices. The biggest problem concern areas where imported goods are predominant and only unit value indices are compiled for imports and in the case of construction where price indices do not always differentiate between different construction objects.

Table 4A: Service lives and rates of consumption of fixed capital: *Buildings (residential and non-residential) and Structures (roads & others)*

	Buildings		Structures	
Country	**Res.**	**non-Res.**	**Roads**	**Other**
Czech Republic				
Service life: years	72	36-75	35	36-75
CFC rate: per cent	1.4	1.3 - 2.8	2.9	1.3 - 2.8
Cyprus				
Service life: years	40 – 65	40 – 65	40 – 65	40 - 65
CFC rate: per cent	1.5 – 2.5	1.5 – 2.5	1.5 – 2.5	1.5 – 2.5
Estonia				
Service life: years	66.7	50	10	20
CFC rate: per cent	1.5	2	10	5
Hungary				
Service life: years	45 – 67	50	42	50
CFC rate: per cent	1.5 – 2.2	2	2.4	2
Latvia				
Service life: years	70	50	30	
CFC rate: per cent	1.4	2%	3.3	
Lithuania				
Service life: years	91	77-91	77	77
CFC rate: per cent	1.1	1.1-1.3	1.3	1.3
Poland				
Service life: years	66.7	52.6	33.3	38 - 45
CFC rate: per cent	1.5	1.9	3	2.2 – 2.6
Slovak Republic				
Service life: years	62		77	
CFC rate: per cent	1.61		1.3	
Slovenia				
Service life: years	77	77	50	
CFC rate: per cent	1.3	1.3	2	

4. Consumption of fixed capital (CFC)

The text above largely related to the capital stock (CS). This section summaries the situation in the CCs concerning the **consumption of fixed capital** (CFC) - the estimates of which are just as diverse as the CS calculations itself. The CFC is in general based on depreciation from bookkeeping records of enterprises and government units. In most countries, CFC is calculated for all sectors, but in Hungary only for non-market producers. In Cyprus it is estimated as 10 per cent of GDP. CFC is calculated on stocks at current purchasing power values (in Slovenia), at rough replacement values (in Estonia & Hungary), but in general on stocks of assets at historic prices. Depreciation rates used are in most cases those prescribed by the Ministry of Finance for tax purposes, but in Latvia, for example, they seem to be based on the economic life of assets. They can be very detailed as in Slovenia or refer to a large group of assets, which is generally the case. They seem often be based on assumptions on rather short service lives. In most countries straight-line depreciation is obligatory, but other functions are also allowed as, for example, in Latvia. In some countries, enterprises calculate depreciation on the opening stock of assets, in others on the closing stock.

In all countries, the CFC estimates needed to be revised or newly calculated based on the **average stock of the year at replacement prices**. Countries were advised to use a **straight-line depreciation function** and a bell shaped mortality function when such a function is needed. Countries needed to look critically at the **depreciation rates**, which are used. The rates prescribed for tax purposes are not necessarily appropriate if based on assumptions of rather **short service lives**, which do not correspond to the economic life of the assets. An illustration is the high proportion of completely depreciated assets in the capital stock in Poland, which was referred to earlier. In Hungary and Slovak Republic, the service lives are based on the average age of a group of assets, while in the Czech Republic, the average age of discarded assets is used. Countries without information on service lives of assets were advised to look at service lives of assets

in other countries. These included lists of service lives used in some OECD countries.

5. The results of the work undertaken by the Candidate Countries

The project work organised under Activity A10 was undertaken in the year 1999. Improvements in the CS and CFC estimates require a substantial investment in research work for new or alternative data sources and methods. Realistically, Activity A10 could only therefore be regarded as a first step towards new and better based CS and CFC estimates, with the emphasis being first given to securing improvements for non-market producers because of the direct impact on the GDP estimates. Some CCs were able to achieve more than others depending on the available resources and existing work programmes. In the case of Hungary, a global CS project had already been planned with a different timetable, so Hungary were not able to deliver any new estimates for non-market producers.

5.1 Coverage of producers

As Table 2 shows, the coverage of the CS and CFC estimates varied between the CCs, both with regard to producers/sectors and the time period to which the calculations refer.

5.2 Methods used by type of asset

The general methodology employed by the CCs was previously described in Section 2:

- *Estonia, Lithuania* and *Poland* are making direct annual CS estimates based on balance sheet data according to the bookkeeping systems reported by enterprises and government units. *Latvia* would collect balance sheet data at gross values for 1998 to begin with. The method represents a continuation of the BFA compiled for the MPS. However, all data necessary to make a complete BFA are not collected at present, so the methodology is lacking in precision and the databases need to be improved.
- *Czech and Slovak Republics, Hungary* and *Slovenia* are applying as the general method a benchmark estimate for a single year extrapolated backwards and forwards in time with PIM. Benchmark estimates are based on bookkeeping data reported by enterprises and other units.
- *Cyprus* is relying on PIM for all type of assets.

Although the CCs in these three groups used the same general method for the majority of assets, the methodology to establish CS estimates in each CC does not necessarily need to be the same for all types of assets. As Table 3 shows, the general method used in each CC was combined with the recommended "*quantity x price approach*" for a few specific assets.

Irrespective of the general method used, data on the stock of assets or gross fixed capital formation (GFCF) need to be converted to current and constant replacement prices, either annually or for a benchmark year. Table 3 shows that many CCs made this conversion for most groups of assets - though the basis for this revaluation was rather different between countries.

Table 4B: Service lives and rates of consumption of fixed capital: Machinery and equipment (M & E)

Country	Computers	Transport equipment	Other M&E
Czech Republic			
Service life: years		6 - 13	6 - 27
CFC rate: per cent		7.2 - 16.7	3.7 - 16.7
Cyprus			
Service life: years		12 - 16	10 - 18
CFC rate: per cent		8.3 - 6.25	10 - 5.6
Estonia			
Service life: years	5.9	10	5
CFC rate: per cent	17	10	20
Hungary			
Service life: years		6.5	8
CFC rate: per cent		15.4	12.5
Lithuania			
Service life: years	10	20	20
CFC rate: per cent	10	5	5
Poland			
Service life: years	--	8.2	11.8
CFC rate: per cent		12.2	8.5
Slovenia			
Service life: years	4	8	8
CFC rate: per cent	25	12.5	12.5

Table 5: Comparison of previous and new capital stock estimates: Total stock; buildings & structures (B &S); machinery & equipment (M & E) ***(Change in current prices; previous estimates = 100)***

Country	Year	Total	B & S	M & E
Czech Republic	1997			
All institutional sectors[3]		346	400	236
S11+S12+S14		315	357	242
S13		493	553	164
S15		376	408	250
Estonia	1995	259	301	113
S13	1996	191	209	125
	1997	131	138	110
Latvia	1998			
Total Residential Buildings			1396	
Res. Buildings (NACE L only):			310	
Non-Res. Buildings & Structures (NACE L only):			319	
Roads (NACE L only);			639	
Poland	1995	117	118	100
S13 + S15	1996	135	136	114
	1997	151	155	120
	1998	165	170	121
Slovak Republic	1996			
Total Res. Buildings			493	
S13 Res. Buildings			450	
S14 Res. Buildings			521	

5.3 Service lives of assets and CFC rates

Determining service lives is important both for estimating CS and for calculating CFC. The differences between the CCs are very noticeable for service lives and the corresponding CFC rates, as shown in Tables 4A and 4B.

By way of summary, Tables 4A and 4B show that service lives vary:

- between 40 and 83 years for *residential buildings*;
- between 36 and 83 years for *non-residential buildings*;
- roads, between 10 and 77 years for *roads*;
- between 20 and 75 years for *other structures*;
- between 4 and 7 years for *computers*;
- between 6 and 16 years for *transport equipment*;
- between 6 and 27 years for *other machinery and equipment*.

In the *Czech Republic*, commendably, the service life for a group of assets depends on the activity in which it is used; service lives were based on a survey of discarded assets. In other countries (except Cyprus), it appears that the same service life was assumed for all activities for a specific group of assets. This is not realistic, as the assets used in each activity are different. In *Cyprus*, the life span of groups of assets, e.g. buildings and structures, were differentiated by kind of activity depending on the most common prevailing types of buildings and structures in each activity.

The new estimates of CFC for non-market producers depend not only on the new CS estimates, but also on service lives and CFC rates, which in several cases are different in the new estimates compared with the previous one. One has to keep this in mind when analysing the changes in the levels of CS and CFC between the previous and the new estimates, and their impact on value added and the output of non-market producers.

Because of the influence the value of CFC has on the value added and output of non-market producers, it is important to check and discuss asset service lives. These need not be the same in all the CCs, but they should be justified and similar criteria should be used to establish them. Further, the CCs which are applying

PIM are using different mortality/survival functions - e.g. *Cyprus* has used a log-normal survival function and *Slovenia* a linear one.

5.4 Comparison of the previous and new estimates: change in the stock levels

Table 5 compares the previous and new CS estimates provided by the CCs. Because the CC details differ, it is difficult to summarise the changes in CS levels and compare them between all the CCs. Although the CCs provided data on the levels of the new CS estimates, they could not always provide the previous estimates. The available data permits comparisons of CS levels between previous and new estimates of buildings & structures for 5 CCs (according to the coverage of producers and assets) and for machinery & equipment for 3 CCs.

5.5 Structure of the capital stock

Table 6 presents the structure of the new CS estimates for six CCs, plus Hungary, which provided its existing CS, estimates. The coverage of the figures

Table 6: Structure of the new capital stock estimates, at current replacement prices Total capital stock = 100

Country	Year	Total	B & S	M & E	Other
Czech Republic	1997				
All sectors		100	77.7	22.3	
S11+S12+S14		100	72	28	
S13 (General government)		100	94.9	5.1	
S15		100	86.7	13.2	
Cyprus	1990	100	80	20	
	1995	100	80.6	19.4	
	1996	100	81.3	18.7	
	1997	100	81.9	18.1	
	1998	100	82.2	17.8	
	1999	100	82.2	17.8	
Estonia	1995	100	90.1	9.9	
S13	1996	100	85.5	14.5	
	1997	100	79	21	
Hungary (Present estimates)	1993	100	93.1	6.9	0.1
S13	1994	100	92.9	6.9	0.1
	1995	100	92.8	7	0.2
	1996	100	91.9	7.8	0.3
	1997	100	92	7.7	0.3
	1998	100	90.6	9	0.4
Lithuania	1995	100	79.5	8.5	12
S13	1996	100	78.3	9.4	12.2
	1997	100	78.1	10.1	11.8
	1998	100	76.8	10.8	12.4
Poland	1994	100	94.7	5.3	0.1
S13+S15	1995	100	93.2	6.6	0.2
	1996	100	92.6	7.2	0.2
	1997	100	92.4	7.4	0.2
	1998	100	92.9	7.7	0.2
Slovenia	1995	100	90.7	9.3	
Constant prices	1996	100	90.8	9.2	
S13: NACE L+M+N	1997	100	91.1	8.9	
	1998	100	91.3	8.7	

provided varies. Total capital stock = 100

By way of summary, Table 6 shows that:

- In the Czech Republic and Cyprus, for which CS estimates were made for the *total economy*, buildings and structures represent approximately 80% of the total CS in 1997 (some 78% in the Czech Republic and 82 % in Cyprus).

In the *government sector (S13),* buildings and structures generally accounted for more than 90% of the capital stock, and this share is rather stable. Exceptions are Estonia and Lithuania, where the share is seen to be falling. In Lithuania, the share may be lower than elsewhere because the item 'Other' in-

Table 7: Comparison of previous and new consumption of fixed capital estimates: Total stock; buildings & structures (B & S); machinery & equipment (M & E) ***(Change in current prices; previous estimates = 100***

Country	Year	Total	B & S	M & E
Czech Republic	1997			
All sectors		176		
S11+S12+S14		171		
S13 (General government)		205		
S15		255		
Cyprus	1995	103.9		
	1996	104.9		
	1997	105.4		
	1998	103.6		
	1999	102.4		
Estonia	1995	138	391	68
S13	1996	142	336	86
	1997	140	293	97
Latvia	1998			
NACE L:				
Residential Buildings			156	
Non-Residential B & S			263	
Roads			3008	
Lithuania	1995	117		
S13	1996	107.3		
	1997	93.8		
	1998	83.4		
Poland	1995	89	90	77
S13+S15	1996	111	109	118
	1997	124	124	121
	1998	134	138	121
Slovak Republic	1996			
Total Res. Buildings:			355	
S13 Res. Buildings:			324	
Weekend houses			326	
Roads			474	
Slovenia	1995	250		
S13	1996	221		
	1997	214		
	1998	214		

cludes assets, which should be classified as structures.

5.6 Comparison of the previous and new estimates: change in the level of CFC

The changes in the level of CFC are shown in Table 7. The main points for each CC are:

- In the *Czech Republic*, the CFC in the *total economy* increased by about 75% and about 100% in the *government sector (S13)*. There are no data, which allow a comparison between previous and new estimates by type of assets.
- In *Cyprus* the PIM-based CFC estimates for the *total economy* vary over the period; on average, the CFC estimates are 4% higher at current prices.
- In *Estonia*, the new level of CFC for the *government sector (S13)* is about 40% higher than the present estimates. This is due to much higher CFC for buildings and structures which more than offset the lower CFC rates for machinery and equipment.
- CFC for residential buildings in *NACE L* increased by 56% in *Latvia,* and for non-residential buildings by 163%. The 30-fold increase in CFC for roads reflects higher stock values and the decrease in the service life assumption from 100 to 30 years.

Table 8: Structure of the new CFC estimates, at current replacement prices. Total consumption of fixed capital (CFC) = 100

Country	Year	Total	B & S	M & E	Other
Czech Republic	1997				
All sectors		100	47.8	52.2	
S11+S12+S14		100	41.2	58.8	
S13 (General government)		100	80.3	19.7	
S15		100	57.7	42.5	
Cyprus	1995	100	53.5	46.5	
	1996	100	55.2	44.8	
	1997	100	56.1	43.9	
	1998	100	57.1	42.9	
	1999	100	57.3	42.7	
Estonia	1995	100	61.3	38.7	
S13	1996	100	56.4	43.6	
	1997	100	52	48	
Hungary	1995	100	68.9	29.7	1.4
Existing estimates, S13	1996	100	65.2	33	1.7
	1997	100	64.1	34	2
	1998	100	59.8	38	2.2
Lithuania	1995	100	49.9	22.7	27.4
S13	1996	100	48.1	24.3	27.6
	1997	100	47.3	25.8	26.9
	1998	100	45.5	26.7	27.8
Poland	1995	100	78.5	21.3	0.2
S13+S15	1996	100	76.8	23	0.3
	1997	100	76.4	23.4	0.2
	1998	100	75.7	24.2	0.2
Slovenia	1995	100	50.3	49.7	
S13: NACE L+M+N	1996	100	52.1	47.9	
	1997	100	55.2	44.8	
	1998	100	57.1	42.9	

Table 9: Effects of the new estimates of CFC on value added of general government: percentage shares of CFC to net and gross value added

Country			1995	1996	1997	1998
Czech Republic	CFC/Net value added	Previous			36.4	
		New			74.0	
	CFC/Gross value added	Previous			26.7	
		New			42.5	
Cyprus (1)	CFC/Net value added	Previous	11.5	11.5	11.5	11.5
		New			9.8	
	CFC/Gross value added	Previous	10.5	10.5	10.5	10.5
		New			8.9	
Estonia	CFC/Net value added	Previous	19.5	17.0	16.0	
		New	26.9	24.1	22.5	
	CFC/Gross value added	Previous	16.3	14.5	13.8	
		New	21.2	19.4	18.4	
Hungary (2)	CFC/Net value added	Present	36.1	41.9	40.7	40.4
	CFC/Gross value added	Present	26.5	29.5	28.9	28.8
Latvia (3)	CFC/Net value added	Previous				2.7
		New				12.7
	CFC/Gross value added	Previous				2.6
		New				11.3
Lithuania	CFC/Net value added	Previous	16.0	14.6	13.8	12.0
		New	18.7	15.6	13.0	10.0
	CFC/Gross value added	Previous	13.8	12.7	12.1	10.7
		New	15.7	12.6	11.5	9.1
Poland	CFC/Net value added	Previous	19.6	14.8	12.9	12.6
		New	17.5	16.4	16.0	16.8
	CFC/Gross value added	Previous	16.4	12.9	11.4	11.2
		New	14.9	14.1	13.8	14.4
Slovak Republic (4)	CFC/Gross value added	Previous		12.7		
		New		19.3		
Slovenia	CFC/Net value added	Previous	5.9	6.6	6.4	6.6
		New	14.7	14.5	13.7	14.0
	CFC/Gross value added	Previous	5.6	6.2	6.0	6.1
		New	12.8	12.7	12.0	12.3

(1) Cyprus: Previous: government services (SNA68); shares implicitly assumed. New: general government.
(2) Hungary: Only the present or existing estimates were available. No new estimates have yet been made.
(3) Latvia: CFC and value added of NACE L and roads.
(4) Slovak Republic: The difference between 'previous' and 'new' refers to CFC on dwellings and similar assets in S13, and roads; value added of S13.

Table 10: Effects of the new CFC estimates on GDP Percentage shares

Country			1995	1996	1997	1998
Czech Republic	CFC S13/GDP	Previous			2.9	
		New			5.7	
	CFC S15/GDP	Previous			0.06	
		New			0.15	
	CFC Total/GDP	Previous			19.8	
		New			33.8	
Cyprus	CFC (S13 +S15)/GDP	Previous			2.3	
		New			1.9	
	CFC Total/GDP	Previous	10.5	10.5	10.5	10.5
		New			12.4	
Estonia	CFC S13/GDP	Previous	2.4	2.1	1.9	
		New	3.3	2.9	2.6	
Hungary (1)	CFC S13/GDP	Present	4.4	4.6	4.4	4.4
Lithuania	CFC S13/GDP	Previous	1.6	1.5	1.5	1.5
		New	1.8	1.6	1.4	1.2
Poland	CFC (S13 + S15)/GDP	Previous	2.0	1.5	1.4	1.3
		New	1.8	1.7	1.7	1.7
Slovak Republic (2)	CFC Total/GDP	Previous		15.3		
		New		17.9		
Slovenia	CFC S13/GDP	Previous	0.8	0.9	0.9	0.9
		New	1.9	1.9	1.9	1.8

(1): Hungary: Only the existing estimates were available. No new estimates have yet been made.
(2): Slovak Republic: The new CFC Total /GDP ratio is influenced by the new CFC on dwellings and similar assets in all sectors and by CFC on roads in the government sector.

- In *Lithuania*, the present CFC estimates are estimated as a fixed percentage of output. The new CFC for *general government* is 17% higher in 1995 to 16.6% lower in 1998. This is due to the fall in value terms of the CS and CFC of government residential buildings due to privatisation and to similar falls in improvements to land and road repairs.
- The effect of the annual revaluation of assets in the new *Polish* estimates is evident in the change in CFC levels. However, it is less pronounced than in the change in stock levels because of lowered CFC rates for some assets. For 1995, the CFC is about 10% lower than the previous estimates, but 34% higher in 1998.
- In the *Slovak Republic,* the CFC for all residential buildings is 3.5 higher than the previous estimates. For residential buildings in the *government sector,* the CFC is 3.25 times higher. For roads, the CFC increased by 374%.
- In *Slovenia*, the CFC for total assets in the *government sector* more than doubled compared with the present estimates - mainly due to a very substantial increase in the CFC for producers of collective services.

5.7 Structure of CFC by type of asset

Table 8 presents the new structure of CFC, broken down by type of asset. The following observations can be made:

- *Building & structures* accounts for a much smaller share of total CFC than is the case with the capital stock; conversely, *machinery & equipment* accounts for a much bigger share.
- In the Czech Republic and Cyprus, for which CFC estimates were made for the *total economy*, build-

ings and structures in 1997 accounted for 48% and 56%, respectively.

- In the *government sector (S13),* the share of total CFC accounted for by buildings and structures ranges considerably between the CCs.

6. Effects on government value added and on GDP

6.1 Effects on government value added

The aim of Activity A10 was to improve the CFC estimates for non-market producers because of their influence on the level of output and value added. The ratio of CFC to net and gross value added for the previous estimates and for the new estimates is compared at current prices (see Table 9 below). For the Czech Republic, Cyprus, Estonia, Lithuania, Poland and Slovenia the comparison is between previous and new estimates for the whole government sector. Hungary also provided figures for general government, but as work on CFC is running the absence of new estimates from Hungary, the *present* ratios of CFC to value added are shown in Table 9. For Latvia and the Slovak Republic, the comparison is based on the activities/assets covered during the A10 project.

The previous estimates: the ratio of CFC to gross value added

For the previous CC estimates, the range of values for the ratio of CFC to value added is very wide. For *general government*, in 1997, the ratio of CFC to *gross* value added ranges from 6% in Slovenia to 27% in the Czech Republic and 29% in Hungary. The limited assets/activities covered in Latvia partly explains why the ratio is less than 3% (in 1998). For the other countries, again in 1997, the share of CFC to gross value added lies between 10% and 14%. However, within a country, the shares vary over the years.

The new estimates: the ratio of CFC to gross value added

With the new CC estimates, the share of CFC in gross value added ranges between 9% and 19% for all but one country (the Czech Republic). The range of the new estimates has definitely narrowed. There is also evidence to suggest that the variation in the new ratios is generally more limited within countries over the years than was the case with the previous CFC ratios.

Czech Republic

As just indicated the Czech Republic data stands out from the other countries' figures. The new ratio of CFC to gross value added is over 42%. The Czech results are very different, not so much regarding the increase between the previous and new ratios, but because of the *levels* of the ratios for both the previous and new estimates. In the *previous* estimates, the ratio of CFC to *net* value added is 36% - much higher than the corresponding ratios for other CCs, except Hungary. Even more remarkable, for the *new* Czech estimates, the ratio of CFC to net value added increases to 74%. The question arises whether the Czech ratios correspond to reality. The calculations were considered to be experimental by the Czech Statistical Office. The methodology (data, assumptions, etc) will be critically reviewed before the estimates will be included in the national accounts.

6.2 Effects of the new CFC estimates on GDP at current prices

Table 10 gives the previous and new ratios of CFC to GDP. The difference between these two ratios represents the impact on GDP of the CC work for Activity A10. Table 10 provides most comparisons in terms of the ratio of CFC estimates for *general government (S13)* in relation to GDP. These comparisons show that:

- In Estonia, Lithuania, Poland and Slovenia, GDP has increased by 1% or less.
- In the Czech and Slovak Republics, the new estimates appear to add nearly 3% to GDP.

The new PIM-based estimates for general government and NPISHs in *Cyprus* might lower GDP by ½ %. Although the new total CFC estimate is higher than previously, the government sector estimate of CFC is lower, perhaps due to activity and sector classification changes.

7. Conclusions and recommendations for further work

The work undertaken for Activity A10 in 1999 and 2000 represented a preliminary exercise. It showed the state of affairs in each of the participating CCs regarding CS and CFC - which is very different from one country to another. The results of the A10 project concerning non-market producers are also different between the CCs, but the gaps between the countries' estimates have narrowed. However, some big differences remain. The question arises whether certain countries have overestimated or underestimated the value of the CS and CFC in the government. The size of the government sector is relevant here. If there are substantial differences in the relative size of the government sector, this could help to explain the differences in the impact of the new estimates on the GDP level.

The Activity A10 has been very useful. It has assisted the CCs to become more familiar with CS and CFC compilations, to address problems e.g. regarding data sources, and to plan the work which needs to be done in the future, both for non-market and market producers.

7.1 Extension of estimations

In the short-term, the CCs should continue improving their estimates for non-market producers and extend them to assets and/or activities, which were not previously covered in the A10 project work. CCs which have not yet made constant price estimates of the new CFC for non-market producers need to do so. Prepa-

rations should be made to improve estimates of the total stock of dwellings and the corresponding CFC by institutional sectors, together with similar plans for market producers. Recommendations for future work were included in each of the expert's A10 individual country reports. Some general issues, which need to be addressed in the future, are discussed in the sections below.

7.2 Database for CS and CFC compilations

Activity A10 revealed that the databases for CS and CFC compilations need to be improved in all CCs, either by *introducing new surveys or improving existing ones*. The CCs have already taking steps in this direction.

The Czech and Slovak Republics have already expanded their surveys of fixed assets to better serve the needs of CFC compilations. New surveys of fixed assets have been planned in Hungary and Slovenia. Estonia has planned a special survey of government fixed assets. Cyprus, Latvia, Lithuania and Poland have introduced or plan changes in existing surveys. The recent or forthcoming population, housing and agricultural censuses also afford opportunities to improve databases for CS and CFC purposes.

The imminent OECD capital stock manual suggests splitting non-residential buildings and structures in the CS calculations. During the second A10 workshop, it was suggested that high-technology machinery and equipment should be distinguished from traditional machinery and equipment, because of different service lives and different price developments. The CCs should also consider the introduction of this additional detail.

Cultivated assets and intangible produced assets, for which most CCs have GFCF data, seems to be missing in the CS estimates or included with other assets. An improvement in the database for these items is needed to move the estimates closer to ESA95 definitions.

A database for CS and CFC compilations should also include information on *service lives* of assets (average and total life span) as these differ considerably between countries. Some CCs have already started to collect information on service lives of assets using surveys; other countries have contacted administrations or institutions having specialised knowledge and information about certain types of assets, such roads or buildings. However, more need to be done and in a systematic way. For the purpose of making comparisons of CS and CFC estimates between the CCs, one needs to know what the service lives and CFC rates refer to, and what the choice is based on. This is especially important for buildings and structures.

7.3 Revaluation of assets

Under Activity A10, the revaluation of assets to current and constant replacement prices has in some countries been made at an aggregated level both for activities and assets, using the same price indices for a specific group of assets for the whole government sector. Other countries have tried to differentiate price indices by kind of activity. Estimates could be improved if the revaluation was made at a detailed level of activities, taking into account the different type of assets used in the individual activities. This not only concerns differences in the structure between the main groups of assets, but also differences within the main group of assets. For non-market producers, the variety of assets used is perhaps smaller than for market producers, but even so, one does not use the same type of machinery and equipment in education as in health services. The issue of re-valuing assets for market producers is even more significant and it is invaluable to have more information about which assets (within the main groups of assets) are used in the various activities. It might not be necessary to undertake a special survey, if use can be made of information already collected for other purposes, e.g. input-output tables, or information available at the industry level. Tailor-made price indices can then be compiled for each activity using the available price information from producer price indices and import price indices.

7.4 Harmonisation of estimation methods

At present, it is not realistic to try to harmonise estimation methodologies in the CCs. However, there are some areas where a certain harmonisation might be possible, namely in those cases where a ‘quantity x price’ approach is used. This method is used by several CCs for estimating the stock of residential buildings and the stock of roads. Although the same basic methodology is used, the actual implementation seems to differ. In some countries, e.g. the Slovak Republic, it seems to have been done in great detail; in other CCs the approach has been used at too high a level of aggregation.

Quantity information for both dwellings and roads seems to be more stratified in some CCs than in others. Some countries are able to stratify dwellings by type of dwellings, type of building, materials and location, others by location and/or size. As to prices, some CCs use average market prices of all existing dwellings; other countries use average construction prices or market prices for new dwellings.

In the case of infrastructure, different quantity units are used. Stratification by type of roads is used in some CCs while others use type of region. Commendably, some CCs have attempted greater stratification. In at least one country, the corresponding replacement costs are differentiated by region, type of roads and construction difficulties. The CCs sometimes base replacement costs on new road construction or only major capital repairs. Similarly, service lives of roads refer in some CCs to the ‘total road’, i.e. road beads, road surfacing, etc. In other CCs, they seem to refer only to a part of what constitutes a road, or the result of major capital repairs. It is natural that construction and repair costs, service lives and CFC rates for roads vary because of different intensities in the use of roads for

goods and passenger transport and also because of different geographic and climatic conditions. It would be useful for the CCs have agreed criteria for the points raised above, including definitions of what constitutes capital and current repairs for roads. Indeed, for both dwellings and transport infrastructure, methodological questions could fruitfully be discussed in working groups in order to recommend common methodology to be employed.

7.5 Visit to countries/learning from each other

Three countries - the Czech Republic, Hungary and Slovenia - have been undertaking national Phare projects to develop capital stock estimates in their countries. It was suggested that these three countries should form a working group, which, together with their project experts, could discuss common problems and gain from each other's experience. Other CCs would also benefit from these exchanges. For example, as the Slovak Republic has a database similar to that of the Czech Republic and will use a methodology similar to the three CCs above, the Slovak Statistical Office would profit from participating in such a working group.

Similarly, Poland and the three Baltic States have certain common problems, namely those linked to the continuation of 'Balance of Fixed Assets'. They would also benefit from meeting regularly in order to find common solutions to problems.

During Activity A10, several CCs asked if visits to EU Member States could be arranged (together with written descriptions of the data sources and methodologies), in order to learn more about how CS estimates are made in practice in EU countries. Practical study visits, targeted at specific topics, would be an efficient way to transfer knowledge.

Annex I:
(Chapter 3) Analytical tables used for the PHC project

Example of Poland, 1997

Table 1 Conversion of HBS data for NA purposes (by COICOP Divisions and Groups)

Current prices, Poland, 1997	Purchases of goods and services - HBS raw data, grossed up	Adjustments for differential non-response	Population adjustments	Adjustments for definitions and concepts (see table 1A)	Consumption - nat. conc.- of illegally produced (or imported) goods and services	PHC - national concept - after all adjustments (but before reconciliatn.)	Residents' household expenditure in the rest of the world	Non-residents' expenditure on the economic territory	PHC - domestic concept - after all adjustments (but before reconciliation)
	1	2	3	4	5	6=1+2+3+4+5	7	8	9=6-7+8
01 Food and non-alcoholic beverages	68,537.5	808.0	706.9	0.0	0.0	70,052.4	1,098.6	2,217.6	71,171.4
01.1 Food	64,511.0	752.9	665.3	0.0		65,929.2	1,043.7	2,106.7	66,992.2
01.2 Non-alcoholic beverages	4,026.5	55.1	41.6	0.0		4,123.2	54.9	110.9	4,179.2
02 Alcoholic beverages, tobacco, narcotics	6,023.7	68.9	39.2	0.0	0.0	6,131.8	601.2	1,612.0	7,142.6
02.1 Alcoholic beverages	2,203.8	41.3		0.0		2,245.1	552.2	676.5	2,369.4
02.2 Tobacco	3,819.9	27.6	39.2	0.0		3,886.7	49.0	935.5	4,773.2
02.3 Narcotics				0.0		0.0			0.0
03 Clothing and footwear	13,479.7	50.5	137.9	232.0	0.0	13,900.1	232.5	2,491.3	16,158.9
03.1 Clothing	9,164.0	36.7	93.8	184.0		9,478.5	24.1	2,081.8	11,536.2
03.2 Footwear	4,315.7	13.8	44.1	48.0		4,421.6	208.4	409.5	4,622.7
04 Housing, water, electricity, gas and other fuels	31,224.7	771.3	274.9	13,369.3	0.0	45,640.2	0.0	136.5	45,776.7
04.1 Actual rents	4,903.4	114.8		3,163.5		8,181.7			8,181.7
04.2 Imputed rentals for housing				10,205.8		10,205.8			10,205.8
04.3 Maintenance and repair of the dwelling	3,870.4	96.4	40.4	0.0		4,007.2		136.5	4,143.7
04.4 Water supply and miscellaneous services...	2,630.7	32.1	27.1	0.0		2,689.9			2,689.9
04.5 Electricity, gas and other fuels	19,820.2	528.0	207.4	0.0		20,555.6			20,555.6
05 Furnishings, households equipment and routine maintenance of the house	10,247.5	133.1	101.5	0.0	0.0	10,482.1	435.9	1,170.6	11,216.8
05.1 Furniture and furnishings, carpets...	2,819.0	13.8	28.9	0.0		2,861.7		870.4	3,732.1
05.2 Households textiles	748.4	13.8	7.8	0.0		770.0	0.6	61.4	830.8
05.3 Households appliance	2,460.9	27.5	25.4	0.0		2,513.8			2,513.8
05.4 Glassware, tableware and househ. utensils	775.9	18.4	8.1	0.0		802.4	379.2	119.4	542.6
05.5 Tools and equipment for house and garden	422.3	4.6		0.0		426.9	55.1		371.8
05.6 Goods and serv. for routine household main.	3,021.0	55.0	31.3	0.0		3,107.3	1.0	119.4	3,225.7
06 Health	7,166.9	243.3	75.5	1,650.1	0.0	9,135.8	208.4	238.9	9,166.3
06.1 Medical products, appliances and equipment	4,173.4	169.9	44.3	1,650.1		6,037.7	208.4	238.9	6,068.2
06.2 Out-patient services	2,842.0	68.9	29.7	0.0		2,940.6			2,940.6
06.3 Hospital services	151.5	4.5	1.5	0.0		157.5			157.5
07 Transport	16,004.9	78.1	163.9	0.0	0.0	16,246.9	441.0	996.5	16,802.4
07.1 Purchase of vehicles	4,664.6	18.4	47.8	0.0		4,730.8	52.1		4,678.7
07.2 Operation of personal transport equipment	7,419.4	41.3	76.0	0.0		7,536.7	388.9	996.5	8,144.3
07.3 Transport services	3,920.9	18.4	40.1	0.0		3,979.4			3,979.4
08 Communications	3,521.4	68.9	36.6	0.0	0.0	3,626.9	0.0	0.0	3,626.9
08.1 Postal services	101.0	4.6	1.1	0.0		106.7			106.7
08.2 Telephone and telefax equipment	137.7	0.0	1.4	0.0		139.1			139.1
08.3 Telephone and telefax services	3,282.7	64.3	34.1	0.0		3,381.1			3,381.1
09 Recreation and culture	11,955.5	68.9	122.6	1,027.0	0.0	13,174.0	386.6	994.5	13,781.9
09.1 Audio-visual, photographic and infor.proc.equip.	3,604.1	13.8	36.9	0.0		3,654.8	156.3		3,498.5
09.2 Other major durables for recreation and culture				0.0		0.0			0.0
09.3 Other recreational items and equipment...				0.0		0.0	230.3	755.6	525.3
09.4 Recreational and cultural services	2,552.7	45.9	26.5	1,027.0		3,652.1			3,652.1
09.5 Newspapers, books and stationery	3,172.5	0.0	32.3	0.0		3,204.8		238.9	3,443.7
09.6 Package holidays	2,626.2	9.2	26.9	0.0		2,662.3			2,662.3
10 Education	1,786.0	-23.0	18.0	0.0		0.0	0.0	0.0	0.0
10.1 Pre-primary and primary education				0.0		0.0			0.0
10.2 Secondary education				0.0		0.0			0.0
10.3 Post-secondary non-tertiary education				0.0		0.0			0.0
10.4 Tertiary education				0.0		0.0			0.0
10.5 Education not definable by level				0.0		0.0			0.0
11 Restaurants and hotels	1,877.8	45.9	0.0	0.0	0.0	1,923.7	439.8	439.8	1,923.7
11.1 Catering services	1,446.2	45.9		0.0		1,492.1	439.8	439.8	1,492.1
11.2 Accommodation services	431.6	0.0		0.0		431.6			431.6
12 Miscellaneous goods and services	11,698.4	64.3	87.9	4,514.3	0.0	16,364.9	274.9	797.2	16,887.2
12.1 Personal care	4,439.7	45.9	45.7	0.0		4,531.3	66.5	119.4	4,584.2
12.3 Personal effects n.e.c.	1,749.2	36.7		0.0		1,785.9	208.4	677.8	2,255.3
12.4 Social protection	482.1	-13.8		0.0		468.3			468.3
12.5 Insurance	3,581.1	4.6	36.6	4,514.3		8,136.6			8,136.6
12.6 Financial services n.e.c.	18.4	0.0		0.0		18.4			18.4
12.7 Other services n.e.c.	541.8	4.6	5.6	0.0		552.0			552.0
	886.1	-13.7				872.4			872.4
Total	183,524.0	2,378.2	1,764.9	20,792.7		206,678.8	4,118.9	11,094.9	213,654.8

Table 1A Conversion of HBS data for NA purposes (by COICOP Divisions and Groups): Adjustments for definitions and concepts (national concept)

Current prices, Poland, 1997	Total adjustments to HBS-based data for definitions and concepts	of which						
		Consumption of households own production	Goods and services received as wages and salaries in kind by employees	Other adjustments for NA concepts	of which			
					Imputed rents, insurance serv., clothing and food in the armed forces	Gifts and transfers in kind from abroad (net)	Licenses and fees	Others
	1=2+3+4	2	3	4=5+6+7+8	5	6	7	8
01 Food and non-alcoholic beverages	0.0			0.0	0.0	0.0	0.0	0.0
01.1 Food	0.0			0.0				
01.2 Non-alcoholic beverages	0.0			0.0				
02 Alcoholic beverages, tobacco, narcotics	0.0			0.0	0.0	0.0	0.0	0.0
02.1 Alcoholic beverages	0.0			0.0				
02.2 Tobacco	0.0			0.0				
02.3 Narcotics	0.0			0.0				
03 Clothing and footwear	232.0			232.0	232.0	0.0	0.0	0.0
03.1 Clothing	184.0			184.0	184.0			
03.2 Footwear	48.0			48.0	48.0			
04 Housing, water, electricity, gas and other fuels	13,369.3			13,369.3	10,205.8	0.0	0.0	3,163.5
04.1 Actual rents	3,163.5			3,163.5				3,163.5
04.2 Imputed rentals for housing	10,205.8			10,205.8	10,205.8			
04.3 Maintenance and repair of the dwelling	0.0			0.0				
04.4 Water supply and miscellaneous services...	0.0			0.0				
04.5 Electricity, gas and other fuels	0.0			0.0				
05 Furnishings, households equipment and routine maintenance of the house	0.0			0.0	0.0	0.0	0.0	0.0
05.1 Furniture and furnishings, carpets...	0.0			0.0				
05.2 Households textiles	0.0			0.0				
05.3 Households appliance	0.0			0.0				
05.4 Glassware, tableware and household utensils	0.0			0.0				
05.5 Tools and equipment for house and garden	0.0			0.0				
05.6 Goods and services for routine household main.	0.0			0.0				
06 Health	1,650.1			1,650.1	0.0	0.0	0.0	1,650.1
06.1 Medical products, appliances and equipment	1,650.1			1,650.1				1,650.1
06.2 Out-patient services	0.0			0.0				
06.3 Hospital services	0.0			0.0				
07 Transport	0.0			0.0	0.0	0.0	0.0	0.0
07.1 Purchase of vehicles	0.0			0.0				
07.2 Operation of personal transport equipment	0.0			0.0				
07.3 Transport services	0.0			0.0				
08 Communications	0.0			0.0	0.0	0.0	0.0	0.0
08.1 Postal services	0.0			0.0				
08.2 Telephone and telefax equipment	0.0			0.0				
08.3 Telephone and telefax services	0.0			0.0				
09 Recreation and culture	1,027.0			1,027.0	1,027.0	0.0	0.0	0.0
09.1 Audio-visual, photographic and infor.proc.equip.	0.0			0.0				
09.2 Other major durables for recreation and culture	0.0			0.0				
09.3 Other recreational items and equipment...	0.0			0.0				
09.4 Recreational and cultural services	1,027.0			1,027.0	1,027.0			
09.5 Newspapers, books and stationery	0.0			0.0				
09.6 Package holidays	0.0			0.0				
10 Education	0.0			0.0	0.0	0.0	0.0	0.0
10.1 Pre-primary and primary education	0.0			0.0				
10.2 Secondary education	0.0			0.0				
10.3 Post-secondary non-tertiary education	0.0			0.0				
10.4 Tertiary education	0.0			0.0				
10.5 Education not definable by level	0.0			0.0				
11 Restaurants and hotels	0.0			0.0	0.0	0.0	0.0	0.0
11.1 Catering services	0.0			0.0				
11.2 Accommodation services	0.0			0.0				
12 Miscellaneous goods and services	4,514.3			4,514.3	4,514.3	0.0	0.0	0.0
12.1 Personal care	0.0			0.0				
12.3 Personal effects n.e.c.	0.0			0.0				
12.4 Social protection	0.0			0.0				
12.5 Insurance	4,514.3			4,514.3	4,514.3			
12.6 Financial services n.e.c.	0.0			0.0				
12.7 Other services n.e.c.	0.0			0.0				
Total	20,792.7	0.0	0.0	20,792.7	15,979.1	0.0	0.0	4,813.6

Tables 2 & 3 combined Conversion of retail sales and data from all other sources (except the HBS) for NA purposes (by COICOP Divisions and Groups)

Current prices, Poland 1997	Adjustments to basic data for definitions and concepts, total	of which						
		Production for own final consumption	Goods and services received as income in kind by employees	Other adjustments for NA concepts	of which			
					Imputed rents, insurance serv., clothing & food in armed forces	Gifts and transfers in kind from abroad (net)	Licenses and fees	Others
	1=2+3+4	2	3	4=5+6+7+8	5	6	7	8
01 Food and non-alcoholic beverages	6,462.1	5,880.7	581.4	0.0	0.0	0.0	0.0	0.0
01.1 Food	6,404.0	5,880.7	523.3	0.0				
01.2 Non-alcoholic beverages	58.1		58.1	0.0				
02 Alcoholic beverages, tobacco, narcotics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02.1 Alcoholic beverages	0.0			0.0				
02.2 Tobacco	0.0			0.0				
02.3 Narcotics	0.0			0.0				
03 Clothing and footwear	581.4	0.0	349.4	232.0	232.0	0.0	0.0	0.0
03.1 Clothing	461.4	0.0	277.4	184.0	184.0			
03.2 Footwear	120.0		72.0	48.0	48.0			
04 Housing, water, electricity, gas and other fuels	13,660.0	0.0	290.7	13,369.3	10,205.8	0.0	0.0	3,163.5
04.1 Actual rents	3,163.5			3,163.5				3,163.5
04.2 Imputed rentals for housing	10,205.8			10,205.8	10,205.8			
04.3 Maintenance and repair of the dwelling	0.0			0.0				
04.4 Water supply and miscellaneous services...	0.0			0.0				
04.5 Electricity, gas and other fuels	290.7		290.7	0.0				
05 Furnishings, households equipment and routine maintenance of the house	10.6	10.6	0.0	0.0	0.0	0.0	0.0	0.0
05.1 Furniture and furnishings, carpets...	0.0			0.0				
05.2 Households textiles	1.5	1.5		0.0				
05.3 Households appliance	0.0			0.0				
05.4 Glassware, tableware and household utensils	0.0			0.0				
05.5 Tools and equipment for house and garden	0.0			0.0				
05.6 Goods and services for routine household main.	9.1	9.1		0.0				
06 Health	1,650.1	0.0	0.0	1,650.1	0.0	0.0	0.0	1,650.1
06.1 Medical products, appliances and equipment	1,650.1			1,650.1				1,650.1
06.2 Out-patient services	0.0			0.0				
06.3 Hospital services	0.0			0.0				
07 Transport	1,453.5	0.0	1,453.5	0.0	0.0	0.0	0.0	0.0
07.1 Purchase of vehicles	0.0			0.0				
07.2 Operation of personal transport equipment	0.0			0.0				
07.3 Transport services	1,453.5		1,453.5	0.0				
08 Communications	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08.1 Postal services	0.0			0.0				
08.2 Telephone and telefax equipment	0.0			0.0				
08.3 Telephone and telefax services	0.0			0.0				
09 Recreation and culture	1,027.0	0.0	0.0	1,027.0	1,027.0	0.0	0.0	0.0
09.1 Audio-visual, photographic and infor.proc.equip.	0.0			0.0				
09.2 Other major durables for recreation and culture	0.0			0.0				
09.3 Other recreational items and equipment...	0.0			0.0				
09.4 Recreational and cultural services	1,027.0			1,027.0	1,027.0			
09.5 Newspapers, books and stationery	0.0			0.0				
09.6 Package holidays	0.0			0.0				
10 Education	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1 Pre-primary and primary education	0.0			0.0				
10.2 Secondary education	0.0			0.0				
10.3 Post-secondary non-tertiary education	0.0			0.0				
10.4 Tertiary education	0.0			0.0				
10.5 Education not definable by level	0.0			0.0				
11 Restaurants and hotels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11.1 Catering services	0.0			0.0				
11.2 Accommodation services	0.0			0.0				
12 Miscellaneous goods and services	4,514.3	0.0	0.0	4,514.3	4,514.3	0.0	0.0	0.0
12.1 Personal care	0.0			0.0				
12.3 Personal effects n.e.c.	0.0			0.0				
12.4 Social protection	0.0			0.0				
12.5 Insurance	4,514.3			4,514.3	4,514.3			
12.6 Financial services n.e.c.	0.0			0.0				
12.7 Other services n.e.c.	0.0			0.0				
Total	29,359.0	5,891.3	2,675.0	20,792.7	15,979.1	0.0	0.0	4,813.6

Tables 2A & 3A combined Conversion of retail sales and data from all other sources (except HBS) for NA purposes (by COICOP Divisions and Groups): Adjustments for definitions and concepts (domestic concept)

Current prices, Poland 1997	Adjustments to basic data for definitions and concepts, total	of which						
		Production for own final consumption	Goods and services received as income in kind by employees	Other adjustments for NA concepts	of which			
					Imputed rents, insurance serv., clothing & food in armed forces	Gifts and transfers in kind from abroad (net)	Licenses and fees	Others
	1=2+3+4	2	3	4=5+6+7+8	5	6	7	8
01 Food and non-alcoholic beverages	6,462.1	5,880.7	581.4	0.0	0.0	0.0	0.0	0.0
01.1 Food	6,404.0	5,880.7	523.3	0.0				
01.2 Non-alcoholic beverages	58.1		58.1	0.0				
02 Alcoholic beverages, tobacco, narcotics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02.1 Alcoholic beverages	0.0			0.0				
02.2 Tobacco	0.0			0.0				
02.3 Narcotics	0.0			0.0				
03 Clothing and footwear	581.4	0.0	349.4	232.0	232.0	0.0	0.0	0.0
03.1 Clothing	461.4	0.0	277.4	184.0	184.0			
03.2 Footwear	120.0		72.0	48.0	48.0			
04 Housing, water, electricity, gas and other fuels	13,660.0	0.0	290.7	13,369.3	10,205.8	0.0	0.0	3,163.5
04.1 Actual rents	3,163.5			3,163.5				3,163.5
04.2 Imputed rentals for housing	10,205.8			10,205.8	10,205.8			
04.3 Maintenance and repair of the dwelling	0.0			0.0				
04.4 Water supply and miscellaneous services...	0.0			0.0				
04.5 Electricity, gas and other fuels	290.7		290.7	0.0				
05 Furnishings, households equipment and routine maintenance of the house	10.6	10.6	0.0	0.0	0.0	0.0	0.0	0.0
05.1 Furniture and furnishings, carpets...	0.0			0.0				
05.2 Households textiles	1.5	1.5		0.0				
05.3 Households appliance	0.0			0.0				
05.4 Glassware, tableware and household utensils	0.0			0.0				
05.5 Tools and equipment for house and garden	0.0			0.0				
05.6 Goods and services for routine household main.	9.1	9.1		0.0				
06 Health	1,650.1	0.0	0.0	1,650.1	0.0	0.0	0.0	1,650.1
06.1 Medical products, appliances and equipment	1,650.1			1,650.1				1,650.1
06.2 Out-patient services	0.0			0.0				
06.3 Hospital services	0.0			0.0				
07 Transport	1,453.5	0.0	1,453.5	0.0	0.0	0.0	0.0	0.0
07.1 Purchase of vehicles	0.0			0.0				
07.2 Operation of personal transport equipment	0.0			0.0				
07.3 Transport services	1,453.5		1,453.5	0.0				
08 Communications	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08.1 Postal services	0.0			0.0				
08.2 Telephone and telefax equipment	0.0			0.0				
08.3 Telephone and telefax services	0.0			0.0				
09 Recreation and culture	1,027.0	0.0	0.0	1,027.0	1,027.0	0.0	0.0	0.0
09.1 Audio-visual, photographic and infor.proc.equip.	0.0			0.0				
09.2 Other major durables for recreation and culture	0.0			0.0				
09.3 Other recreational items and equipment...	0.0			0.0				
09.4 Recreational and cultural services	1,027.0			1,027.0	1,027.0			
09.5 Newspapers, books and stationery	0.0			0.0				
09.6 Package holidays	0.0			0.0				
10 Education	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1 Pre-primary and primary education	0.0			0.0				
10.2 Secondary education	0.0			0.0				
10.3 Post-secondary non-tertiary education	0.0			0.0				
10.4 Tertiary education	0.0			0.0				
10.5 Education not definable by level	0.0			0.0				
11 Restaurants and hotels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11.1 Catering services	0.0			0.0				
11.2 Accommodation services	0.0			0.0				
12 Miscellaneous goods and services	4,514.3	0.0	0.0	4,514.3	4,514.3	0.0	0.0	0.0
12.1 Personal care	0.0			0.0				
12.3 Personal effects n.e.c.	0.0			0.0				
12.4 Social protection	0.0			0.0				
12.5 Insurance	4,514.3			4,514.3	4,514.3			
12.6 Financial services n.e.c.	0.0			0.0				
12.7 Other services n.e.c.	0.0			0.0				
Total	29,359.0	5,891.3	2,675.0	20,792.7	15,979.1	0.0	0.0	4,813.6

Table 4 Commodity Flow estimates (by CPA)

CPA (P60) (relevant items)	Production of goods and services at basic prices	Imports - cif	Supply at basic prices	Transport margin	Trade margin	Taxes minus subsidies on products	Exports - fob	Supply at purchasers prices (less exports)	Supply coefficient to PHC	PHC national concept
A	1	2	3=1+2	4	5	6	7	8=3+4+5+6-7	9	10
01										
02										
05										
10										
11										
etc.										

Table 4A Transformation of Commodity Flow estimates (by CPA) to COICOP Divisions and Groups

CPA (P60) (relevant items)	PHC national conc.	Relevant COICOP items									
		01.1	01.2	02.1	etc.						
A	1	2	3	4	5	6	7	8	9	10	11
01											
02											
05											
10											
11											
etc.											
Total (nat. concept)											
Net "tourist" expenditure											
Total (dom. concept)											

Table 5 Summary table – final estimate of PHC (domestic concept)

Current prices, Poland 1997	PHC - domestic concept							Residents households expenditure in the rest of the world	Non-residents expenditure on the economic territory	PHC - nat.conc.
	HBS-based estimates (from Table 1)	Non-HBS estimates (from Tables 2 & 3 combined)	Commodity Flow based estimates - not available	Blank column, not needed	Best estimate - before recon-ciliation	NA estimate actually used (absolute size)	Col. 6 expressed as % of col. 5			NA estimate actually used (absolute size)
	1	2	3	4	5	6	7=6/5	8	9	10=6+8-9
01 Food and non-alcoholic beverages	71,171.4	77,913.2			77,913.2	75,080.8	96.4	1,098.6	2,217.6	73,961.8
01.1 Food	66,992.2	72,221.2			72,221.2	69,896.9	96.8	1,043.7	2,106.7	68,833.9
01.2 Non-alcoholic beverages	4,179.2	5,692.0			5,692.0	5,183.9	91.1	54.9	110.9	5,127.9
02 Alcoholic beverages, tobacco, narcotics	7,142.6	24,884.2			24,884.2	24,769.3	99.5	601.2	1,612.0	23,758.5
02.1 Alcoholic beverages	2,369.4	16,575.9			16,575.9	16,486.9	99.5	552.2	676.5	16,362.6
02.2 Tobacco	4,773.2	8,308.3			8,308.3	8,282.4	99.7	49.0	935.5	7,395.9
02.3 Narcotics	0.0									
03 Clothing and footwear	16,158.9	18,176.6			18,176.6	17,506.1	96.3	232.5	2,491.3	15,247.3
03.1 Clothing	11,536.2	13,757.1			13,757.1	13,246.7	96.3	24.1	2,081.8	11,189.0
03.2 Footwear	4,622.7	4,419.5			4,419.5	4,259.4	96.4	208.4	409.5	4,058.3
04 Housing, water, electricity, gas and other fuels	45,776.7	61,001.7			61,001.7	60,621.0	99.4	0.0	136.5	60,484.5
04.1 Actual rents	8,181.7	8,158.3			8,158.3	8,158.3	100.0			8,158.3
04.2 Imputed rentals for housing	10,205.8	10,205.8			10,205.8	10,205.8	100.0			10,205.8
04.3 Maintenance and repair of the dwelling	4,143.7	22,390.2			22,390.2	22,300.2	99.6		136.5	22,163.7
04.4 Water supply and miscellaneous services...	2,689.9	1,686.0			1,686.0	1,686.0	100.0			1,686.0
04.5 Electricity, gas and other fuels	20,555.6	18,561.4			18,561.4	18,270.7	98.4			18,270.7
05 Furnishings, households equipment and routine maintenance of the house	11,216.8	14,935.2			14,935.2	14,845.4	99.4	435.9	1,170.6	14,110.7
05.1 Furniture and furnishings, carpets...	3,732.1	4,752.4			4,752.4	4,662.4	98.1		870.4	3,792.0
05.2 Households textiles	830.8	930.3			930.3	930.6	100.0	0.6	61.4	869.8
05.3 Households appliance	2,513.8	3,278.0			3,278.0	3,278.0	100.0			3,278.0
05.4 Glassware, tableware and househ. utensils	542.6	1,308.3			1,308.3	1,308.2	100.0	379.2	119.4	1,568.0
05.5 Tools and equipment for house and garden	371.8	202.3			202.3	202.3	100.0	55.1		257.4
05.6 Goods and serv. for routine household main.	3,225.7	4,463.9			4,463.9	4,463.9	100.0	1.0	119.4	4,345.5
06 Health	9,166.3	12,100.8			12,100.8	12,090.9	99.9	208.4	238.9	12,060.4
06.1 Medical products, appliances and equipment	6,068.2	10,278.5			10,278.5	10,268.6	99.9	208.4	238.9	10,238.1
06.2 Out-patient services	2,940.6	1,741.0			1,741.0	1,741.0	100.0			1,741.0
06.3 Hospital services	157.5	81.3			81.3	81.3	100.0			81.3
07 Transport	16,802.4	35,343.1			35,343.1	33,889.6	95.9	441.0	996.5	33,334.1
07.1 Purchase of vehicles	4,678.7	7,171.6			7,171.6	7,171.6	100.0	52.1		7,223.7
07.2 Operation of personal transport equipment	8,144.3	14,175.8			14,175.8	14,175.8	100.0	388.9	996.5	13,568.2
07.3 Transport services	3,979.4	13,995.7			13,995.7	12,542.2	89.6			12,542.2
08 Communications	3,626.9	2,641.2			2,641.2	2,641.2	100.0	0.0	0.0	2,641.2
08.1 Postal services	106.7	48.2			48.2	48.2	100.0			48.2
08.2 Telephone and telefax equipment	139.1	231.7			231.7	231.7	100.0			231.7
08.3 Telephone and telefax services	3,381.1	2,361.3			2,361.3	2,361.3	100.0			2,361.3
09 Recreation and culture	13,781.9	20,029.4			20,029.4	19,854.5	99.1	386.6	994.5	19,246.6
09.1 Audio-visual, photographic, infor.proc.equip.	3,498.5	5,627.1			5,627.1	5,477.1	97.3	156.3		5,633.4
09.2 Other major durables for recreation and culture	0.0	901.5			901.5	901.5	100.0			901.5
09.3 Other recreational items and equipment...	525.3	2,177.5			2,177.5	2,152.6	98.9	230.3	755.6	1,627.3
09.4 Recreational and cultural services	3,652.1	4,182.1			4,182.1	4,182.1	100.0			4,182.1
09.5 Newspapers, books and stationery	3,443.7	5,132.5			5,132.5	5,132.5	100.0		238.9	4,893.6
09.6 Package holidays	2,662.3	2,008.7			2,008.7	2,008.7	100.0			2,008.7
10 Education	0.0	2,926.6			2,926.6	2,926.7	100.0	0.0	0.0	2,926.7
10.1 Pre-primary and primary education	0.0	525.2			525.2	525.2	100.0			525.2
10.2 Secondary education	0.0	528.8			528.8	528.9	100.0			528.9
10.3 Post-secondary non-tertiary education	0.0	165.9			165.9	165.9	100.0			165.9
10.4 Tertiary education	0.0	974.8			974.8	974.8	100.0			974.8
10.5 Education not definable by level	0.0	731.9			731.9	731.9	100.0			731.9
11 Restaurants and hotels	1,923.7	8,895.9			8,895.9	8,895.9	100.0	439.8	439.8	8,895.9
11.1 Catering services	1,492.1	8,566.2			8,566.2	8,566.2	100.0	439.8	439.8	8,566.2
11.2 Accommodation services	431.6	329.7			329.7	329.7	100.0			329.7
12 Miscellaneous goods and services	16,887.2	19,098.9			19,098.9	19,069.5	99.8	274.9	797.2	18,547.2
12.1 Personal care	4,584.2	6,231.8			6,231.8	6,202.3	99.5	66.5	119.4	6,149.4
12.3 Personal effects n.e.c.	2,255.3	3,700.3			3,700.3	3,700.3	100.0	208.4	677.8	3,230.9
12.4 Social protection	468.3	742.8			742.8	742.8	100.0			742.8
12.5 Insurance	8,136.6	4,514.3			4,514.3	4,514.4	100.0			4,514.4
12.6 Financial services n.e.c.	18.4	269.8			269.8	269.8	100.0			269.8
12.7 Other services n.e.c.	552.0	3,639.9			3,639.9	3,639.9	100.0			3,639.9
	872.4	8,651.6			8,651.6	8,651.6	100.0			8,651.6
Total	213,654.8	306,598.4			306,598.4	300,842.5	98.1	4,118.9	11,094.9	293,866.5

Annex II:
(Chapter 3) Explanatory notes for Annex I

This Annex provides some essential information about the tables completed by the Candidate Countries for the PHC project. The tables completed by Poland are given in **Annex I**. It is worthwhile referring to the Polish tables in order to follow the descriptions below; references are occasionally made to figures in the Polish tables, which relate to the year 1997.

Table 1: Conversion of HBS data for NA purposes (by COICOP Divisions and Groups)

Table 1 employs a systematic and rigorous procedure to convert the basic HBS results into ESA95-based estimates, required for NA purposes. Total PHC is derived using a „**bottom-up**" approach, i.e. by summing the estimates obtained for individual commodities (COICOP items).

Starting from the raw grossed-up HBS figures (in col. 1), a series of adjustments for statistical, coverage and definitional reasons are made (in cols. 2-5) in order to obtain ESA95-consistent estimates of PHC (col. 6).

Because the HBS covers the expenditure of resident households (at home and abroad), column 6 is labelled as a national concept of PHC (i.e., expenditure by Poles in Poland and abroad). However, for NA purposes (and also for comparison with other sources, like retail sales), a domestic concept of PHC is also needed. This concept relates to expenditure by residents and non-residents on the economic territory (i.e., expenditure in Poland both by Poles and non-Poles).

Hence the national concept of PHC (in col. 6) is converted in the corresponding domestic concept (in col. 9) by removing residents' expenditure abroad (col.7) and adding non-residents' expenditure on the economic territory (col.8).

It is worth stressing that the PHC estimates in columns 6 and 9 are not final estimates. The final PHC estimates are obtained later in a summary table (Table 5) which compares the HBS-based estimates with alternative estimates from other sources, chooses a „best" PHC estimate and then reconciles these expenditure estimates with those from the output approach to GDP. Hence, the PHC estimates in columns 6 and 9 of Table 1 are labelled „before reconciliation".

Table 1A: Conversion of HBS data for NA purposes (by COICOP Divisions and Groups): Adjustments for definitions and concepts

The function of Table 1A is to provide a breakdown of the definitional & conceptual adjustments (totalling 20,792.7 in Poland) given in column 4 of Table 1. Virtually half of the total of 20,792.7 is accounted for by the adjustment for imputed rent (10,205.8).

The Polish version of Table 1A does not contain any figures for the consumption of own production (col. 2) nor for wages & salaries in kind (col. 3). This is simply because these two items are already included in the HBS estimates in column 1 of Table 1.

Table 2: Conversion of retail sales data for NA purposes (by COICOP Divisions/Groups)

Like Table 1, Table 2 adopts a systematic step-by-step "bottom-up" approach in order to convert basic retail sales data (col. 1) into ESA95-consistent estimates, using a number of adjustments. The adjustments in cols. 2 & 4 reflect the fact that reported retail sales miss certain transactions. In contrast, the col. 3 adjustment is needed because retail sales include sales to businesses as well as households. Definitional & conceptual adjustments (col. 5) were previously discussed under Table 1.

Because retail sales includes sales both to residents and non-residents, the NA-consistent estimate in col. 7 is a domestic concept. The corresponding national concept in col. 10 can be obtained by adding residents' expenditure abroad (col. 8) and deducting non-residents' expenditure (col. 9).

As with the HBS-based estimates in Table 1, the retail sales-based estimates of PHC in Table 2 are not final, and precede the "reconciliation" that later occurs in Table 5.

Table 2A: Conversion of retail sales data for NA purposes (by COICOP Divisions and Groups): Adjustments for definitions and concepts

The function of Table 2A is to provide a breakdown of the definitional & conceptual adjustments given in column 5 of Table 2.

Table 3: Conversion of data from sources other than the HBS and Retail Sales (by COICOP Divisions and Groups)

Table 3 follows the same general approach as Tables 1 and 2. „Other sources" include household surveys other than the HBS, business survey data other than from retailers, data from state utilities and large producers that dominate the market (e.g. communications, gas, electricity, transport, water), data from trade associations, and from the fiscal authorities and other administrative sources.

Table 3A: Conversion of data from sources other than HBS and Retail Trade (by COICOP Divisions and Groups): Adjustments for definitions and concepts

Table 3 contains a column "Adjustments for definitions and concepts". Table 3A provides a breakdown of these adjustments for definitions/concepts.

Tables 2 & 3 Combined: Conversion of retail sales data and data from all other sources except the HBS (by COICOP Divisions and Groups)

It was possible for CCs to combine Tables 2 and 3, where this was appropriate. Poland chose to do this, as shown in **Annex I**. The title of the table indicates that data from retail sales were combined with data from all other sources except the HBS (for which PHC estimates are given by Table 1).

Tables 2A & 3A Combined: Conversion of retail sales data and data from all other sources except the HBS (by COICOP Divisions & Groups): Adjustments for definitions/concepts

If Tables 2 & 3 were combined, then Tables 2A and 3A needed to be combined. The function of "Tables 2A & 3A Combined" is to provide a breakdown of the definitional & conceptual adjustments given in column 5 of "Tables 2 & 3 Combined".

Tables 4: Commodity Flow estimates (by CPA)

Commodity Flow (CF) estimates were not available for Poland for 1997 during the A1 project, so Table 4 was not completed. Several other Candidate Countries did complete Table 4. The CF method is discussed in Annex III.

Table 4A: Transformation of Commodity Flow estimates (by CPA) and to COICOP Divisions and Groups

In Poland, the CF estimates were not available for 1997, so Table 4A was not completed.

Table 5: Summary table - final estimate of PHC

The alternative PHC estimates from Tables 1, 2, 3 and 4 are brought together for comparison. These four alternatives are on the same basis, i.e. following a domestic concept. A “best” estimate (col. 5) is chosen for each and every COICOP item from among the alternative PHC estimates obtained from the HBS, Retail Sales, Other Sources and the CF method. The “best” estimate may not always be equal to any of these alternatives; it could be a compromise figure, or even higher than the available PHC estimates if they are all known to be deficient. In Poland, because Tables 2 and 3 were combined and CF estimates in Table 4 were not supplied, only two alternative estimates feature in Table 5.

The “best” expenditure estimate in column 5 is not the final figure used for NA purposes. At this point, there is a reconciliation of the expenditure and output measures of GDP. Ideally, the reconciliation should be undertaken in a supply & use framework, but not all Candidate Countries yet have a S&U framework in place.

Following the reconciliation, an estimate is obtained for each COICOP item representing the final figure actually used for NA purposes (col. 6).

Column 7 shows that, in Poland, the PHC estimates (essentially based on retail sales and other non-HBS sources) were very close to the final PHC estimates, after the reconciliation process.

Corresponding final NA estimates according to the national concept (col.10) can be obtained as previously described.

Annex III: (Chapter 3) Ideal Procedures for Estimating Private Household Consumption (PHC)

Table A below is reproduced from Section 3 of Chapter 3. It contains 10 columns which feature ideal estimation procedures (see the start of Section 2 of Chapter 3), which were integrated into the analytical tables employed for the PHC project.

Each of these characteristics of good estimation practice (several of which are related) are discussed in turn below. The most important is the first item – the availability and exploitation of the HBS, Retail Sales (plus other data sources) for individual commodity groups.

While discussing each of these ten procedures, an assessment is made of the estimation strengths and weaknesses in each of the eleven Candidate Countries who participated in the PHC project.

Table A: Summary of the PHC estimation procedures employed by each of the CCs

COUNTRY	HBS, RS (& other data sources) should be used. Which sources are not used to obtain absolute levels of PHC?	Is a bottom -up approach used, so that total PHC is obtained from the sum of the individual items?	Does the breakdown of goods & services permit different data sources to be compared?	Is there a breakdown of tourist expenditure?	Is more than one estimate actually calculated for individual items, using different data sources ?	Are there adjustments for differences in definitions and coverage, before comparing different estimates?	Did the tables show the choice of the best estimate of PHC for individual items ?	Is there balancing within a Supply & Use framework ?	Are reconcilation Adjustments made to obtain final PHC estiMates?	Are the PHC estimates independent (from the output estimates) ?
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
BG	-	Yes	Yes	No	Yes	Partly	No	Yes, partly	No	Yes
CY	HBS,RS	Yes	No	No	No	No	No	Not yet	No	No
CZ	RS	Yes	Not really	Yes	No	No	No	Yes	Yes, high	Not really
EE	-	Yes	Yes	Yes	Yes	Yes	Yes	Not yet	Yes, small	Yes
HU		Yes	Yes	No	No	No	No	Not yet	No	No
LV	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT	-	Yes	Yes	Yes	Yes	Yes, but not clearly	Not clearly	Not yet	Yes, high	Yes
PL	-	Yes	Yes	Yes	Yes	Yes	Yes	Not yet	Yes	Yes
RO	HBS	Yes	Yes	Yes	No	No	No	Yes	Possibly, not clear	Not really
SI	HBS	Yes	Yes	Yes	Yes	Yes	Partly	Not yet	No	Not really
SK	HBS	Mixed	Not really	No	Yes (some items)	No	No	Yes	No	Not really

Sources used for estimating PHC (see Table A, column i)

There is no single data source which can be used to obtain a complete and reliable PHC estimate of total PHC. Several different sources need to be fully exploited in order to cover the whole range of expenditure and also to offer alternative estimates for individual commodity items. Each data source has its implicit advantages and weaknesses, which often vary from country to country.

The main PHC sources that are exploited are:

- The household budget survey (HBS)
- Retail sales (RS) and other business statistics (e.g. relating to services).
- Data from large producers (e.g. utilities)
- Commodity flow (CF)

This list is by no means comprehensive, many other sources being used for PHC purposes, including other household surveys, BoP data, surveys of travellers, trade association data, and information from the fiscal authorities and other administrative sources. It should also be noted that CF is an approach rather than a data source; further, CF estimates are based on sources and methods used in the output approach.

Household Budget Survey (HBS)

Except for Cyprus, Romania, Slovak Republic and Slovenia (for the time being), the CCs use grossed-up HBS results as an important source for PHC levels. In some countries, the HBS is the most important source. Because, in principle, the HBS covers the whole range of household expenditure, the HBS can be used as a primary source, or an alternative source for verification purposes.

The main problem is that the HBS has a tendency to underestimate expenditure. Adjustments are also needed for differential response, especially where non-response is high; the under-representation of high-income households is a particular problem. Most CCs need to make adjustments for differential response; for those CCs that already make some adjustments (Estonia, Hungary, Lithuania and Poland), their work needs to be further developed. Ralf Hein and Knut Sorensen recommended ways of coping with differential response. Eurostat created a Task Force in 2001 which is specifically addressing the issue of differential response.

Other issues, which should be taken into account when producing HBS-based estimates of PHC were also identified and discussed during the project:

- With respect to infrequently purchased durable goods such as cars, furniture, large household equipment etc., the use of a longer period of diary recording or period of recall was recommended. This is currently done only in a few countries.
- Intelligent prompting in the HBS diary is essential in order to ensure that all expenditure by all household members is faithfully recorded.
- Explicit information about household expenditure abroad is needed, even though this will often be inadequately recorded and seldom used for NA purposes. It is important to separate households' purchases abroad from domestic purchases so that the latter can be used for NA purposes. Household expenditure abroad is usually based on the more reliable BoP estimates.
- To ensure consistency between the expenditure, output & income measures, the HBS questionnaire can be used to obtain information about a number of household transactions (e.g. the use of own account production and wages and salaries in kind).
- In some countries, the HBS does not cover all households (e.g. foreigners). Special estimates are required. In addition, people living in institutions (e.g. residential or nursing homes, hostels, boarding houses, etc) are certainly not covered by the HBS and special adjustments are needed to cover the expenditure that would be missed.

Retail Sales (RS)

With the exception of Cyprus and the Czech Republic, the CCs use retail sales turnover as an important source for PHC estimates. In several countries, RS statistics are the most important source for the consumption of goods (other business statistics are used for services).

The following issues, which, for convenience, concentrate on retail sales rather than other business statistics, were identified and discussed during the project:

- There are borderline problems with trade for business purposes.
- Exhaustiveness problems:
  - Coverage of small units. Small retailers often receive special attention.
  - Attention for the possible under-reporting of sales.
  - Sales for PHC can occur outside retail trade. For instance, from the wholesale trade or direct from farmers (in general, all producers can sell goods for PHC).
- Problems with commodity detail. Data for commodities (as distinct from the NACE industry classification for the retailer) are needed to classify the PHC by COICOP. Some countries have commodity data that are not yet fully adapted to COICOP (e.g. Bulgaria, Hungary, Romania, and Slovakia).
- Technical considerations. These include: drawing and grossing-up sample surveys. business registers, which often define a sampling frame, are not always sufficiently up to date, there being often a problem to remove inactive units; RS figures are mostly net of VAT, so needs to be included in PHC.

Data from large producers

Most countries use data directly from the producers where there is a monopoly or a limited number of substantial suppliers which dominate the market. Examples include communication, gas, electricity & water supplies, transportation, etc. The data obtained from such units often accounts for the vast majority of sales and does not therefore need much, if any, grossing-up. Such producers can normally readily separately identify sales to households, so the data is usually more reliable than HBS-based estimates.

Commodity Flow (CF) estimates

Some CCs use this approach to a large extent. For Cyprus this method was used exclusively for almost all PHC estimates. For many commodity groups it is used by the Czech Republic, Romania and Slovenia.

In many applications of the CF approach or related methods, the PHC estimates are found residually as the imbalance between total supply and other uses, or as a percentage of net supply. Such residuals cannot be regarded as being independent estimates of PHC.

"Bottom-up approach" (see Table A, column ii)

Experience shows that better estimates of total PHC are obtained from the sum of expenditures on individual goods and services. This is because each COICOP item of expenditure is individually considered and there is less chance that some items are overlooked or double-counted. A bottom-up approach also enables different sources to be compared and the best estimate chosen for each commodity group. "Top-down" estimates are rarely reliable.

As Table A shows, nearly all CCs employ a bottom-up approach.

The available level of detail (see Table A, column iii)

A "bottom-up" approach requires detail. In principle, more commodity detail is better than less detail, particularly where this permits the comparison of PHC estimates from different data sources. So the availability of sufficient commodity detail from several data sources is highly desirable, particularly where, in addition, absolute levels of PHC for individual COICOP items can be obtained from two or more independent sources.

Table A shows that the majority of CCs have, in principle, sufficient commodity detail (e.g. from both HBS and RS data) to compare two or more PHC estimates for many COICOP items. The exceptions are Cyprus (which had not yet fully exploited its HBS and RS data), and the Czech and Slovak Republics because of their still extremely limited RS commodity detail.

There is also scope for improvements in some other CCs. For example, Romania needs to successfully gross up its HBS results so the resulting levels can be compared with the detailed RS estimates. In Slovenia, much work has recently been undertaken on the HBS, but the sample sizes are relatively small and grossed-up HBS results for several years need to be combined before they can be fully exploited.

A breakdown of tourist expenditure (see Table A, column iv)

For NA purposes, complete coverage and reliable estimation should be ensured for expenditure by residents abroad and for non-residents on the domestic territory.

Aggregate figures about expenditure by residents abroad and of non-residents on the domestic territory are available in all CC except the Slovak Republic. Surveys of travellers are used for estimating the total figures, for example, in Estonia, Latvia, Lithuania and Poland. Most of the other CCs cited the BoP as the source (but without actually specifying the sources which are used for obtaining the BoP figures).

For PHC estimates based on different sources for different commodities, a commodity breakdown for tourist expenditure is also required. For example, HBS and RS data cannot be directly compared without adjustments for tourist expenditure. This is because RS does not include residents' expenditure abroad, but does include sales to non-residents (indistinguishably from sales to residents). In contrast, the HBS does include residents' expenditure abroad, but does not cover any expenditure by non-residents. As already mentioned above, the HBS often underestimates household purchases abroad, so these should be separately identified and excluded from HBS data.

Breakdowns of tourist expenditures are obtained from surveys of travellers in Estonia, Latvia, Lithuania, Poland and Slovenia. In the Czech Republic, breakdowns are estimated by NA experts. As column (iv) of Table A indicates, no breakdowns are available in Bulgaria, Cyprus, Hungary, Romania and the Slovak Republic; however, a survey is to be undertaken in Cyprus.

More than one PHC estimate for individual commodities (see Table A, column v)

The more (independent) data sources there are for PHC estimates, the more opportunities there are for comparison and validation of these different estimates.

Column (v) of Table A indicates that most CCs make more than one estimate for individual COICOP items. Cyprus, the Czech Republic, Hungary, Romania and the Slovak Republic, in general, do not obtain more than one estimate for different commodity groups.

Adjustments for differences in definition and concepts (see Table A, column vi)

The analytical tables used for the PHC were specifically designed to enable the CCs to systematically insert adjustments for differences in definition, concepts and coverage – in order to transform basic survey and other source data into the ESA95-based PHC estimates needed for NA purposes, and to permit the comparison of PHC estimates from different sources.

Table A shows that the majority of the CCs documented these adjustments, at least in part. The remaining CCs did not provide the required documentation – or simply do not yet attempt to make such adjustments in their normal estimation procedures.

Choice of the best estimate of PHC (see Table A, column vii)

The desirability of this characteristic is clear, and is related to the previous one. Only those CCs which attempt more than one PHC estimate are in a position to make an explicit 'choice'. Only Estonia, Latvia and Poland identified their best estimates for individual commodity groups. Other CCs like Slovenia provided very good analytical tables, but did not show their choice of best estimates in each case.

Balancing within a supply & use framework (see Table A, column viii)

After a „best estimate" for each commodity group is chosen, and the total PHC estimate is derived by using a „bottom-up" approach, the final figure should be obtained from balancing within a S&U framework.

Four countries, Czech Republic, Latvia, Romania and Slovak Republic, already use a S&U framework for the final balancing. All the other CCs are working to establish such a system.

Reconciliation adjustments (see Table A, column ix)

Some CCs indicated quite high reconciliation adjustments (e.g. Czech Republic, Lithuania). In other countries, the differences between output and expenditure were not significant (e.g. Estonia, Poland) or do not exist because of the method used (e.g. Cyprus, Hungary). Not all CCs provided information about the reconciliation adjustments made in the analytical tables.

Independent expenditure estimates (including the suggested approach for estimating PHC) will, for many commodity groups, and also for the total supply and use, automatically lead to differences that must be reconciled. The existing or planned use of a S&U framework provides the appropriate procedure for reconciling the estimates. Depending on the completeness and reliability of results derived for different commodity groups using different sources, output as well as expenditure data will finally be adjusted. It should also be mentioned that high differences between supply and use (for individual commodity groups) indicate problems that should be investigated and resolved.

Independent estimates of PHC (see Table A, column x)

The PHC project criteria and requirements (C&R) set out in Section 1 of Chapter 3 indicate that independent estimates should be made for each commodity in as much detail as possible and from as many sources as possible. Ideally, the independence of PHC estimates is secured if:

- a "best estimate" is made from alternative sources for each of the commodities, using a "bottom-up" approach for the total PHC estimate;
- sources different from that used for the output approach are used for estimation and verification;
- at the commodity level, all necessary adjustments for definitions and coverage are made to basic data before comparing them with alternative sources;
- the final figure is obtained from balancing within a supply and use table.

Really independent PHC estimation is also important for improving the completeness and reliability of the whole NA system. In particular, within the verification and reconciliation procedures, detailed and reliable PHC data can be used for making adjustments to the GDP output approach.

In the opinion of the experts, the most independent PHC estimates were found in Estonia, Latvia and Poland. Fairly independent estimates were also made by Bulgaria and Lithuania.

More problems appeared in Slovenia (the CF method is used for a number of commodities) and in the Czech Republic (the independently derived HBS-based estimates were adjusted by more than 5 per cent on the basis of CF estimates). In Romania and the Slovak Republic, where RS are used to compile total PHC, comparison with results from other sources on a detailed commodity level is limited.

In Hungary (with its "total income minus savings" approach) and Cyprus (with its reliance on the CF method), PHC estimates were clearly not independent.

Annex IV:
(Chapter 6) Recommendations for each Candidate Country with regard to banks, insurance and FISIM

Country	Rec[1]. Nos.	Sub-Sector	Subject of recommendation
Group 1[2]:			
Bulgaria	1	S.122	Transition key to EU Accounting Directive.
	4	S.122	Seek more detail on composition of property income flows.
	6	S.125	Reconciliation with the Supervisor's data.
Cyprus	1	All	From the new business surveys, update and improve keys linking NACE codes of institutional units with the sub-sectors of ESA S.12.
	2	All	Use administrative data whenever possible, except perhaps for S.123
	3	S.122	Obtain full profit and loss data for international ("offshore") banks and ensure that the treatment of their residence is uniform in both the national accounts and the balance of payments.
	7	S.125	The calculation of insurance output to be based on premiums earned and claims due, rather than premiums written and claims paid;
	8	S.125	In the insurance output calculation, premiums and claims to be gross of reinsurance, with the difference between the gross and net calculations treated as the intermediate consumption (IC) of reinsurance services.
	10/11	S.125	Non-life insurance output should include premium supplements (income, excluding capital gains, on the investment of technical provisions); and life insurance output should exclude capital gains and income on the investment of own funds.
	12	All	Update the 1984 key for allocating total costs between IC, labour costs, taxes on production and depreciation.
Latvia	1	S.123	Use the opportunity provided by the move to central supervision.
	5	S.122/3	Commissions payable should be in IC.
	6	S.122/3	Holding losses on forex should not be in IC.
	8	S.125	Transfer claims management expenses to IC.
Slovak Republic	1	S.121-3	Reconcile survey results with Supervisors' data.
	1a-d	S.125	Prepare for Supervisor introducing EU Accounting Directive.
	4	S.125	Review method – income from investment of technical reserves.
	5	S.125	Improve estimates of sectors using insurance services.
Group 2[2]:			
Czech Republic	3	S.125	Change estimates of premium supplements on non-life insurance.
	5	S.125	Redefine imported reinsurance services on the accruals basis.
	6	S.125	Review treatment of pension funds as within "Social Insurance".
Estonia	1	All	Establish contact at an early stage with a new (centralised) supervisory body, to cover statistical needs in its common format for reporting annual financial data.
	3	S.123/4	The current review of survey forms for these sub-sectors to take account of the headings in EU Directive 86/635/EEC (annual accounts of credit institutions), those of the Eesti Bank for S.122 and those in corporation tax declarations.
	9	S.125	Introduce a new calculation of insurance output, gross of reinsurance, and of IC distinguishing reinsurance services and other.

[1] These relate to the recommendation numbers in Mr Walton's reports for each Candidate Country.
[2] Group 1: Countries that had not previously received technical assistance from Eurostat. Group 2: Countries that had previously received technical assistance from Eurostat

Country	Rec[1]. Nos.	Sub-Sector	Subject of recommendation
Hungary	4	S.125	Ensure that imported reinsurance services are on accruals basis.
Lithuania	2	S.123	Separate interest element of repayments to financial lessors.
	6	S.122	Estimates used for IC of banks include non-IC elements of costs.
	7	S.122	Banks' provisions for bad debts are holding losses, not IC.
	9	S.125	Include estimates of IC which is the use of reinsurance services.
Poland	1	S.123	Review adequacy and exhaustiveness of information for S.123.
	2	S.124	Review exhaustiveness of information for S.124.
	3	S.125	Pension funds – use the opportunity provided by the setting up of the information system and review classification.
	8-12	S.125	An urgent need to update the concepts and methodology and to carry back revised estimates at least to 1995.
Romania	1	S.122-5	Contribute to the specification of the new accounting structures.
	4	S.123	Review figures of investment institutions in relation to households.
	7	S.125	Reassess implausible figures of insurance service charge (=output).
	12	S.125	Use of reinsurance imported services to be based on insurance accounts, rather than the balance of payments.
Slovenia	4	S.125	Check treatment of claims management expenses, should be in IC.
	5	S.125	Check consistency between reinsurance services in IC and BoP.

[1] These relate to the recommendation numbers in Mr Walton's reports for each Candidate Country.

Annex V:
(Chapter 7) Descriptions of Tourist Expenditure and Shuttle Trade

More detailed definitions of these two terms, as they relate to National Accounts and Balance of Payments, are given further below, but the following are reasonable working descriptions:

Tourist Expenditure

Tourist Expenditure (TE) comprises those activities which are classified under "Travel" in the Balance of Payments and is composed of two distinct parts:

i) Final consumption expenditure outside a country by its residents, and

ii) Final consumption expenditure in the relevant country by non-residents.

Shuttle Trade

Shuttle Trade (ST) is best described by example; it typically involves a traveller making repeated visits abroad, returning with substantial volumes of goods. The Customs regulations of most countries allow residents to bring in goods up to a certain value in their accompanied luggage without any customs declaration or the assessment of customs duty. The goods are then sold for profit in the trader's country of residence. It is the intention to generate income and hence a profit from the transactions which distinguishes ST from TE. Shuttle trade is made profitable, or more profitable, by the avoidance of taxes, import duties and other excise duties. If a certain type of goods attracts an import duty of x per cent and sales of that type of good attract a value-added or sales tax of y per cent, the shuttle trader has an advantage over formal importers of (x+y) per cent and a potential advantage over formal retailers of home-produced goods of y per cent. For example, high UK excise duties led to shuttle trade in tobacco and alcohol between France and the UK. Shuttle traders are thus highly unlikely to be declaring their income to the fiscal authorities.

The following sections expand upon these working descriptions and place TE and ST formally in the context of National Accounts (NA) and Balance of Payments (BoP).

Tourist expenditure (TE)

National Accounts considerations

It is instructive to make use of the basic NA identity:

$$y = c + g + i + (x - m)$$

Where
y = gross domestic product
c = private household consumption
g = government final expenditure
i = gross fixed capital formation + changes in inventories
x = exports of goods and services
m = imports of goods and services

The above NA identity illustrates the impact of economic transactions involving foreign countries on NA estimates. Within the household sector, the (x-m) subsumes what is termed 'Tourist Expenditure', which essentially consists of the net difference between:

Expenditure abroad by resident households (e.g. the expenditure abroad by Polish households)

and

Expenditure abroad by non-resident households (e.g. expenditure in Poland by foreigners).

This information is also required to move between the 'national concept' for macro-economic aggregates (those relating to the expenditure of residents of a country, irrespective of location) and the 'domestic concept' (those relating to economic activity that takes place within the territory, irrespective of the residence of the people involved).

Balance of Payments considerations

The NA adjustment for TE, above, also contributes to the BoP under the heading of 'Travel'. The BoP definition of 'Travel' obviously extends beyond air, sea or land journeys and includes goods and services such as hotels and restaurants. The location in the NA or BoP of the transport element of travel depends on the circumstances:

- A transport ticket bought in the resident's country will count as 'Travel' within final consumption expenditure and not enter the BoP;
- A transport ticket bought outside the resident's country will count as household expenditure abroad and will enter the BoP accordingly, as part of the Travel account.

For BoP purposes, Travel is broken down into five categories:

Business	1. Seasonal, border and other non-residential workers;
	2. Others;
Personal	3. Health-related - expenditure by medical patients;
	4. Education-related – expenditure by students when studying abroad;
	5. Other.

What is required ideally?

Putting aside practical considerations, an ideal system for measuring TE would contain the following, both for expenditure abroad by residents, and for expenditure by foreigners in the relevant country: All expenditures

by type of good or service; currency used; and date of transaction.

The purpose of the trip should be classified within the five categories described earlier for classifying “Travel” within the BoP.

Shuttle trade

Definition

The term 'shuttle trade' is not mentioned in the ESA95 or SNA93. Nor do the other common designations (e.g. 'border trade' and 'suitcase trade') feature in the ESA or SNA. However, there appears to be broad agreement about what constitutes shuttle trade. The derivation of the term 'shuttle trade' can be seen from the following IMF description of the typical economic activities of a shuttle trader:

‘Shuttle trade typically involves a traveller making repeated visits abroad, returning with substantial volumes of goods in their accompanied luggage. The Customs regulations of most countries allow residents to bring in goods up to a certain value without any customs declaration or the assessment of customs duty. The goods are then sold for profit in the trader’s country of residence.’[1]

The IMF definition quoted above is, of course, illustrative and does not cover all aspects of shuttle trade. The shuttle trader may take goods from his country of residence and sell them in another country or the shuttle trade may involve more than two countries.

What is not included under shuttle trading?

As described above, shuttle trading is typically characterised by a traveller making visits abroad to purchase goods to sell for profit in his own country; it is possible that repeated trips may be made.

The following are not covered by shuttle trade, primarily because they are covered elsewhere in NA and BoP statistics:

‘Travel’ expenditure in the BoP (see above) is defined as goods and services acquired by travellers, during visits of less than one year, for their own use or to give away (for example as presents). Since shuttle trade involves the purchase of goods with the purpose of reselling for profit, any associated ‘Travel’ expenditure should be recorded under ‘Business - others’ in the BoP. Any purchases, which are made on behalf of others, and where the third party reimburses the purchaser, at cost price and with no element of profit, would also be part of travel.

‘Merchanting’ is defined, for BoP purposes, as the purchase of goods by a resident from a non-resident and re-selling to another non-resident when the goods do not enter the relevant country of residence. Such merchanting is not considered to be shuttle trade as the transactions are not connected with travel by the trader.

Given that the provision of services is by necessity at the point of delivery, services are unlikely to feature in shuttle trade. The use of services on the traveller’s own account is important but is not part of shuttle trade; in shuttle trade, crossing the border is for the purpose of making a profit.

Place of shuttle trade in National Accounts and Balance of Payments

Although shuttle trade is linked with ostensibly private travel journeys, the practice is undertaken for business purposes to make a profit. In the BoP, therefore, shuttle trade should be recorded under goods and will contribute in a similar fashion to normally imported and exported goods. A component of the profit made should be estimated as the income generated for the shuttle trader. The household sector (as defined in ESA paragraph 2.75) includes individuals acting as entrepreneurs and this is the most logical sector for these entries.

The element of informality about shuttle trade does not affect its inclusion in NA, which explicitly extends to activities ‘from which the revenues are not declared in full to the fiscal authorities’ (ESA para. 1.13) and to activities ‘forbidden by law’. Similarly, the location of transactions abroad does not remove the transactions from the NA of the trader’s country of residence (ESA para. 2.10).

Requirements of a ideal estimation system

If there were no practical problems involved, an ideal estimation system would yield the following for the typical shuttle trade activity of a person going abroad, purchasing goods and returning to his own country to sell the goods:

a) Value of goods purchased abroad for future reselling; currency used; date of purchase
b) Value for which goods re-sold in country of residence; currency used; date of sale

Similar information would be provided for goods taken by the trader from his own country for sale abroad. Within each value, any relevant taxes, excise duties or customs duties should be identified separately.

For BoP purposes, entry i) is strictly all that is required. However, for NA purposes, the addition of entry ii) enables the income generated by the shuttle trade to be estimated.

[1] Source: IMF paper ‘Shuttle Trade’ (BOPCOM98/1/3) prepared by the Fund’s Statistics Department, October 1998

Annex VI:
(Chapter 9) Questionnaire on changes in inventories and holding gains

QUESTIONNAIRE: METHODS USED BY THE CANDIDATE COUNTRIES TO ESTIMATE CHANGES IN INVENTORIES

This questionnaire should be completed by 30 November 1999.

However, questions 5, 6, 10, 12, 15, 19, 25, 27, 28, 29 and 30 (which ask for more detailed information) can, if necessary, be completed by 29 February 2000. These questions are identified in the questionnaire with an asterisk (*****).

Before completing this questionnaire, please read **Annex VII** which gives the definitions of the terms used.

Please indicate your answers by **ticking the relevant circles (❑)** provided.

Two sets of circles are included for most questions in this questionnaire – one for annual methods (shown as **A** ❑) and the other for quarterly methods (shown as **Q** ❑). Please complete both sets of circles, even if your annual and quarterly methods are the same.

In responding to this questionnaire please specify details concerning how and at what level of detail inventories data are *estimated* on an ongoing basis in your national accounts (i.e., each quarter/year rather than in a benchmark year), even if they not are published at that level of detail.

Country: .....

Agency: .....

Contact details

Name: .....

E-mail: .....

Fax: .....

Date of completion of this questionnaire: .....

Question 1: Periodicity of estimates

Do you calculate changes in inventories and inventory holding gains and losses both quarterly and annually or annually only? *Please tick one of the circle (a), (b) or (c).*

(a) ❑ Quarterly and annually for all industries and branches
⇒ **GO TO QUESTION 2**

OR

(b) ❑ Quarterly for some industries and branches and annually for some others
⇒ **GO TO QUESTION 2**

OR

(c) ❑ Annually only for all industries and branches
⇒ **GO TO QUESTION 3**

Question 2: Relation between quarterly and annual estimates

Are annual changes in inventories and inventory holding gains and losses calculated as the sum of quarterly estimates? *Please tick one the circles (a), (b) or (c).*

(a) ❑ Annual estimates are calculated as sums of quarterly estimates in all cases

OR

(b) ❑ Annual estimates are calculated as sums of quarterly estimates only in some cases

OR

(c) ❑ Annually estimates are calculated independently from quarterly estimates

Question 3: Direct estimation or residual estimation

Do you derive changes in inventories as a residual; or do you obtain values of the levels of inventories and then derive changes; or are details of changes in inventories collected directly from respondents? *Please tick one of the circle (a), (b), (c) or (d).*

(a) ❑ Changes in inventories are derived as a residual in all cases
⇒ **GO TO QUESTION 4**

OR

(b) ❑ Changes in inventories are collected directly from respondents
⇒ **GO TO QUESTION 5**

OR

(c) ❑ Changes in inventories are derived as differences between the inventory levels at the beginning and end of the reporting period.
⇒ **GO TO QUESTION 5**

OR

(d) ❑ Changes in inventories are derived as a residual in some cases and are collected directly from respondents or derived as differences between the inventory levels at the beginning and end of the reporting period.
⇒ **GO TO QUESTION 4**

Question 4: Residual estimation

Which methods do you use to derive changes in inventories as a residual?
Please see 4(a) to 4(e) below.

4(a) Inventories are derived as the difference between the income-based GDP and the sum of the expenditure components (aggregate estimates).
Please tick if the circles are relevant.

In quantities		In value	
A	**Q**	**A**	**Q**
❑	❑	❑	❑

AND/OR

4(b) Inventories are derived as the difference between output (or production) based GDP and the sum of the expenditure components (aggregate estimates). *Please tick if the circles are relevant.*

In quantities		In value	
A	**Q**	**A**	**Q**
❑	❑	❑	❑

AND/OR

4(c) Inventories are derived residually in some other way (specify on a separate attachment). *Please tick if the circles are relevant.*

In quantities		In value	
A	**Q**	**A**	**Q**
❑	❑	❑	❑

AND/OR

4(d) Some changes in inventories are not determined by residual but are explicitly valued, estimates being made by product (*please specify the inventories that are explicitly valued and give the level of classification*):

A ❑ _____

_____

Q ❑ _____

_____

AND/OR

4(e) Some changes in inventories are not determined by residual but are explicitly valued, estimates being made by type of stock (i.e. raw materials, work in progress, etc – see the Annex), and/or by industry (*please specify the inventories that are explicitly valued and give the levels of classification*):

A ❑ _____

_____

Q ❑ _____

_____

NOTE:
Please check your responses to questions 4 (a) to 4 (e).
Your responses to 4(a), 4(b) and 4(c) indicate that (some or all) inventories are determined by residual.
Your responses to 4(d) and 4(e) indicate that some inventories are explicitly valued.

*Question 5: Separate evaluation of changes in inventories by industry

For which of the following industries do you separately value changes in inventories? *Please tick the relevant circles.*

	ANNUAL		QUARTERLY	
	Stocks at beginning of year	Stocks at the end of year	Stocks at beginning of quarter	Stocks at end of year
Agriculture				
In value	❑	❑	❑	❑
In volume	❑	❑	❑	❑
Mining				
In value	❑	❑	❑	❑
In volume	❑	❑	❑	❑
Manufacturing				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Electricity, gas and water				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Construction				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Wholesale trade				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Retail trade				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Hotels and restaurants				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Transport and storage				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Communication				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
General government				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑
Other				
in value	❑	❑	❑	❑
in volume	❑	❑	❑	❑

***Question 6: Separate evaluation of changes in inventories by stage of processing** (i.e. raw materials, work in progress, etc – see **Annex VII**).*

For which of the following industries do you separately value changes in inventories by stage of processing? *Please tick the relevant circles.*

ANNUAL	Raw materials[1]	Work in progress[2]	Finished products	Goods for resale	No separate evaluation by stage of processing
Agriculture					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Mining					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Manufacturing					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Electricity, gas and water					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Construction					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Wholesale trade					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Retail trade					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Hotels and restaurants					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Transport and storage					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Communication					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
General government					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Other					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑

[1] Please attach a separate statement describing the method used for livestock.
[2] Please attach a separate statement describing the methods used for different types of products, such as crops, wool, dairy products etc, including the extent to which SNA93/ESA95 concepts are followed or not; if they are not followed, explain why not.

QUARTERLY	Raw materials[1]	Work in progress[2]	Finished products	Goods for resale	No dissection by type of asset
Agriculture					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Mining					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Manufacturing					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Electricity, gas and water					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Construction					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Wholesale trade					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Retail trade					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Hotels and restaurants					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Transport and storage					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Communication					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
General government					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑
Other					
in value	❑	❑	❑	❑	❑
In volume	❑	❑	❑	❑	❑

[1] Please attach a separate statement describing the method used for livestock.
[2] Please attach a separate statement describing the methods used for different types of products, such as crops, wool, dairy products etc, including the extent to which SNA93/ESA95 concepts are followed or not; if they are not followed, explain why not.

Question 7: Assumptions about valuation methods, i.e. the methods by which inventories are "priced"

Do you have to make assumptions about the ways in which businesses value their inventories, or is the information you obtain on inventories from businesses on a basis consistent with national accounting requirements? *Please tick (a) or (b) or (c).*

(a) A ❑ Q ❑ Yes, assumptions have to be made, because of tax regulations and bookkeeping practices
⇒ **GO TO QUESTION 8**

OR

(b) A ❑ Q ❑ Yes, assumptions have to be made, since our survey methods do not allow for greater details
⇒ **GO TO QUESTION 8**

OR

(c) A ❑ Q ❑ No, it is not necessary to make assumptions
⇒ **GO TO QUESTION 14**

Question 8: Valuation methods

Do you assume that businesses in all industries use the same method to value their inventories? *Please tick (a) or (b).*

(a) A ❑ Q ❑ Yes
⇒ **GO TO QUESTION 9**

OR

(b) A ❑ Q ❑ No
⇒ **GO TO QUESTION 10**

Question 9: Single valuation method used

Is there a single valuation method you assume that businesses use to value their inventories (see **AnnexVII** for definitions)? *Please tick one of the circle (a), (b), (c), (d) or (e).*

(a) A ❑ Q ❑ Yes: historic cost
⇒ **GO TO QUESTION 11**

OR

(b) A ❑ Q ❑ Yes: current (replacement) cost
⇒ **GO TO QUESTION 11**

OR

(c) A ❑ Q ❑ Yes: standard cost
⇒ **GO TO QUESTION 11**

OR

(d) A ❑ Q ❑ Yes: average cost
⇒ **GO TO QUESTION 11**

OR

(e) A ❑ Q ❑ Yes: some other method, please specify:

A ❑ _____

Q ❑ _____

⇒ **GO TO QUESTION**

*Question 10: Multiple valuation methods

Which valuation methods do you assume are used to value inventories in the following industries? *Please tick the relevant circles.*

	Historic cost		Current (replacement) cost		Standard cost		Average cost		Other	
	A	Q	A	Q	A	Q	A	Q	A	Q
Agriculture	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Question 11: Sources of information on valuation methods

What is the source on which you have based your assumptions about the methods of valuation used by businesses? *Please tick the relevant circles.*

(a) A ❑ Q ❑ Questions on valuation methods are included in regular industry questionnaires

AND/OR

(b) A ❑ Q ❑ Periodic surveys of a representative sample of businesses

AND/OR

(c) A ❑ Q ❑ One-off or occasional surveys of a representative sample of businesses. The latest survey was undertaken in month /year:_____

AND/OR

(d) A ❑ Q ❑ One-off or occasional surveys of a non-representative (small) sample of businesses. The latest survey was undertaken in month /year: _____

AND/OR

(e) A ❑ Q ❑ Valuation used in the bookkeeping of enterprises whose data are collected by the tax authorities

AND/OR

(f) Other sources, please specify:

A ❑ _____

Q ❑ _____

*Question 12: Cost assignment (i.e. underlying method of inventory accounting)

Which basis of cost assignment do you assume that businesses use? According to the different methods you use, please tick individual industries and the partial aggregation "All other industries taken together" (if this applies), **OR** tick the complete aggregation at the end of the list below.

	FIFO		LIFO		NIFO		Other	
	A	Q	A	Q	A	Q	A	Q
Agriculture	❑	❑	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑	❑	❑	❑
All other industries together	❑	❑	❑	❑	❑	❑	❑	❑
All industries use the same methods	❑	❑	❑	❑	❑	❑	❑	❑

Question 13: Sources of information on cost assignment methods

What are the sources of information on which you have based your assumptions about the methods of cost assignment used by businesses? *Please tick the relevant circles.*

(a) A ❑ Q ❑ Questions on cost assignment methods are included in regular industry questionnaires

AND/OR

(b) A ❑ Q ❑ Periodic surveys of a representative sample of businesses in which they are asked detailed questions about their cost assignment methods

AND/OR

(c) A ❑ Q ❑ One-off or occasional surveys of a representative sample of businesses. The latest survey was undertaken in month/year: _____

AND/OR

(d) A ❑ Q ❑ One-off or occasional surveys of a non-representative (small) sample of businesses. The latest was undertaken in month/year: _____ _____

AND/OR

(e) A ❑ Q ❑ Cost assignment used in the bookkeeping of enterprises whose data are collected by tax authorities

AND/OR

f) Other sources, please specify:

A ❑ _____

Q ❑ _____

Question 14: Estimation of stock-holding period

Do you usually estimate stock-holding periods? *Please tick the relevant circles.*

(a) ❑ **Yes**, questions on stock-holding periods are explicitly included in regular industry questionnaires
⇒ **GO TO QUESTION 15**

AND/OR

(b) ❑ **Yes**, stock-holding periods are estimated from replies to periodic surveys (please, describe the methods in a separate attachment).
⇒ **GO TO QUESTION 15**

AND/OR

(c) ❑ **Yes**, stock-holding periods are calculated from data (please, describe the methods in a separate attachment).
⇒ **GO TO QUESTION 15**

AND/OR

(d) ❑ **No**, stock-holding periods are not provided, nor estimated
⇒ **GO TO QUESTION 16**

*Question 15: Detailed estimation of stock holding periods

Are different stock-holding periods estimated for the following different types of stocks and industries? *Please tick the relevant circles.*

	Raw materials[1]	Work in progress[2]	Finished products	Goods for resale	No dissection by type of asset
Agriculture	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑

*Question 16: Detailed estimation of stock-holding periods

Are different stock-holding periods estimated for different *specific* products? *Please tick (a) or (b)*.

(a) ❑ Yes (please specify in detail in a separate attachment)

OR

(b) ❑ No

[1] Please attach a separate statement describing the method used for livestock.
[2] Please attach a separate statement describing the methods used for different types of products, such as crops, wool, dairy products etc, including the extent to which SNA93/ESA95 concepts are followed or not; if they are not followed, explain why not.

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Question 17: Deflation methods

Are price indices the only means of deflation used in calculating constant price estimates of inventories, or are quantities used directly as well? *Please tick (a) or (b).*

(a) A ❑ Q ❑ Only price deflators are used

OR

(b) A ❑ Q ❑ Both quantities and price deflators are used

Question 18: Price deflators and quantity data used

In broad terms, what are the sources of the price deflators used in deflating inventories? Please tick all the price/wage indices that are relevant. Please also specify the quantity data used, if any.

(a) A ❑ Q ❑ Consumer/retail price index

(b) A ❑ Q ❑ Producer/wholesale price index

(c) A ❑ Q ❑ Export price index

(d) A ❑ Q ❑ Import price index

(e) A ❑ Q ❑ Implicit price deflators from other components of the national accounts

(f) A ❑ Q ❑ Wage indices

(g) Other price indices, please specify:

A ❑ _____

Q ❑ _____

(h) Quantity data, please specify:

A ❑ _____

Q ❑ _____

**Question 19: Price or volume indices used for the purpose of calculating constant price estimates of inventories, by industry*

For which of the following industries do you use the different price or volume indices indicated? *Please tick the relevant circles.*

ANNUAL DATA	Consumer price indices	Producer price indices	Export price indices	Import price indices	Implicit price deflators	Volume indices
Agriculture	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑	❑

QUARTERLY DATA	Consumer price indices	Producer price indices	Export price indices	Import price indices	Implicit price deflators	Volume indices
Agriculture	❑	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑	❑

Question 20: Methods used to obtain volume (constant price) estimates of inventories

Are your volume estimates for the most recent periods obtained using a fixed base (traditional Laspeyres volumes) or are annually-weighted chain series produced (mobile base indexes)? *Please tick (a) or (b) or (c).*

(a) A ❑ Q ❑ Fixed base (i.e. the traditional Laspeyres volume) estimates

OR

(b) A ❑ Q ❑ Chain Laspeyres volumes (please attach a separate statement describing the methods used to chain the estimates, i.e. the level of detail at which inventories are chained, whether the chains are derived from inventory levels or in some other way, etc)

OR

(c) A ❑ Q ❑ Chain Fisher volumes (please attach a separate statement describing the methods used to chain the estimates (i.e. the level of detail at which inventories are chained, whether the chains are derived from inventory levels or in some other way, etc)

OR

(c) Other (please specify)

A ❑ _____

Q ❑ _____

Question 21: Constant price data comparability

Are constant price data comparable over time, i.e. do price indices form “time series” (e.g. during the year, for months or quarters) so that data in constant prices are comparable over time, or do price indices simply reflect changes with respect to the same period of the previous year? *Please tick (a) or (b) or (c).*

(a) ❑ Monthly or quarterly price indices are comparable over time: the base month or quarter is fixed and all price variations are compared to the initial base

OR

(b) ❑ Annual price indices are comparable over time, i.e. the base year is fixed, but monthly or quarterly price indexes are not comparable over time: the base month or quarter is mobile and all price variations are compared to the moving base (e.g. the same month or quarter of the previous year, or the previous month or quarter)

OR

(c) ❑ Neither annual price indices nor monthly or quarterly price indices are comparable over time, i.e. the base year (month/quarter) moves over time, and all price variations are compared to the moving base (e.g. the same month or quarter of the previous year, or the previous month or quarter or year)

Question 22: Estimates of inventory holding gains

Do you calculate inventory holding gains and losses? With which periodicity? *Please tick (a) or (b) or (c).*

(a) ❑ **Yes**, quarterly and annually
⇒ **GO TO QUESTION 23**

OR

(b) ❑ **Yes**, but only annually
⇒ **GO TO QUESTION 24**

OR

(c) ❑ **No**, we do not calculate holding gains and losses
⇒ **GO TO QUESTION 27**

Question 23: Method used to obtain annual estimates of inventory holding gains, given the availability of quarterly estimates

Are annual inventory holding gains calculated as the sum of the quarterly estimates? *Please tick (a) or (b).*

(a) ❑ **Yes**, Annual inventory holding gains are the sum of the relevant quarterly holding gains

OR

(b) ❑ **No**, Annual inventory holding gains are calculated independently of the quarterly holding gains (please attach a separate statement describing the method used)

Question 24: Which method do you use to obtain annual estimates of inventory holding gains in the absence of quarterly estimates?

Please attach a separate statement describing the method(s) used

**Question 25: Details on the estimates of inventory holding gains or losses*

Are inventory holding gains estimated by industry, by type of inventory, or by product? Please tick the relevant circles, if any, for each industry and type of inventory. Please also specify the level of classification by product in a separate attachment.

	Raw materials[1]	Work in progress[2]	Finished products	Goods for resale	No estimates for individual types of inventory
Agriculture	❑	❑	❑	❑	❑
Mining	❑	❑	❑	❑	❑
Manufacturing	❑	❑	❑	❑	❑
Electricity, gas and water	❑	❑	❑	❑	❑
Construction	❑	❑	❑	❑	❑
Wholesale trade	❑	❑	❑	❑	❑
Retail trade	❑	❑	❑	❑	❑
Hotels and restaurants	❑	❑	❑	❑	❑
Transport and storage	❑	❑	❑	❑	❑
Communication	❑	❑	❑	❑	❑
General government	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑

[1] Please attach a separate statement describing the method used for livestock.
[2] Please attach a separate statement describing the methods used for different types of products, such as crops, wool, dairy products etc, including the extent to which SNA93/ESA95 concepts are followed or not; if they are not followed, explain why not.

Question 26: Adjustment for holding gains

Are changes in inventories, gross output and intermediate consumption adjusted for holding gains by the same amount? *Please tick (a) or (b) or (c).*

(a) ❑ Yes, gross output, intermediate consumption and changes in inventories are all adjusted by the same amount

OR

(b) ❑ Only changes in inventories are adjusted

OR

(c) ❑ Gross output and intermediate consumption are adjusted differently (please specify the details in a separate attachment)

THIS SECTION OF THE QUESTIONNAIRE IS CONCERNED WITH THE FOLLOWING ISSUES:

⇒ The coverage and representativeness of the data relating to inventories (see Question 27).

⇒ The details of the sample sizes in relation to the population number of units; the variables used for grossing-up purposes, and the proportion of the population value of the grossing variable that is accounted for by the latest sample survey used for estimates of inventories (see Question 28).

⇒ The extent to which adjustments for exhaustiveness are systematically made to your estimates of changes in inventories (see Question 29).

⇒ A representative example of how you make estimate changes in inventories; this should clearly illustrate the numerical calculations, step by step (see Question 30).

**Question 27: Coverage of the data*

Do the data sources used for inventories ensure that the coverage of all units is complete and that the sample surveys are therefore representative?

Please tick those circles that are relevant.

If the data sources do not enable all units to be surveyed or some types of units are simply not included in surveys, then please do not tick the relevant circles.

Please also provide details in a separate attachment for the "Other" category below.

Types of unit covered by statistical surveys	**A**	**Q**
All big enterprises	❑	❑
All medium-size units	❑	❑
All small units	❑	❑
All self-employed	❑	❑
All farms	❑	❑
Other (*please specify***)**	❑	❑

Question 28: Details on the coverage of the data sources relating to changes in inventories

For each industry, please indicate, for the latest year available, the sample survey and population sizes, the variable used for grossing-up to the population value (e.g. turnover, employment, stock levels, etc), and the percentage of the total population value of the variable used for grossing purposes, which is accounted for by the sample.

	Sample size (no. of units)	Population size (no. of units)	Variable used for grossing (e.g. turnover, employment)	% of the population value of the grossing variable which is accounted for by the sample
Agriculture: All farm units				
Mining: All Units				
Manufacturing: All Units				
Electricity, gas and water All Units				
Construction: All Units				
Wholesale trade: All Units				
Retail trade: All Units				
Hotels and restaurants: All Units				
Transport and storage: All Units				
Communication: All Units				
General government: All Units				
Other: All Units				
TOTAL: All Units				

*Question 29: Adjustments for exhaustiveness

Do you adjust data on changes in inventories for exhaustiveness?

Please tick the circles for those types of unit, if any, for which exhaustiveness adjustments are regularly made.

Please also provide details in a separate attachment for the "Other" category below.

Type of units which are adjusted for exhaustiveness	A	Q
All big enterprises	❑	❑
All medium-size units	❑	❑
All small units	❑	❑
All self-employed	❑	❑
All farms	❑	❑
Other (*please specify***)**	❑	❑

*Question 30: Illustrative worked example:-

- Please show a representative example of your calculations of changes in inventories, at current and at constant prices, together with the calculations of holding gains.
- The example should be representative, if possible. E.g., the illustration should apply to more than one important industry, even if the numerical figures you provide concern only one industry.
- It is important that you provide the calculations in sufficient detail for the methodology to be clear.
- Please provide the illustrative worked example as a separate attachment.

NOTE: Where possible, you should make use of any relevant documentation that is readily available in order to complete this questionnaire. This will be particularly helpful if your existing documentation provides more detail (than is requested by this questionnaire) of the methods used to value inventories in your national accounts.

Annex VII:
(Chapter 9) Definitions on inventories and holding gains

Background

Changes in inventories in the national accounts can be classified either on the basis of the kind of activity of their owner or by the type of inventory held. It is necessary to classify inventories both by type of inventory and by the industry which is holding them.

Four broad types of inventories can be identified:

- materials and supplies;
- work-in-progress;
- finished goods;
- goods for resale.

Inventories in agriculture can fall into any of the above categories; livestock raised for slaughter are included in “work-in-progress”.

Inventories held by wholesalers or retailers are largely those which have been purchased for sale and which will not be physically transformed; these goods are termed “goods for resale” in ESA95. There is also a small part of their total inventories which are for intermediate consumption (fuels or supplies).

The extent of inventory holding in other industries varies from one country to another depending on the structure of each country’s economy (e.g., some countries could have significant inventories held by the mining industry while others will not). Inventories of finished goods and of materials and supplies in

manufacturing are generally sufficiently large for them to be treated separately in the national accounts. In most industries, there will be fairly small inventories of work-in-progress. The main exceptions are for major production or construction activities, such as in building ships or in large engineering or construction projects. Service activities, other than wholesale/retail, will usually only hold inventories of materials and supplies, but some may record significant amounts of inventories of work-in-progress, for example, architectural or engineering services that are not completed within a single accounting period.

The overall principle involved in valuing inventories is described in ESA95 and SNA93. Broadly, output should be recorded at the time it is produced and valued at the same price whether it is immediately sold or otherwise used or entered into inventories for sale or use later. In other words, entries into inventories must be valued at the basic prices prevailing at the time of entry, while withdrawals must be valued at the prices at which they are then sold. (It is recognised that business accounting principles are not generally consistent with national accounting concepts as far as inventories are concerned.)

Terminology

The questionnaire at Annex A uses terms that are commonly associated with inventories but there may be differences in terminology in different countries. Therefore, the various terms used in the questionnaire (like FIFO, LIFO, etc) are described on the following pages

Item	Description
Book value of inventories	The value of inventories recorded in the accounts of businesses. It is defined as the value of inventories held at a point in time (in the national accounts, generally the beginning or end of a quarter or a year) and valued at the prices prevailing at that point in time.
Change in the book value of inventories	Calculated by deducting the book value of inventories at the beginning of the period (quarter or year) from the book value at the end of that period. In the national accounts, the inventories at the beginning of a period are often considered to be identical to those at the end of the previous period.
Current cost accounting	An accounting method whereby assets and goods used in production are valued at their actual or estimated current market prices at the time the production takes place rather than the prices prevailing when they were produced.
Replacement cost accounting	An alternative term for “current cost accounting”.
Historic cost	Historic cost accounting requires goods or assets used in production to be valued by the expenditures actually incurred to acquire those goods or assets, however far back in the past those expenditures took place.
Average cost	A system based on maintaining running totals of both the value and volume of inventories so that the average price of goods held in inventory can be recalculated at any time. Typically, the average price is calculated periodically and withdrawals from inventories are valued at the latest calculated price until the average is recalculated.

Item	Description
Standard cost	An inventory valuation method used in business accounting in which broad groups of items held in inventory are valued on the basis of a “standard” unit price for each group; “standard cost” may be based on recent prices/costs, current prices/costs, or forecast prices/costs. At any time, the value of inventories is determined by multiplying the quantity of each group of items in inventory by the standard price assigned to that group. The standard price is changed periodically, generally after a fixed period (such as annually when a business has to prepare its accounts for taxation purposes) or, in the situation where prices are rising rapidly, when the difference between the standard price assigned to inventories and the actual price becomes sufficiently large.
Lower of cost or market price	It is a common business practice in some countries to value inventories on the basis of the lower of their production or purchase price (i.e. the cost price) or the price at which the inventories could currently be sold (i.e. the market price). This method is generally referred to as valuing inventories at the “lower of cost or market price”.
First-in-first-out (FIFO)	A cost assignment system in which goods are withdrawn from inventories in the same order in which they entered (in other words, the goods withdrawn from inventories are those which were acquired earliest so that, at any stage, inventories will consist of the most recently acquired goods).
Last-in-first-out (LIFO)	A cost assignment system in which the goods withdrawn from inventories will be those which were most recently acquired (in other words, inventories will consist of the items purchased earliest, which is the opposite assumption to FIFO); the implication is that withdrawals are valued at current prices provided that the overall level of inventories is not depleted.
Next-in-first-out (NIFO)	A cost assignment system for inventories proposed for use in situations of very high inflation; it involves valuing goods withdrawn from inventory at the prices expected to prevail at some point in the near future
Weighted average of acquisition prices (sometimes referred to as the “moving averages” method)	A method sometimes used in business accounting which values goods withdrawn from inventory at the weighted average of the prices at which they entered; this method values withdrawals at prices between those used for FIFO and LIFO.
Change in inventories (ESA95 and SNA93 concept)	The sum of the values of all goods entering inventory *less* the sum of the values of all goods withdrawn from inventory *less* the value of any recurrent losses of goods held in inventory. It can also be expressed as the change in book value of inventories *less* the holding gains/losses on inventories.
Level of inventories at constant prices	The constant price estimate usually obtained by deflating book values at the end of the accounting period by price indexes but sometimes obtained by directly valuing quantities held.
Changes in inventories at constant prices	The difference between the level of inventories at the end of the accounting period and the level at the beginning of the accounting period with both levels valued at constant prices of the same base period.
Holding gains/losses	Holding gains/losses on goods held in inventory arise as a result of price increases/decreases during the period for which they are held. Such gains should not be included in the national accounting value of output but most methods of business accounting reflect any such holding gains as part of business profits.