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# ECONOMIC GLOBALISATION: A Challenge for Official Statistics

Proceedings of the 2007 Joint  
EFTA/UNECE/SSCU Seminar



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**UNITED NATIONS  
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## **Note**

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## FOREWORD

In recent years, many concerns have been raised that the traditional methods of measuring the national economy are not suitable in the increasingly globalised world.

A seminar on Economic Globalisation: A Challenge for Official Statistics, organised jointly by the United Nations Economic Commission for Europe (UNECE), the European Free Trade Association (EFTA) and the State Statistics Committee of Ukraine (SSCU) in Kiev (3-6 July), was the first of its kind, providing national statistical offices with a forum to share ideas and discuss approaches to cope with the distortions caused by the activities of multinational enterprises on the production of statistics. The seminar addressed globalisation in the context of national accounts and the effect on gross domestic product, gross national income and other parts of the accounts. It also looked into classification issues, data collection methods, price indices and methodological guidelines.

The seminar was composed of two modules. The first included a discussion with the main users of statistics to raise awareness of the role of statistics in decision-making and the challenges that statisticians face due to globalisation, for example the reflection in national statistics of the activities of multinational or of “virtual” enterprises, which play a growing role in most countries.

The second module targeted the producers of statistics. It dealt with the practical problems associated with globalisation, and pointed at possible solutions, for example how to derive national accounts or balance of payment statistics in the conditions of increasing international trade and production activities organised across countries.

The seminar was considered as a first event in a series of meetings where representatives of national statistical services can discuss the main distortions in the compilation of national accounts and related source statistics caused by globalisation, and will propose approaches and guidance on how to tackle these distortions.

Presentations at the seminar were provided by the Organisation for Economic Co-operation and Development (OECD), Eurostat, UNECE, Canada, Ireland, Netherlands, Norway, Slovenia, Switzerland, Ukraine and United Kingdom. More than 25 foreign participants from international organizations and national statistical offices also attended, together with representatives of different Ukrainian ministries, government agencies, research institutes and universities.

The seminar was regarded as very useful and fruitful and the participants recommended the publication of the proceedings. This publication includes the papers that were presented at the meeting. In addition, several PowerPoint presentations were made that were not accompanied by papers. These are listed in the Annex.

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## INTRODUCTION

By Gabriel Gamez, Statistical Office of the European Free Trade Association (EFTA)

Impartial and reliable statistical data are a prerequisite for a democratic society and a necessary condition for the smooth running of a competitive market economy. Statistics are:

- Important for policy making in a modern society;
- Vital for monitoring the effects of policies;
- Crucial for understanding the society around us.

Comparable statistics across countries and regions are a necessity in a globalised society.

Ukraine, like many other countries, is facing a rapid globalisation process of its economy. This is a challenge for a statistical institute which is requested to deliver reliable statistical information for the monitoring of this transition process. Statistical methods and infrastructure have to be constantly adapted to an evolving economic and social framework.

During the course of the seminar, worldwide reputed experts discussed with users and producers of statistics in Ukraine the challenge that globalisation implies for official statistics. The substance of the seminar was adapted more specifically to Ukrainian conditions; however, issues that were presented concern statistical authorities and users of official statistics in all countries.

The seminar focused mainly on the statistical measurement of economic globalisation. But globalisation also refers to increasing global connectivity, integration and interdependence in social, technological and cultural spheres.

International cooperation in the field of statistics is bringing people together in order to find common solutions to common issues, which is the most concrete expression of globalisation for us statisticians.



**SESSION WITH MAIN USERS: THE ROLE OF  
STATISTICS IN AN OPEN MARKET ECONOMY**

## 1. Summary of the session

During the session with main users of statistics, the following main points were made:

- national statistical authorities have to implement pro-active policy in order to meet users' requirements in all fields and in particular for emerging social and economic phenomena. Official bodies such as a Statistical Council and other advisory statistical committees could be crucial for this purpose;
- statistical authorities have constantly to build up a capital of trust with users and avoid any behaviour that might undermine it. Trust takes time to obtain and can be lost quickly;
- producers of official statistics have to be actively involved in the development of a national legal and normative basis;
- within the framework of the ESS, Member States are conducting peer review exercises of the implementation of the European Statistics Code of Practice (ESCP). The experience of National Statistical Institutes of EU and EFTA countries, and in particular that of Slovenia, shows that such peer reviews allow to identify issues that require special attention and improvement. Reviews on the state of implementation of fundamental principles might be extended to national statistical systems of other UNECE countries;
- countries outside the EU wishing to adapt their statistical legislation to the European requirements and standards should launch the process as soon as possible in cooperation with Eurostat and the countries that are members of the European Statistical System: EU27, EFTA and the pre-accession countries. Adaptation to the "Acquis Communautaire" (EU legislation) and compliance with EU statistical requirements is a long process and should also involve research institutes and other academic institutions;
- tackling the issue of economic globalisation requires active coordination among national statistical authorities and international organizations. The Seminar in Kiev is one of the first opportunities for the national and international community of producers and users of official statistics to discuss the impact of globalisation on statistics. The outcome of the seminar will be taken into account in the further work of the newly created Joint UNECE/OECD/Eurostat Working Group on the Impact of Globalisation on National Accounts. Ukraine is willing to join the Working Group;
- given the huge impact of globalisation on economic and social spheres and the need for relevant statistical information in this field, it is important that national statistical authorities regularly inform the user community on recent developments and keep an open dialogue with them. This would allow national statistical authorities to receive the necessary human and financial resources.

## 2. The role of statistics in a globalised world: the case of development of Slovene official statistics

Keynote speech by Irena Križman, Statistical Office of the Republic of Slovenia<sup>1</sup>

### Introduction

Official statistics - as a tool for policy making and the objective basis for strategic governmental decisions in economy and the social sphere - should measure the reality of our social, economical, cultural, political and institutional world.

In the second half of the 20<sup>th</sup> century and especially in the last 20 years our world has become increasingly dynamic and multidimensional mainly due to ever faster globalisation. Globalisation has significant effects on economies that become interdependent, on investment, on the activities of multinational firms, on production, on diffusion of technology, on trade, on the labour market, on the level and living patterns of the population and on the environment.

Traditional statistics of the “pre-global period” was no longer sufficient as a tool for facilitating policy decisions on the economic and non-economic aspects of globalisation and the question raised was not whether official statistics needs the adaptation to measure the effects of globalisation, but how to adapt it in the most efficient manner.

Comparable statistics based on internationally shared concepts and methodologies was developed on the national and also international level. Inside the national statistical systems traditional organizational structures have been modified, capacity building and coordination of official statistics on national and international levels were developed; sharing of good practices and data is nowadays considered to be the normal way of working, managing confidentiality and human recourses are considered as investments in the mid- and long-term future of official statistics.

Globalisation and its effects concern the public because they can experience the effects globalisation has had on their way of living on daily basis. But objective, measurable facts about globalisation are at best only partly available and we statisticians have to admit that official statistics in the globalised world and also in that of globalisation has not kept pace with the phenomenon itself.

Slovenia as a small country is deeply affected by globalisation. The paper presents the evolution of official statistics in Slovenia and the system which has been in the last two decades considerably upgraded to meet the needs of the government, such as to prepare and evaluate the policies to enable Slovenia and its population to take the opportunities offered by European Union membership and globalisation to those who are eager and able to compete in the global world.

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<sup>1</sup> More information on the Slovene statistical system and more on SORS can be found on: [www.stat.si](http://www.stat.si)

## **Short historical background of the Republic of Slovenia**

The Republic of Slovenia proclaimed its independence and sovereignty on 25<sup>th</sup> June 1991. It became a member of the United Nations on 22<sup>nd</sup> May 1992, a member of the European Union on 1<sup>st</sup> May 2004 and from 1<sup>st</sup> January 2007 Slovenia is a member of the Euro Area. It is expected that Slovenia will become member of OECD in the near future. In the first half of 2008 Slovenia will hold the presidency of the European Union.

All these very fast steps in the development towards modern state and market economy have had an important implication on the development of the Slovene official statistics and particularly on the development of the Slovene Statistical Office (SORS).

## **Short historical background of the Slovene national statistics**

The history of Slovene statistics goes back to 1754, when the first population census was carried out. In 1863 the first independent statistical service was created in Vienna. As the milestone of the starting point of national statistics, the year 1944 is taken, when the Slovene Statistical Office was established by independent Slovene authorities during World War II. From 1945 to 1990 the work was organized within the former Yugoslavia. But Slovenia all the time kept the Slovene Statistical Office and also in that period made use of the opportunity to co-operate with Germany and the Nordic countries. The co-operation resulted in bringing the concept of registers in the seventies and eighties to Slovenia, as well as the knowledge on statistical methods and modern statistical concepts as is the System of National Accounts (SNA). The Slovene government already in the late nineties decided that the Slovene Statistical Office started to calculate the economic aggregates not only in the Material Product System (MPS), but also in SNA terms.

## **First steps of the national statistics in independent Slovenia**

In 1992 the Statistical Office of Slovenia (SORS) became a member of the Conference of European Statisticians (CES) which in the same year adopted the Fundamental Principles of Official Statistics. This largely contributed to the process of preparing new statistical legislation in Slovenia. In 1994 the Common Declaration of Statistical Co-operation between SORS and the Statistical Office of the European Communities (Eurostat) was signed, enabling official participation of the Slovenes in the European Statistical System. In 1995, the Slovene Parliament adopted the National Statistics Act, with which SORS became a professionally independent statistical service. It introduced vital provisions on the functioning of a modern statistical office.

## **Slovene national statistics as part of the European statistical system**

In 1998 with the Accession Partnership Agreement and Screening of the statistical Acquis Communautaire, the Slovene National Statistics committed itself to achieve full compliance with the EU statistical legislation by 2002 at the latest. As a part of the process, Amendments and Supplements to the National Statistics Act were adopted in 2001 in order to allow the preparation and adoption of programming to become more flexible, to improve statistical confidentiality, to deepen the independence of the institution and to clearly define the role of authorised producers

of statistics. In June 2003 the Government of the Republic of Slovenia established that its national statistics was fully prepared for the accession of Slovenia to the EU. On 1st May 2004 Slovene national statistics became part of the European Statistical System. This resulted in successfully taking on board all the responsibilities and challenges of the member of the ESS in working together in partnership and through institutional arrangements such as Working Groups, Sectoral Groups and the Statistical Programme Committee at the European Commission and Working Groups at the Council - when preparing the *Acquis Communautaire*. Active participation in ESS work has brought quality improvement through involvement in R&D projects and a new way of thinking on the part of the SORS staff.

### **Key issues for successful capacity building of the Slovene statistics**

The following issues were important for the development of the Slovene Statistics:

- The Slovene decision to start the negotiation process for full membership in EU resulted in speeding up the process of harmonization of statistics with international standards, EU demand for high quality, EU comparable statistics needed in order to assess the Slovene position in the accession process; and its readiness to enter EU and the Euro Area was also pushed from the EU side. In the negotiation process, it was stated by EU - the Commission that good quality statistics is a precondition for negotiation and that statistics cannot be a subject of the negotiations. That was a clear message to the Slovene government to support the statistical capacity building process to be a guaranty to non-political objectivity, professionalism and to provide the indispensable means (legal framework, organizational position of the SORS within the government, human and financial resources, programming of work). The development plan was followed by strict compliance monitoring and evaluation studies, organized by Eurostat in order to ensure that the statistical legislation and other statistical standards be properly taken into account. One of the key issues was the awareness of the Slovene state authorities that they need objective, impartial and comparable statistics in order to be able to assess and defend the Slovene position in the EU framework as well as to prepare, conduct and assess the evidence based policy at the national level.
- The forward-looking management of SORS, who started international co-operation on registers, modern statistical and IT standards, encouraged learning foreign languages very early in the seventies and eighties. This has resulted in a good knowledge base of the SORS staff and register oriented statistics and was crucially important when the transition to a modern statistical system in Slovenia officially started. The management and the staff have been prepared to take on board very challenging tasks. Even though SORS is a small office, due to professional qualities, good legal framework, trust of users, and a good management, SORS has become a case of the “good statistical practice” in EU.
- The support of academia and research institutes in providing professional assistance in projects and training on statistical methods and in helping to build professionalism and consequently in increasing trust in official statistics in Slovenia were important as well. The Statistical Society of Slovenia, SORS and University of Ljubljana introduced the

postgraduate study of statistics with a special module on official statistics in 2000. There is also ongoing co-operation with several research institutes.

- The legal framework of the Slovene national statistics is one of the most modern ones. It has been prepared in line with the basic principles of official statistics and also the best practices in world statistics, especially those in the Nordic countries where similar register-based statistics have been developed.
- At national level, SORS as co-coordinator of official statistics has developed good co-operation with data providers, especially public sector institutions as holders of registers and administrative records as a vital source for statistics. SORS is responsible for standard classifications. Use of standard classifications in administrative records is obligatory and influences the quality and coherence of data in administrative records. Such data represent an excellent source for statistics.
- SORS established the Statistical Advisory Committees in the eighties, i.e. long before they were officially introduced by National Statistics Act in 1995. Their work together with the Statistical Council has a significant impact on the development of national statistics in Slovenia. Currently more than 400 participants from the public sector, academia, research institutes and enterprises work in 25 different groups.
- SORS has a long tradition in intensive relations with the media. Support and mutual understanding with media in general was very helpful. Planning media relations is a top management responsibility. Our products must be accessible, understandable, useful and of high quality. Media play an important role in disseminating data to users. Media trust is a precondition for public trust building and the reputation of NSI. Currently SORS organises around 15 press conferences per year. The press conference is chaired by the Director-General. It is noteworthy that the journalists attend press conferences also after we started releasing all information in special folders on our website: [www.stat.si](http://www.stat.si). The user-friendly website, incl. a special section for press conferences, provides also the advance release calendar for publications and automated information is sent via e-mail about new publications and updates in the database. The method of preparing the First Release has also been revised (the content is provided as a short message, the lay-out has been changed and the publication runs under WebCMS) and the assistance of the help desk (public relations officer and the Information Centre) is available - and moreover: rapid replies to press requirements have been developed. The awareness of SORS that it must respect the principles of the media and train the statisticians (on journalism, on writing messages, on the art of speaking, on appearing in front of the camera) is one of the key challenges also for the future. Another is to develop the awareness that statistics can be useful for citizens and the societies. Fair and transparent communication, incl. of top management, shows respectance of the role of media. The on-going process with the media has to be two-way communication. Taking into account the way in which the journalists operate (time, medium) also proved to be a factor for success. Training of statisticians in order to work with the media is crucial. Statisticians have to be prepared for end-users, they have to offer them outputs with low additional efforts by journalists.

- International co-operation started in the end of the sixties when Slovenia took part in international projects sponsored by OECD. Participation in the projects offered to SORS the opportunity to start co-operation with the Nordic countries and Germany. In 1992 SORS was – for the first time after having gained independence - even officially included in the international statistical community in the Conference of European Statisticians. In the most demanding period of the harmonization process SORS benefited from good technical assistance organized by the European Commission and especially by Eurostat, the technical assistance provided by EU Member States, the technical assistance provided by the Conference of European Statisticians and UN Statistical Division Geneva, the Statistical Commission, OECD<sup>2</sup>, ILO, UNDP and other international organizations as well as the knowledge gained by the International Statistical Institute. It also has to be mentioned that Slovenia carried out statistical capacity building for joining the European Union in a group with other 9 countries. It was a scale of economy which enabled good organization from the Eurostat point of view, as well as a synergy effects between accession countries. Today Slovene statistics is actively involved in shaping the international statistical work with a Chief Statistician being a member of the Bureau of Conference of European Statisticians and the member of the Partnership Group, which represents the preparatory group for the Statistical Programme Committee in the European Union.
- Register-based statistics became vital during the accession to EU, and is such also currently. We have to cope with the increasing demand for timely, high quality and relevant statistical information on the one hand and reduction of administrative burden on the other hand.
- The issue of the stability of resources needed for the preparation and execution of the statistical work programmes is crucial for future developments of official statistics. Also in Slovenia, especially after full membership in EU, which also means higher national costs for statistics. SORS has been facing increasing demands from the Slovene government and also data providers to take into account as much as possible the reduction of the administrative burden and the cost-benefit approach. At the same time the user requirements are growing. SORS is at present in the phase of preparing the next five-year programme which has to take into account all these challenges.
- Flexibility is required in anticipating and responding to the new needs of policy makers in view of the changing conditions in which they have to act. For example dissemination of micro data for secondary analysis can be considered as non-traditional service for academic and government researchers. SORS has developed it in the last years to enable the government and civil society to transform some important statistical information into knowledge to enable some high quality policy making that would be not possible without this service and to minimize the response burden on enterprises and the population. A far reaching tax reform and social transfers reform in Slovenia was prepared and evaluated on the basis of a micro stimulation model for which all the micro data were prepared and provided by SORS. Considerable efforts in the field of confidentiality have been made in order to build up the service for providing micro data for secondary analyses.

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<sup>2</sup> Much methodological knowledge has been gained thanks to the co-operation with OECD in the accession period. In 2005 SORS became a permanent observer in the OECD Statistical Committee.

## **Strategic objectives for the period 2008 – 2012**

Slovene National Statistics - and especially SORS as co-ordinator of all official statistical activities - is in the process of the preparation of the new Mid-term Programme of Statistical Surveys 2008-2012. The following major strategic objectives were defined:

- Further work on quality assurance and user friendliness;
- Improvement of flexibility in response to user needs and requirements with the innovative approach to the data sources and competence development in the field of the methodologies used;
- Building trust in official statistics and promotion of statistics within the country and abroad;
- Building willingness and trust of data providers, and diminishing of administrative burden with the use of administrative data sources, simplification of the current EU statistical legislation and improvement of the process of assessing the users' needs at the national and EU levels;
- Building the competence and new innovative approaches for efficient process-oriented organization;
- Improvement of the organizational culture and staff motivation and satisfaction;
- Further active participation in international statistical co-operation;
- Further development of the Slovene national statistics (interinstitutional cooperation, co-ordination of statistical work, development and dissemination policy of ministerial sectoral statistics in connection to official statistics with the aim to increase the users' satisfaction).

SWOT analyses were carried out in order to reveal the strengths and weaknesses inside the Slovene statistical system - and opportunities and potential treats in the external environment. SWOT analyses were performed on: infrastructural issues such as general methodology and standards, data dissemination, data collection, editing and database management, further development of official statistics, IT support, promotion of official statistics and increasing the statistical literacy, Human Resource Management and financial issues.

In the next step the SWOT analyses will be an input for revision of the strategic objectives and to revise the strategies such as:

- Dissemination strategy;
- Data protection strategy;
- IT strategy;
- Quality strategy;
- HRM strategy;
- Strategy for reducing the response burden.

## **Our users are generally satisfied with the products and services we provide**

The quality of Slovene official statistics is regularly monitored by user satisfaction surveys and different assessments by international organizations.

User satisfaction surveys show general satisfaction with the quality of products and services provided by SORS, trust in SORS and their appreciation for the possibility of influencing the range of official statistics.

Assessments made by international institutions show high level of quality of the products and services. For example the Code of practice peer review showed particular strengths and examples of good practice of the European Statistical System in the legal framework of the Slovene national statistics, in managing confidentiality issues, in the structure and functioning of the Statistical Advisory Committees and in human resources management, particularly in the integration of young employees in the statistical process.

## Conclusions

The key issue for the rapid development of the Slovene statistics was the transition of Slovenia to democratic, market-oriented and social welfare state. High quality statistical data were the key element in accession to EU, as well as for the good functioning as a Member State in the Euro Area and a player in global economy.

Lessons learned in adapting EU requirements show that EU harmonisation requires long-term, organizationally and financially sustainable efforts. Organization of statistics at international and particularly at EU level has made it possible. But to sustain the level of harmonisation and development also in the future, the national circumstances in which the National Statistics operate are equally important. National needs for EU harmonisation raised the awareness on importance of official statistics and SORS within the Slovenia. But it has to be underlined that statistical capacity building and harmonisation are ongoing processes.

The principles we developed for strengthening the capacity of official statistics in Slovenia are the basis for production of statistics of globalisation, too. The development of this field of statistics - which is rather underdeveloped but is becoming increasingly important for proper decision-making - is a big challenge for all the statistical institutes throughout the world.

In their efforts to upgrade statistics on globalisation, NSI's have been facing several challenges at the level of the statistical system, such as:

- Methods and knowledge to estimate new phenomena (new definitions in SNA, revision of the classifications and other statistical standards);
- New tools of data collection and data dissemination including communication to the users (e.g. the World Wide Web has changed the strategies towards data users and data providers);
- Legislative and organizational frameworks (e.g. data protection and exchange of micro data between countries involved access and confidentiality);
- Cross-border co-operation and mirror statistics;
- International co-operation and technical assistance programmes, used to improve the statistical capacity throughout the world;
- Better international availability and comparability of data.

Globalisation has to be measured in as many countries as possible, because the economies and societies have become interlinked and interdependent in a globalised world. Most important fields of statistics are:

- Economic performance (MNEs);
- Labour market statistics (labour costs, labour force, entrepreneurship);
- The environment (global warming);
- Social conditions and the level of living (refugees, asylum-seekers, migration).

The global statistical system, as globalisation in the field of statistics, will become more and more important. Capacity building with the support of governments and with certain technical assistance in developing countries is a prerequisite in order to put together a complete economic, social and environmental picture of the globalised world.

### 3. European statistical cooperation

by Inna Steinbuka, Eurostat

#### Introduction

The construction of the European Union began in 1951, when the Treaty creating the European Coal and Steel Community (ECSC) was signed in Paris. This treaty led to free movement of coal and steel and free access to sources of production in France, Germany, Italy and the three Benelux countries. By 1953, the need for statistics to support decision making in this new Community was recognised and a first European statistical department was created. Over the ensuing years this grew into what is now called Eurostat.

By 1957, the ECSC had developed into the European Economic Community (EEC). The Treaty which created the EEC marked the birth of European legislation on statistics, making it possible to construct the vast body of Regulations and Recommendations governing statistics collected for a wide range of domains from Agriculture to Youth statistics, and known in 'Eurospeak' as the 'acquis statistique communautaire' or simply the 'acquis statistique'.

The EEC has changed beyond recognition since the early days, growing from six Member States to become the European Union with twenty-seven Member States in 2007. The world itself has also been transformed, with major changes in the way it trades and in work patterns, the growth in multi-national companies, and the rise in international trade in services – almost unheard of fifty years ago.

To meet these challenges, not least of which is globalisation, the European Statistical System has introduced a number of checks and balances to ensure that the statistics collected respond to user needs and that the data provided is conceptually sound, harmonised between Member States, consistent over time, reliable, and timely.

#### Eurostat's mission

Today the mission of Eurostat can be stated simply: *to provide the European Union with a high-quality statistical information service.*

There are three main elements to this mission:

- *The concept of statistical service:* Eurostat's mission is not only to provide rough statistical data, but also to deliver all the elements necessary for their comprehension, their interpretation and their analysis. This includes delivering the "metadata" associated with the data (definitions of the concepts used, sources of information, methods of calculating, etc.), but also the tools set up to allow easy access to this data, in particular using modern communication technology.
- *The quality of the data:* it is a fundamental concern of Eurostat; that the data delivered meets certain minimum standards as regards quality. To this end, Eurostat drew up with the

statistical institutes of the Member States a “**Quality Charter**” which defines these standards. In addition, Eurostat is committed to a policy of Total Quality Management, to permanently analyse and improve our statistical production processes.

- *The user community*: Eurostat's main users are the different services of the European Commission, who need harmonised, consistent and reliable data to help them to define, implement, follow-up and evaluate the Community policies for which they are responsible. But there is also a wider use community which needs harmonized and reliable data. This includes the other Community Institutions, in particular the European Parliament, the national and local administrations of the Member States, the wider business community, the media, and more generally European citizens. This wider interest is behind the policy of free access to Eurostat data via the Internet.

## The European Statistical System

Eurostat does not directly collect statistical information from the data providers (companies, households, etc.). This work is carried out by the national statistical systems. The close co-operation between Eurostat and the national statistical institutes and more generally with the national statistical systems, within what is called the European Statistical System (ESS), is an essential element in the production of European Statistics.

The ESS is a network made up of all the government bodies which, at the various levels (regional, national and European) are responsible for drawing up, processing and disseminating the statistical information needed for the analysis of the economic and social life of the European Union. The EU focal point for the ESS is Eurostat. It is Eurostat's role to bring together all the various bodies in the system and, taking account of feedback from the users, to channel the resources in an efficient manner. The National Statistical Institutes play a pivotal role in representing all the players in the ESS in their country, for example, ministries and government departments, such as the customs service, that collect statistics as part of their normal work.

To function properly, this network is guided by a number of decision-making and consultation bodies. Of particular importance are:

- *The Statistical Programme Committee (CPS)*: this Committee, which meets three times a year, is composed of the Directors-General or Presidents of the statistical institutes of the Member States and the countries of the EEA.
- The task of the SPC is the general co-ordination of the multi-annual statistical programmes, so as to ensure that the agreed programme is consistent with the national statistical programmes. In particular, the SPC has the duty to give its opinion on the relevance of the Community statistical programmes, how they are monitored and on the associated costs incurred by the Community, the NSIs and the providers.
- *The European Advisory Committee on Statistical Information in the Economic and Social Spheres*: this committee is generally known by its French acronym, CEIES. It brings together a wide range of users of statistics, including those from outside the general government organizations. The task of CEIES is to give its opinion on the relevance of the

Community statistical programmes, on the way in which they are monitored and on the associated costs incurred by the Community, the national statistical institutes and the providers.

### **The European statistics Code of Practice**

Underlying the work of the ESS is the European Statistics Code of Practice, which was adopted in 2005. The Code sets out a number of principles to guide the institutional environment, statistical processes and outputs of a statistical authority. It is intended to improve trust and confidence in the independence, integrity and accountability of both National Statistical Authorities and Eurostat, and in the credibility and quality of the statistics they produce and disseminate, as well as promoting the application of best international statistical principles, methods and practices by all producers of European Statistics to enhance their quality. The Code of Practice is therefore a kind of “constitution” for the daily work of Eurostat, but also for the NSIs.

### **The planning process**

There are two main planning tools used by the ESS:

- *The five-year work programme* defines the main fields and objectives of the actions envisaged over a five year period. It provides a summary of statistical requirements viewed from the perspective of the policy needs of the EU and a financial framework for its implementation. The Community Statistical programme 2008-2013 was adopted by the Commission at the end of 2006, and now must be approved by the European Parliament and the European Council. Although official statistics are used in support of almost all Community policies, the 2008-2013 programme is guided by the a number of over-arching policy priorities:
  - prosperity, competitiveness and growth,
  - solidarity, economic and social cohesion and sustainable development,
  - security, and
  - further enlargement of the European Union.
- *The annual programme* is a Decision of the Commission. It allows Eurostat to plan its work taking into account Commission priorities, as expressed in its Annual Policy Strategy, and the priorities in the five-year programme.

Statistical co-operation activities are a key part of both the five-yearly programme and the annual programmes.

## Why co-operation in statistics?

Statistics have a dual role in society: they provide information on which to base policy decisions, and they are a tool for measuring the progress of the different policy areas. Moreover, in a market economy, businesses will rely on statistics to provide them with information on which they may partly base their decisions to invest in a country.

Therefore a basic principle of statistical cooperation is that it should help build a sustainable system that is capable of producing the statistics needed to satisfy national needs.

International donors are also interested in having reliable statistics, providing indicators of the effect of their assistance to beneficiary countries. To achieve these goals, a number of bodies, particularly the European Union but also others such as the World Bank and individual countries, have supported the building up national statistical capacities, particularly in transition countries and in the Mediterranean region.

From the EU point of view, technical co-operation in statistics is crucial for the purposes of providing the basis for formulating EU policies towards partner countries; for example, discussions on possible bilateral trade agreements need data on trade flows between the EU and partner countries. The work necessary to build up this statistical information system is a collective international effort, in which the Commission plays a key role together with other international and bilateral donors.

## The Phare programme

International statistical cooperation was a feature of Eurostat's work from the early days, focusing mainly on cooperation and standardisation of definitions and methodologies with other international organizations. But the political upheaval in Eastern Europe from 1989 onwards brought about a radical change in that policy.

The **Phare** programme (the acronym is taken from its French title: *Pologne, Hongrie Assistance à la Reconstruction Economique*) was set up in July 1989 initially to support the transition of Poland and Hungary to democracy and to market economies. It quickly expanded to become the main channel of EU assistance to the Central and Eastern European countries, encompassing a further eleven countries: Albania, Bosnia Herzegovina, Bulgaria, Czech Republic, Estonia, Former Yugoslav Republic of Macedonia, Latvia, Lithuania, Romania, Slovakia and Slovenia.

Statistical cooperation has always been part of Phare: it was clear from the beginning that the statistics produced for a planned economy would no longer meet the needs of emerging market economies and the challenges of globalisation. As a result, the Phare statistics programme was designed to help build the sustainable statistical systems needed in transition countries to provide policy makers with the information they need as a basis for their political decisions, and to measure progress in their economic and social development.

The original objectives of this co-operation in statistics were to:

- Strengthen the statistical system of partner countries, in line with the UN Fundamental Principles;
- Strengthen the standing of the National Statistical Institutes (NSIs), including their role as co-ordinators of all statistical work in the country;
- Promote international comparability of the statistics produced by applying international standards;
- Assist in the collection and production of reliable, objective and comparable statistics for relevant policy areas, and transfer 'know-how' so that the statistical offices are able to repeat the work at regular intervals;
- Promote the dissemination and use of statistics as the basis for evidence-based policy making.

The focus of Phare later shifted to assisting the 10 candidate countries from Eastern Europe to prepare for entry into the European Union in 2004 and 2007. This involved a major challenge, to progressively adopt the 'acquis statistique', harmonising countries' statistical systems with the European Statistical System and with European standards and methods in the sector, a massive undertaking.

Three other countries are also considered as candidates for membership of the EU, Croatia, the former Yugoslav Republic of Macedonia and Turkey, and a further four, plus Kosovo, are considered to be potential candidate countries. No timetable for full membership has been drawn up, but programmes are already underway to build up the statistical services of these countries to enable them to adopt the 'acquis statistique' in a structured manner.

### **The TACIS technical assistance programme**

While Phare focused on the thirteen countries of Central and Eastern Europe, a different EU instrument was launched in 1991 to provide technical assistance to the newly independent states of the former Soviet Union. **TACIS** (Technical Assistance to the Commonwealth of Independent States) has provided grant-financed technical assistance to 12 countries of Eastern Europe and Central Asia (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan). Mongolia was also covered by the TACIS programme from 1991 to 2003, but is now covered by another programme.

The aim of TACIS was to enhance the transition process in these countries, to encourage democratization, and to strengthen the rule of law. The most recent TACIS programme, covering the period 2000-2006, was based on the principles and objectives set out in partnership and cooperation agreements (PCAs) and the trade and economic cooperation agreements concluded between the Union and these countries. It aimed to maximise its impact by concentrating on a limited number of initiatives targeting:

- assistance for institutional, legal and administrative reform;
- support for the private sector and assistance for economic development (promotion of small

- and medium-sized enterprises, development of the banking and financial systems, promotion of private entrepreneurship, etc.);
- assistance in addressing the social consequences of transition (reform of the health, pension, social protection and insurance systems, assistance for social reconstruction and retraining, etc.);
  - development of infrastructure networks (transport networks, telecommunication networks, pipelines, border crossings, etc.);
  - better environmental protection and management of natural resources;
  - development of the rural economy.

Although not mentioned as a separate priority in this list, it is obvious that reliable statistics are needed to underpin work in almost all of these areas. Statistical cooperation started in 1994 with a multi-beneficiary project, covering all TACIS countries. Since 1996 individual projects for each country have been the standard.

### **The Medstat co-operation programme**

The EU's co-operation activities have not been limited to Eastern European neighbours; a Euro-Mediterranean partnership was established in 1995 as a result of the Barcelona Conference that year. The MEDA programme is the EU's principal instrument for the implementation of this partnership. The Medstat regional statistical co-operation programme is a sub-programme of MEDA. Medstat was launched in 1996, with the aim to improve comparability and harmonisation of statistics in several different sectors, as well as to improve the information system and to provide training in statistical methods.

An important element of the Medstat programme is the development of a 'road map' for each country, setting out the steps needed to implement its national statistics development strategy (NSDS), as well as identifying the parts covered by Medstat and other international assistance projects. It is hoped that this tool will be used to maximise the benefits of international co-operation for the country.

### **The European neighbourhood policy**

Since 2004, EU relations with its neighbours are governed by the European Neighbourhood Policy (ENP), which brings together under one policy six of the TACIS countries and ten Mediterranean countries<sup>1</sup>. The ENP aims at preventing the emergence of new dividing lines between the enlarged EU and its neighbours and to offer them the chance to participate in various EU activities and share some of the benefits of enlargement. Examples of such activities are within the fields of good governance, human rights, principles of market economy and sustainable development.

A corner stone of the ENP is the country Action Plan which covers a number of key areas, including statistics. The main areas of interest are likely to remain trade and investment flows, national accounts, business statistics, migration, labour statistics, and poverty reduction. But new

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<sup>1</sup> ENP countries are Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Palestine Authority, Syria, Tunisia, Ukraine.

areas such as Energy, Transport, Environment, and more broadly, Sustainable Development, are emerging as priority, so that the development and harmonisation of statistics on these subjects will need to be considered for future projects. And regardless of region, capacity building activities like legislation, strategic programming, statistical training and quality issues will remain of great importance.

The implementation of this new policy will of course also require new statistical work. This co-operation will continue the TACIS and Medstat work of strengthening of the technical and organizational infrastructures, though the current format of assistance is likely to change, with more focus on regional activities. Because both Medstat and TACIS programmes are still running, until the end of 2008 and 2009 respectively, no statistical projects have been agreed yet within the ENP framework.

The statistical assistance for these countries will be implemented through the European Neighbourhood and Partnership Instrument (ENPI). Although the Mediterranean and European countries covered by the ENPI are a very heterogeneous group, it is hoped that the ENPI will be able to benefit from the best practices from both the TACIS and Medstat programmes.

### **Statistical cooperation with other parts of the world**

Eurostat also works to promote good governance through statistics in other parts of the world. This includes monitoring and co-ordinating EU efforts to build statistical capacity in countries outside Europe within the framework of international commitments such as the UN's Millennium Development Goals; and encouraging best practices from the European Statistical System to be applied in third countries through mutual contacts, training, study visits and attendance at meetings. However, no technical assistance programmes of the scale of Phare, TACIS or Medstat exist for these countries.

### **Conclusion**

The current European Statistical System was not created overnight, it was built up over a long period, constantly being improved and refined. New eras brought new challenges, for example, adapting to six rounds of enlargement between 1973 and 2007, the introduction of the Single Market, the introduction of the Euro, and globalisation. The most important aspect is that the tools are in place to help Eurostat and the European Statistical System to adapt as required, while assuring a high-quality statistical information service to its users.

As a good neighbour, the ESS wants to share its experience with its European and Mediterranean partners, to help them build up the structure and tools needed to meet these and future challenges.

## 4. Globalisation and official statistics

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### Abstract

Globalisation is the shrinking of distance and the reduction of trade boundaries in the world economy. Companies operate across national boundaries and consumers purchase from suppliers half-way across the world. Sometimes the purchaser will have no clear idea of the supplying country if the product is supplied via the internet. Statistical measurement systems are national in arrangement. Their purpose is to serve national governments, by measuring the national economy and interactions between it and the rest of the world. Economic unions of countries such as the European Union and the Eurozone at present compile statistical pictures of their economies by aggregating member state pictures. This means that seeing the whole picture through these fragmented measurement systems can be difficult. This paper sets out some of the issues involved, and describes some recent initiatives of national statistical offices to work together to establish the extent and nature of the statistical issues. The paper concludes by making some observations on the implications for future collection and recording systems.

### Introduction

*Globalisation - a set of related effects*

The term 'globalisation' is used to describe a range of changes in the way the international economy works. There is no single phenomenon. Instead a range of structural changes in markets and societies are under way which affect, and reflect:

- the behaviour and performance of firms which operate across several countries;
- relationships between firms across national boundaries;
- the increasing ability of consumers to access international suppliers;
- the international exploitation of intellectual property assets within firms, also accessible to consumers;
- the decreasing importance of geography in the choices firms make about where to carry out specific parts of their operations, how much their operations they choose to do themselves, and how they finance them.

All these effects have as a common cause the growing tendency by economic actors to ignore barriers once imposed by national, or supranational, boundaries. More of them now behave as if the world (or at least large parts of it) consists of a single market for goods and services, for ideas and for capital. Firms are able to do this because the world trade system is increasingly designed to facilitate it. Lower barriers to trade - abolition of tariffs, common frameworks for regulation, diminishing transport costs, simpler distribution systems, convergent customer requirements and powerful scale economies (among the key factors) - are the fundamental drivers of the changes in firm behaviour. Their effect on firm behaviour and strategy is well documented (Yip 1992).

Economic studies of foreign direct investment (FDI) over the last ten years have distinguished:

- 'horizontal' investment by firms, reproducing their home business model in foreign markets to overcome tariff or transport costs; from
- 'vertical' investment, creating parts of a production chain run as linked elements in an integrated international system.

Hanson, Mataloni and Slaughter (2001) working on data from US firms find strong evidence that the pattern of investment by multinational enterprises has moved in the direction of 'vertical' chains during the 1990s, and also that the pattern of behaviour is more complex than simple economic models represent.

As economic incentives change, companies are driven to adopt international approaches to procurement, operations, marketing and innovation. The development of international operations has been under way by multinationals for over a century. Once it was relatively straightforward process, with firms cloning operations and marketing from one national market to another, but retaining administration and development in their 'home' country. Now perhaps the majority of large international firms are 'truly international' in that they have operations located where they make the most effective contribution to the whole enterprise, with relationships between units driven from a global - or global region - HQ. Such firms may not have a 'home country' except in a legal sense.

Measures to describe these changes in firm behaviour are already in use by individual countries or are compiled internationally, and include:

- the role of foreign affiliates in employment, value added, exports, investment by country (included in the OECD compilation of data 'Measuring Globalisation' MNE review 2001);
- investment overseas by national firms, and turnover of overseas subsidiaries, which put the overseas operations in the context of the overall enterprise (measured by US and a few other countries, and also shown in the OECD review).

But globalisation means much more than the activity of multinationals. In the first flowering of a global economy, in the late 19th century, a huge increase in the flow of goods, capital and ideas between regions of the world enabled a period of rapid economic growth and cultural interchange. It was characterised by very large increases in international trade, and levels of migration which were unprecedented. (Legrain, 2002).

But the benefits of investment and technology flow which underpinned the first global trade revolution then were due less to multinationals than to the activities of large numbers of independent firms. These traded under conditions supported by newly developed communications and financial infrastructure, to build global supply chains in which each specialised in their areas of comparative advantage.

Firms like this are also present in the globalised markets of the second half of the 20th century, for example in the contract manufacturers of the far East which produce goods for Western brands. The rapid growth of outsourcing, its impact on industry structures, and on wages and income distribution has been explored by economists (Feenstra 1998).

The added twist for the 21st century that it is much easier now for individual consumers to access international market information, and to buy internationally. Once convergence of consumer demands was something which could be influenced by major firms through one-way media communication. Now the ability of consumers to access international suppliers electronically, with instant price comparisons for goods and services, increases the scope for international trade.

Indicators which reflect the impact of 'globalisation' by describing increasingly international, borderless, markets, but which are independent of the role of multinationals can be found among the measures used by the EU to track the increasing integration of the single market:

- trade integration, reflecting the increasing level of cross-border transactions;
- price and interest rate convergence between markets, measuring the effect of lower inter-country barriers in creating competitive arenas which are genuinely international.

Through such increasing integration of markets, the effects of globalisation can be spread without the need for direct ownership through multinational affiliates. Competition itself can do some of the job. At least that is the theory. In practice, the activity of multinationals, as shown by the OECD review of multinational statistics, grew in almost every year during the 1990s, reaching almost 25% of manufacturing output in the EU and 20% in the US (OECD 2001).

#### *Why do we need to measure globalisation?*

Economic and social analysis of the effects of globalisation generates demands for more than simple measures of 'how big it is'. As trade:GDP ratios, and the proportion of output accounted for by multinationals continue to grow, policy makers raise questions both at international and national levels.

At the international level, key concerns are related to:

- identifying the competition impact of multinational activity, with implications for welfare understanding the changed behaviour of markets, due to closer international linkages;
- the recognition that large firms no longer think in terms of national boundaries.

The switch from 'horizontal' to 'vertical' structures for globalisation by multinationals also has welfare implications which policy-makers need to understand. If investment is primarily 'vertical' then firms are likely, by shopping around for specific process investment locations, to affect relative wage levels, and other input costs, between countries. With 'horizontal' investment this is much less likely.

At national level, where most statistics are generated, major concerns for government raised by globalising firms and markets are related to the impacts they have on the effectiveness of local (i.e. national) policy. Attention has focused strongly over the last two decades on inward investment by multinationals and the encouragement of inward foreign direct investment. As we shall see later, this may be too limited a focus, but it is ever more important for national policy-makers to understand competitiveness in a global context.

*Does globalisation change what we need to measure, and the way we measure it?*

The range of structural economic changes under the heading 'globalisation' require Statistical Offices to re-examine their approach to enterprise measurement, not just to tackle the policy issues above, but to ensure that their measures of economic activity capture the changing pattern of inputs and outputs.

This paper covers four measurement areas, and gives a brief UK perspective on statistical needs and how they could be met. They are:

- the effects of vertical disintegration in value chains, the increasing specialisation by firms in specific processes and some examples of what it means for measurement;
- measurement issues associated with national units in multinationals;
- the role of intellectual property, especially those which can be transferred within and between firms, or sold to consumers electronically without requiring any physical transfer;
- financial flows of capital, or payments for goods and services by multinationals.

The second and fourth of these issues are specific to multinationals, the first two apply more generally as measurement needs of the globalised economy. However, as we shall see they raise related measurement needs and problems.

### **The 'vertical disintegration' of value chains**

*Evidence that change is underway*

The substantial body of case and statistical evidence assembled for the EU single market review in the mid 1990s showed the extent to which larger firms were achieving scale economies by focusing investment in areas of activity where they could command competitive advantage within an EU wide market. The increasing use of outsourcing by firms, often within national boundaries to obtain 'non core' local services, accompanied by offshore purchasing for important intermediate inputs, has changed some of the structural ratios of business - not just in the EU but internationally.

For example, analysis of private sector data for the single market review showed that value added / sales ratios for international firms, defined by their own management accounts, had fallen by around 6% between the early 1980s and the early 1990s, from around 56% on average

to close to 50%. Analysis of the strategies and behaviour of the most successful among them showed that they benefit from scale within their target markets, and that they are most likely to exploit it in areas where 'dynamic scale economies' apply, such as Research & Development and marketing communication (Clayton 1999).

The picture suggests a process in which, for successful globalising businesses, value chains become 'wider', as they acquire strong competitive positions in specific processes across international markets, but 'shorter' as they carry out fewer processes themselves. The ultimate examples of this type of transformation are the design and marketing companies, for example in consumer markets such as fashion and footwear, which outsource all production and logistics, and undertake only development, international brand advertising and selling.

More recent evidence comes from work on multinational firms in the UK, compared against firms operating only within the national market. Based on UK Annual Business Inquiry data for the manufacturing sector, this finds that UK operations of MNEs have a consistently lower value added / sales ratio than purely domestic firms, although there is some variation depending on firm origin. This may be taken to support the conclusions above, that as firms become more global in their scope, they tend to focus locally on parts of the value chain which are more essential to their competitive advantage, and outsource other activities.

Significant shifts towards greater outsourcing will change the value added structure of sectors of the economy whether organised across international boundaries or not. However, the measurement effects are more difficult to tackle if changes take place across international boundaries. For example construction of input / output statistics is much more difficult if there are changes in sector value added due to switches in sourcing by multinationals. At present, UK national input - output statistics are built on the assumption that sector value added ratios are relatively stable. This assumption also feeds through to short-term indicators on output, where a constant ratio between gross output and value added is assumed. If sustained changes are under way affecting globalising sectors, the methodology of measurement may need to change.

Measurement problems are compounded if multinationals outsource to operations offshore which they own or control. The scope for transfer pricing in such arrangements, or the use of management service fees, to distribute profits in the most tax efficient ways will distort not only business output data but also values for imports and exports. Since multinational activity, measured by sales or output of affiliates under foreign control now accounts for over 25% of major country EU manufacturing output, the scope for distortion of official statistics is clear.

A specific, and growing, measurement problem is the treatment of 'toll processing' in a number of industries. There has been increasing use of outsourced manufacturing processes by firms in commercial arrangements where one firm contracts another to perform a specific operation, but retains ownership of the material through the process. This type of operation is not new (it was traditional in a number of multi-process craft industries long ago) but is now found in large scale chemicals, engineering and other industries where products move not just between plants but across national boundaries for processing - and back - without changing ownership. Depending on how output of such transactions is recorded, in output reports and in customs

returns, the statistical record can be biased. Recording at less than full value means that the effective trade integration of markets is understated.

ONS has identified a significant number of firms where discontinuities in reported data on manufacturing have followed changes in ownership, or in commercial relationships with non-UK affiliates towards a toll processing approach. These arise in:

- value of gross output, which in the firm's turnover now excludes value of materials;
- purchases, which also excludes materials owned by the manufacturing client;
- value of stocks, which may not be recorded because the firm does not take ownership (and may not even know the value);
- profits, which are determined by tolling fees and may reflect most beneficial tax regimes;
- trade with other countries.

Motives for the move towards toll processing in genuine arms length relationships are based on cost reduction due to specialisation. There is a clear economic logic for this, as specialists in particular processes, like coating, rolling, simple assembly, may be able to offer more efficient operations, better quality and use of capacity, than units within integrated firms. However, where toll processing takes place between related enterprises, there are also tax implications. Rules on transfer of goods from one part of a group to another require transactions to be valued and treated as arms length sales. Enforcing such requirements for services is much more problematic, so toll processing may well be used by some firms to move profits to low tax rate jurisdictions.

However, current official guidance is that toll processing should be classified as manufacturing (ISIC and NACE), and that transfers across borders of goods for processing should be treated as transfers of ownership (Balance of Payment Manual and ESA 95). Tax guidance is less clear cut. If companies structure their transactions, and information flows, to make the most effective use of tax rules it is more than likely that some find it difficult to deliver the information required for accurate output and import / export statistics.

Work is underway in ONS to improve compliance with the official guidance. However, it is worth considering how much might be gained by a US style approach to measuring foreign affiliates, with details on relationships, outsourcing or marketing type operations, scale, as well as country coverage and assets. Such an overall picture, firm by firm would help statisticians and economists understand:

- the types of Foreign direct investment / overseas operations owned by UK firms, including vertical / horizontal relationships, and hence economic effect;
- relationships between UK elements of foreign owned firms and their parents;
- the types of trading arrangement between units within multinationals, and the degree to which they are becoming more integrated.

If policy-makers are also concerned to gauge the penetration of globalisation across the whole economy, they may also be interested in the number of exporters / importers in key sectors. This would tell them more than data on the total flow of goods / services - as measure of

real interdependence of economies. At present, structures for assembling National Accounts do not require information on imports or exports of goods at firm level, depending instead on import / export information from customs. However, data is collected in the UK structural business survey on imports and exports of services; perhaps it would be worth completing the picture.

## **National units in multinational enterprises**

### *Looking at the elephant*

The basic building block for national accounts is the 'unit of homogeneous production' (UHP) which is realised in the business statistics 'kind of activity unit' (KAU). The KAU is essentially the organizational unit within the enterprise with a relative degree of homogeneity. In the UK, and other countries, the KAU corresponds to the enterprise in all but the most complex instances. The enterprise is the smallest grouping of legal units within a national enterprise group that has a relative degree of autonomy. The use of the organizational unit allows some flexibility in the way that the KAU are created, with the main criterion being data availability. The resulting unit, called the 'reporting unit' in the UK, is used as the unit for sampling, collection of data, and for analysis. The structural data is then used for:

- benchmarking output by sector and region, as an essential input to National Accounts;
- providing key data for sector input / output relationships;
- micro-data for detailed policy analysis.

While this framework delivers its primary objective - the capture by sector of data on gross and net output, employment and other inputs within a national economy, there are problems in interpreting results at both macro and micro level. Especially for firms which organise activities on an international basis - the national reporting approach means that a series of countries' statistical systems will see different 'parts of the elephant' which do not necessarily make sense in isolation. For the statistical returns from a multinational to add to understanding of issues such as productivity the parts need to be viewed in relation to each other in order to present a picture of how business inputs relate to outputs.

For example, Shell undertakes its R&D as a corporate entity, co-ordinating activity based in at least two EU member states. In making R&D returns it is required to indicate what is done in each country, but not to relate them to each other. Nor is it possible under existing statistical systems to relate inputs in one country to outputs in another. Instead detailed analysis for policy tends to assume that inputs to a reporting unit within a country are related to outputs from the same unit. In vertically organised, or integrated, multinationals this is unlikely to be the case; in real life outputs in one country unit are critically dependent on inputs from another.

The treatment of local entities in countries as individual enterprises can hide the real relationships which exist between units in multinationals. Within countries there is concern to identify the 'real' dimensions of enterprises, for competition regulation, to check on intra-firm transactions and transfer pricing and to understand structural market effects. This has driven the statistical definition of enterprise groups, as 'associations of enterprises' bound together by legal and / or financial links which imply control. As the latest draft of the Eurostat manual makes

clear, while most national business registers identify membership of foreign controlled enterprise groups, and country of control, few capture economic data on activities outside the country in which the enterprise is registered (Business Register recommendations manual, March 2003). The US model for data collection, which permits a view of the whole enterprise, has a number of attractions to meet policy needs in this area.

There have been recent initiatives to examine the statistical recording of the activities of Multi National Enterprises (MNEs) – one in particular was initiated by Statistics Canada and endorsed by the Bureau of European Statisticians (CES). France, Italy, the Netherlands and the United Kingdom also took part. The project was part of the work programme of the Roundtable on Business Survey Frames. The objective was to identify areas where more standardised and coordinated approaches in measuring the activities of MNEs could contribute to improved national and international economic statistics. In order to achieve this objective, a first stage was to gain insights into the forms of organization and ownership and control of multinational enterprises. The aim was to assess the view selected global enterprises have of themselves in each of the participating countries compared with the view gathered by each national statistical agency. Although valuable knowledge was gained in this project, companies that at first indicated their willingness to collaborate, often subsequently did not cooperate as fully as was hoped, and it may be that issues of company confidentiality have prevented a more positive outcome.

#### *Understanding the parts of the elephant*

R&D is just one example of the shared use of intellectual capital across multinationals. An even more difficult problem is posed by the use of shared software across global firms. For example Sun Microsystems writes much of its own system software, so a significant part of software professional time expensed in its accounts will really be attributable to investment in software capital. But attempts to assign software investment activity to reporting units by country will be defeated by the facts that:

- the software developed in Sun UK is used worldwide within the company;
- much of the internal systems software used in Sun UK is written in North America and Asia.

In effect the firm behaves as if it has a stock of intellectual capital - in software and other aspects of management systems - which is freely shared across its enterprise activities. Is there any evidence that this type of intellectual capital affects firm performance?

Analysis of productivity performance across US firms by CES some years ago, comparing productivity for purely domestic firms with productivity for multinationals shows that there is 'multinational effect'. Similar work for the UK shows a consistent, positive, relationship between multinational activity and productivity, even after taking account of a large number of other related factors.

Regression analysis, allowing for all inputs including the relatively lower level of capital per employee in UK multinational firms, shows the 'multinational effect' on productivity to be

consistent across multinationals firms irrespective of their origins. There is a modest additional advantage for US owned multinationals. In any event, there is a clear productivity advantage which almost certainly reflects the availability of intellectual capital to these multinationals. Inputs of such intellectual capital are not captured in the data gathering systems for National Accounts, or other statistical sources.

This type of analysis is one of the few ways available to measure the value of intellectual capital shared across international businesses, and which cannot be tied to geography. It shows, however imperfectly, the additional value added which firms having access to shared technical, organizational, human and market capital are able to generate. These results also suggest that the effects are scale dependent. The 'US advantage' they show may reflect the fact that US based global firms tend to be more global than those from other countries, and that the productivity advantage conferred by intellectual capital is greater the wider the range of markets over which it is spread. This interpretation would certainly be consistent with the European single market studies quoted earlier.

The implications for measurement of capital services of this effect are significant, and pose severe problems for statisticians. The intellectual capital in multinationals does not reside in a country, but in the enterprise systems which make the firm function, and give it competitive advantage. This extends beyond the software example quoted earlier. Any attempt to measure software capital formation accurately in a firm like this - except at the level of the whole enterprise group on an international basis - is likely to fail.

### **Electronic trade in intellectual property in a borderless world**

International trade statistics are affected by growing cross-border electronic commerce (international e-commerce). There are changes in the way goods and services are delivered to customers, and here we consider the implications for international trade statistics, both in terms of how such transactions might be presented in the statistics, but also how the data might be collected.

#### *Classification issues*

The issue of classification; namely whether electronic transmissions or products shipped electronically (instead of physically) should be classified as goods, services, intellectual property or something else (perhaps intangible goods); is more than a statistical issue and has been the subject of discussion amongst taxation and trade policy experts. For example, if they are regarded as goods, they would be subject to General Agreement on Tariffs and Trade (GATT) rules, which would make electronically shipped products dutiable. If, on the other hand, they were classified as services they would be subject to General Agreement on Trade in Services (GATS) rules and probably not dutiable. Thus the issue of classification has implications for government revenues from Customs tariffs.

Other important differences between GATT and GATS are as follows. While GATT's general obligations include most-favoured nation treatment (MFN) and national treatment, GATS includes the national treatment principle only in negotiated specific commitments and

specific services. For example World Trade Organisation (WTO) member countries have defined within their schedules whether, for a certain service trade, foreign suppliers will be given national treatment (i.e. they are subject to same rules as domestic suppliers of the same service). Thus, if electronic transmissions fall under GATS rules and if no national treatment is specified, imports could be subject to higher taxes than domestically supplied services.

GATT in general prohibits the use of quantitative restrictions or quotas while they are allowed under GATS. Therefore, theoretically, a country could put (in principle) a limit on, for example, the number of books transmitted electronically via the internet. There are also domestic taxation issues in that most imported goods are subjected to domestic taxation while in the case of services the level of domestic taxation is usually lower or non-existent. For certain electronic transactions agreement on how they should be classified is fairly straightforward. For example, goods that have been ordered, paid for or marketed electronically but shipped physically are clearly defined as goods in the traditional sense. Similarly the supply of traditional services such as financial services accountancy, tourism, computer-related and other office services, educational and telecommunications services via electronic means are clearly defined as services.

The most controversial classification issue concerns electronic transmission of products, which have physical counterparts (e.g. books, music, film and video material and software). In the past these products were shipped physically across borders via a carrier media such as CDs, diskettes and tapes. Hence they were classified as goods. Increasingly these products are being sent via data files through virtual networks, thereby crossing borders. The data are then downloaded onto a carrier medium, printed or stored in a computer. They could be sent to individuals for direct consumption or to retailers for distribution.

Put simply the debate is:

- Whether, because they are equivalent to a hard copy of a book, CD or videotape for example, they should be classified as a good or;
- whether the transmission of the data itself is a service and thus the 'data' should fall under services  
or;
- whether there should be a specific category for electronic transmissions containing a mixture of goods and services.

#### *Current international position*

Although there is, as yet, no international agreement on how electronic supply of products across international borders should be classified, it seems more likely that such trade will be regarded as trade in services rather than goods. In fact a number of countries such as US, Canada and the Irish Republic at present include such transactions in trade in services because Customs systems cannot detect them. The OECD taxation experts have agreed that for the purpose of consumption taxes, such electronically delivered digitized products should not be treated as goods. In trade policy it is still an unresolved issue globally.

The next section illustrates how international e-commerce and related services might be classified within trade in services and identifies unresolved issues.

### *Coverage issues*

Aside from the classification issue, and because the internet creates opportunities for small firms and individuals to trade internationally, there is a question of whether e-commerce is creating significant international trade that will not be picked up and identified by existing data collection systems.

For example:

- The value of the transaction may be below the threshold values set by a country's Customs Authority and therefore not identified as trade in goods. Under the European-wide INTRASTAT system for recording movements of goods between EU Member States, data on purchases by private individuals of goods from an EU member state will not be collected;
- With many new and small companies involved in international e-commerce there may be problems identifying them on business registers;
- The location of a web site will often be different from that of the supplier so the purchaser will not necessarily know the residency of the supplier;
- Traditional business surveys for collecting data on trade in services will not pick up purchases of services from overseas by private individuals;

The latest ONS e-commerce inquiry asked UK businesses for the percentage of their sales and purchases carried out using e-commerce. It also asked them for the percentage of e-commerce sales to overseas but not purchases from overseas. Overall the inquiry showed greater levels of e-commerce purchases than sales, implying net purchases from overseas.

### *Implications for UK data collections*

In most cases, the existing International Trade in Services (ITIS) surveys run by ONS will already pick up these types of transactions. However, the notes accompanying the questionnaires will be reviewed to make specific mention of electronic transmission if necessary.

ONS is currently improving the coverage of its ITIS inquiries in order to capture sectors of industry and sizes of business, which might not historically have traded in services internationally. These improvements should ensure that new electronic trade is picked up in future from smaller businesses and sectors traditionally associated with goods - such as the manufacturing, retailing and wholesaling sectors.

ONS household surveys now pick up consumers' electronic purchases but do not currently distinguish purchases from overseas. There are no plans to ask them to do so on the grounds

that they are unlikely to know the true origin of their purchases. Nevertheless it may be possible to use data from these surveys, in conjunction with data from the other surveys mentioned above, to make estimates of goods and services transmitted direct from overseas to consumers in the UK. This would require e-commerce surveys of business sales and purchases to be compared with household e-purchase data on a consistent basis.

### **Balance of payments and international investment issues**

International movement of capital to support investment is an essential part of the globalizing economy. An accurate account of the role of multinational firms in directing investment to markets which they wish to establish or expand in is therefore important. Distinguishing investment from other payment streams is a helpful step.

#### *International work*

The UK is a member of a European Steering Group on multinationals, commissioned by the European Central Bank and Eurostat to carry out a feasibility study on the reporting of balance of payments and the international investment position of multinational companies. The balance of payments (BOP) records statistics on transactions of an economy with the rest of the world and is part of the framework of national accounts. The International Investment Position (IIP) is a statistical statement on the level of an economy's financial assets and liabilities with regard to the rest of the world. Thus IIP is information on stock levels, whereas the BOP statement presents measures of flows.

The aim of the project was to carry out a test exercise for harmonised BOP/IIP reporting rules for European multinationals. The project would test how practical it was to ask multinational companies to provide a coherent story of their balance of payments and international investment so that national and European statistics could be drawn up in an integrated and coherent manner. At the moment, Europe is marked by a diversity of national BOP/IIP reporting formats. For enterprises with affiliates in other European countries, this is not optimal from an enterprise point of view, as each separate unit requires a different data processing and response for each EU member state. Standardisation of BOP/IIP reporting rules would improve the quality of the information as a result of the streamlining of the reporting process at the enterprise.

The harmonised BOP/IIP reporting model for multinationals focuses on a close link-up with any enterprises' accounting system. The proposed system which makes due allowance for reporting requirements of international institutions such as the ECB, the European Commission and the IMF is based on monthly reporting of information directly to the BOP/IIP compiler. The model covers the collection of data on foreign financial assets and liabilities, including related investment income. For the reporting of these foreign financial assets and liabilities of multinational enterprises, a fully reconciled model for reporting both stocks and flows has been designed. Furthermore, the common reporting system also provides for the collection of data on international trade in services. In general, the underlying accounting standards would be either the US generally accepted accounting principles (GAAP) already in use in some EU-based

multinationals or the International Accounting Standards as laid out in the EU legislation that would be in force from 2005.

On the basis of the results to hand at the time of the CMFB meeting, the following comments could be made:

- Not all the information required by the proposed uniform reporting model is directly available - some investment in appropriate software for the accounting systems used by the firms is necessary.
- Nearly all the multinationals used the proprietary brand SAP accounting software as either a sole platform, or as an important tool for company administration. Pilot studies are underway in the Netherlands, to consider how SAP software can be adapted and extended to allow automatic reporting of BOP and IIP statistics. If concrete results with SAP can be obtained for the Netherlands, then this suggests that a platform can be created for application in other European multinationals. This may in turn stimulate other accounting software providers to also develop these facilities as an important marketing strategy.
- ERP (Enterprise Resource Planning) embedded solutions were acknowledged to be an important feature of any solution, as they facilitate BOP/IIP reporting in a structured manner.
- The multinationals initiated this exercise in order to reduce the amount of ad hoc work in regard of statistical reporting. But a major barrier was the initial investment in software to allow the returns to be generated as a by-product of existing accounting software.
- For reporting on services, the degree of detail asked under the EBOPS (Extended Balance of Payments Services) classification was reported as unduly burdensome and not consistent with the level of detail held by the companies.
- For some of the non-financial companies, early responses suggest that portfolio investment is of little significance and so this part of the feasibility study remains untested at the time of writing.
- The proposed treatment of foreign direct investment consistent with national accounts and balance of payments concepts, appears to tie in well with company recording practice - this is a positive finding for an important BOP component. A similar positive message is emerging for foreign assets and liabilities.

#### *Some provisional comments*

The key to making this work seems to lie in the creation of appropriate extensions of accounting software. The fact that for European companies the reporting will be administered under regulation gives an added incentive for the multinationals and therefore the software accounting firms to tackle this issue and allocate resources to it.

This preliminary feasibility study suggests that there are benefits for the companies as well as the national statistical institutes in developing software which is an extension of commonly used accounting systems, but the key question remains - will the companies see the need to provide this data under regulation a sufficient incentive to fund software development. And given that SAP is applied to meet companies' individual requirements, can the software development be sponsored and carried out to common standards which can be implemented easily in each company implementation of SAP? Although there is enthusiasm for tackling this issue at the top of the multinationals, there is understandably more reluctance to devote scarce resources within the firms to tackle the issues. This is exemplified by twelve of thirteen multinationals approached giving qualitative replies to the feasibility questionnaire. However, draft report forms including a full response of real data have been supplied by only two multinationals as reported to the CMFB.

### **Concluding remarks**

The range of statistical needs relating to globalisation extends beyond the topics examined in this paper. However, the key issues are:

- understanding the 'disintegration' of business operations, including splitting of value chains across borders;
- limitations in data derived from single country snapshots of larger, multinational, operations;
- international movement of intangibles, and of investment by households and firms all illustrate the need for statistical collection - for part of the economy at least - at an international level.

First steps in this process are under way, but most National Statistics Offices still have a long way to go. The Bureau of Economic Analysis of the United States has put significant resources into the topic, and has useful statistics on the business of foreign affiliates to show for its investment.

It is important in the development of the process that the objectives of NSOs - the accurate accounting of activity within national borders - are met alongside the objectives for overview of multinational firms.

### *The future*

Presenting a picture of business in the world economy should be tackled from a global perspective. This implies global collection systems, and business structures presented irrespective of national boundaries. It implies that the flow of capital services from assets, both tangible and intangible must be measured and shown in business production accounts. This will help explain the relationships of companies across national boundaries, and better determine where value added is created by business processes.

The key to a better picture of the world economy is to capture the flows between parent companies and foreign affiliates. This can only be achieved through an expanded collection of

foreign direct investment and associated financing arrangements. This must be carried out in a manner which avoids the asymmetries generated at present with respect to trade in goods and services between countries.

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## 5. Global development challenges for the new market economies in the XXI century: view from Ukraine<sup>1</sup>

by V.M. Geyets and V.P. Sidorenko, National Academy of Sciences of Ukraine<sup>2</sup>

### Introduction

The issues pertaining to economics of growth are such sphere where the scientific talent of J. Bognar had appeared first of all.<sup>3</sup> However, at his mature scientific age, he became more engaged in problems concerning international integration and the thing that we call now globalisation. Within this context precisely, it is worth looking at global perspectives of the new market economies, i.e. economies that have emerged as a result of systematic transformation processes since the beginning of the 1990s.

### Globalisation and the internal development: interaction affects

On the whole, globalisation pertaining to not only economic but the social processes in their very road definitions has become a dominant of modern world development. This process has its defining impact on the countries that have just finished or are finishing the process of market system formation and that follow the path of consistent joining the commonly recognized civilization processes. As a result, the trajectory and the effectiveness of their national social and economic development are more and more influenced by the effects of interactions caused by internal and external factors which are of positive and negative nature. In particular, these countries face the challenge: *create the mechanisms in the economy and society on the whole that would allow, on one hand, to make use of the globalisation's positive influence and on the other hand, to oppose to its negative effects.*

Today, a great deal of research has been done in the world indicating to the *globalisation's positive influence upon social and economic development*. Thus, one of the World Bank<sup>4</sup> researches stated that more globalized countries have higher growth rates on the whole. This is based on the empirical analysis of data from 24 developing countries, among which the countries that advanced their integration level into the world economy during the two decades (up to the

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<sup>3</sup> See in particular: J. Bognar (1968). *Economic policy and planning in developing countries*. Budapest: Akademiai Kiado; *The economic growth, international flows of capital and petrodollars in the third world*/Principle editor: J. Bognar. Budapest, Institute of the World Economy, Academy of Sciences of Hungary, 1977; *End-century crossroads of development and cooperation*/Jozsef Bognar. – Budapest: Hungarian scientific Council for World Economy, 1980.-2v.

<sup>4</sup> The World Bank (2002). *Globalization, Growth and Poverty: Building an Inclusive World Economy*. Washington, DC: The World Bank – New York: Oxford University Press, p.5.

end of 1990s) have reached higher (5%) per capita income growth rate as compared to 2% in the rich countries and 1% in less globalized countries.

In a number of studies among which it is worth mentioning the recently new research by J. Bhagwati<sup>5</sup>, we can find a fundamental basing (in contrast to the powerful movement of antiglobalists) for the beneficial impact on the globalisation development which as it is stated "has a human face already now". However, even J. Bhagwati and other active supporters of the globalisation process cannot but admit the presence of serious defects in the way the process looks now which should be eliminated during the process of improving the globalisation controllability.

In particular, both at the global and national levels, the first and foremost attention should be focused on the problematic aspects representing the *global challenges for development*. It should be pointed out at once that these global challenges originate from the very contents of the basic driving force of the globalisation process.

*The informational revolution* is among the most active components and catalysts of globalisation. It fundamentally changes not only the capabilities of communications but the technologies for the exchange of products, services, knowledge, and, the most important thing, technology to manage the social processes within their internal and external manifestation. For all, without exception, world countries, the inclusion into the world economic system of electronic communications is the priority task. And many new market countries meet this challenge. Thus, in 2000-2004 the number of the Internet users in the countries of South-Eastern Europe and the SIC have increased by 583.3% while in the developed countries by 75.8%. While in 2000, the first group of the countries accounted for only 1.5% of the total number of users in the world, in 2004 this number has already reached 4.7% (more than 40 million people).<sup>6</sup>

Especially the emphasis should be made on the accelerated *development of e-commerce* which lead to the all-round globalisation of markets, optimization of mechanisms enabling their functioning, changes in structures for traditional economic sectors, speeding up the rate for progress on the markets of new products and services that, in one's turn, accelerates the rate for circulation of capital and significantly increases the speed of the national wealth accumulation.

But the globalisation of the world economic relations through the use of informational and communicational technologies contains the potential of probable losses. Thus, *the lack to a fair degree of independent mass media* in a number of countries with a market economy (mainly on the post-Soviet area) creates the prerequisites for deformations in the people's mind, hampers the freedom of their choice and often serves as a tool to deform the morale and public behavior. The danger of the unauthorized spread of information about some individuals, their financial status, the threat of the unauthorized access to their bank accounts are progressing and this threatens not enough stable institutes of private property and gives rise to the new types of crimes. That is

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<sup>5</sup> A striking example of such approach is the book of the well-known American economist of Indian origin, one of the key theorist of the international trade freedom: J. Bhagwati *In Defence of Globalization*. Bhagwati J. (2004). In Defence of Globalization. New York: Oxford University Press.

<sup>6</sup> Estimates are based on UNCTAD (2005). Information Economy Report 2005. New York and Geneva: United nations, p.2.

why, on one hand, the development of informational –communication system exclusively on the basis of the real competition and public control is very relevant for these countries. On the other hand, equally important is the provision of reliable tools to protect information from unauthorized access.

Another problematic component of the globalisation process and at the same time its important driving force is *financial globalisation* which produces the opportunities for almost immediate movement of such amounts of financial resources that can provoke the financial crises not only in a separate country but in a number of countries.

The modern *uncontrolled globalisation of financial relations* more and more virtualizes the world economy, it is very weakly mediated through the real economic relations. At the same time, it makes the role of the state significantly weak in the regulation of the economic processes. As far back as in the middle of the 1990s, it was concluded that the situation on the world financial market is already determined not by the national governments but private capital<sup>7</sup>. As the share of the national states in the management of the financial and economic processes is getting down, the effectiveness of many established mechanisms enabling the participation and democratic control is also falling off, while the system for the national bodies still lacks the developed mechanisms of such controls. However, it has especially negative influence upon the insufficiently good mechanisms for the state regulation in the new market economies and, in the broader context, in the developing world.

Today, international "financial alchemists" are able not only to regulate the financial flows from the point of view of their mercenary interests, but if necessary, to provoke the local and worldwide financial and common to the whole economy crises similar to the one that happened in 1997-1998. And evidently, this is not the last case of this kind.

*The submission of the financial markets to the risk capital* which had freedom in its movements owing to the modern electronic technologies has put high *on the agenda the changes in modern and establishment of the new financial system* which should not be very much dependent on the speculative flow of capital and, to a greater extent, would take into account the interest of the development of the real sector of the economy. Quite similar and extremely risky is the situation when the world turnover of financial assets more and more surpasses the turnover of the world trade in goods.

Thus, in 2004 the traditional daily trade in currencies, according to different data, accounted for 1.77-1.88 trillion USD<sup>8</sup> (this makes up approximately 645-685 trillion dollars per year), while the world trade in goods is estimated at 8.9 trillion dollars in 2004. That is, the trade in currencies is 73-77 times higher, although in 1973 such a surplus doubled<sup>9</sup>. As early as in

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<sup>7</sup> Allen R.E. *Financial Crises and Recession in the Global Economy*. Aldershot: Edward Elgar, 1994, p. 129.

<sup>8</sup> Bank for International Settlements (2005). *Triennial Central Bank Survey: Foreign Exchange and derivatives Market Activity in 2004*. Basel, March 2005, p.5; Garnham P. FX volumes "to double" by 2007. *Financial Times*, October 9, 2006.

<sup>9</sup> Kuvaldin V.G. *Globality: a New Dimension of Human Existence*// Gorbachev M.S. and other. *The Distinctions of Globalization: Difficult Issues of Modern Development*. Moscow: Alpina Publisher, 2003, p. 53.

2007, as a result of the expected sharp increase in the amounts of currency trade to reach 3.6 trillion each day, this ration is to be 102:1<sup>10</sup>.

The significant controversial problem for the globalisation mechanism is the activity of *the multinational corporations (MNC)*. Of course, MNCs are the main entities of the world trade, the main entities of modern technological progress in the world economy and the main source of technologies transfer for the less developed countries.

Thus, according to estimates of those who did a research into these issues, approximately 75-80% of the R&D world volume in civilian sector is made by MNCs<sup>11</sup> while 700 the biggest industrial firms of the world, which are mainly MNCs, have a ½ of the total volume of commercial usage of the inventions in the world<sup>12</sup>. In separate countries the role of the MNC foreign affiliates in the development of high technological areas for manufacturing is very big: in Ireland - 95.6%, the Great Britain 59.0%, Canada 52.5%, France 51.5%, Norway 48.6%<sup>13</sup>.

For many countries of the world, the refusal to allow the MNCs into the national economy would mean more lagging behind the developed countries than it is now. It is typical that the majority of economically successful countries from Eastern Asia including Malaysia, Singapore, China, etc., were opening their door to MNCs rather wide.

However, at the same time, MNCs which as a rule have a rather high sensitiveness towards the governments policies of the countries where they are basing (today this is mainly the USA and other advanced developed countries)<sup>14</sup> create the environment for weak countries in order to wash out their national and state identity. This process has the prolonged nature and can, if circumstances permitting, threaten the safety of the new market economies in the long-term since the financial and technological capabilities of separate MNCs significantly surpass the government capabilities in each country. As a result, the strategic decisions when the MNC activities are widespread across the country can be taken to the prejudice of the national interest – from the actual control over the usage of the important strategic natural resources up to accumulation of ecological problems.

For the newly emerged market economies still not enough strong in terms of availability of institutes to protect their own economic interest, the over strengthening of foreign MNCs can bring the negative consequences. The latter basically remain the *nationally attached* organizations, and therefore their policy is mainly dictated by the interest of the countries where

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<sup>10</sup> Estimated are based on data Garnham P. Op. cit, and the IMF data on the projected value for exports of goods and services in 2007 (12.9 trillion USD). IMF (2006). World Economic Outlook. September 2006. Washington, D.C., p. 218.

<sup>11</sup> Dunning J.H. (1993). Multinational enterprises and the Global Economy. Workingham: Addison-Wesley Publishing Company, p. 106-109.

<sup>12</sup> See: Cantwell J.E. Introduction. In: Cantwell J.E., ed. (1994). Transnational Corporations and Innovatory Activities. London and New York: united nations, p. 1-36.

<sup>13</sup> OECD Statistics on Measuring Globalization, Volume I: Manufacturing (AFA), March 2005 – <http://oecd.p4.siteinternet.com/publications/>

<sup>14</sup> Particularly in this place the majority (about 57 thousand) out of 77 thousand of parent MNC companies is located, which undergone registration in 2006. UNCTAD (2006). World Investment Report 2006: FDI from Developing and Transition Economies: Implications for Development. New York and Geneva: United Nations, p. 9-10.

the MNC main offices are located. Often MNCs either obviously or implicitly hamper the technological progress of the provincial countries providing for its attachment to standardized technologies generated within MNCs (as a rule at their research centers located outside the host countries) and moreover in many cases representing not the recent achievements (technologies at the stage of maturity). Owing to the mentioned reasons, the theoretical possibility for the new market systems to join the highest standards of scientific and technological progress through the MNC mechanisms with Headquarters in the foreign countries seems rather dubious.

The reaction to this potential threat could be *the creation of one's own powerful financial and industrial groups and transnational structures* so that the latter would have an opportunity to defend the national interests being interested in political support to be given to the government's activity of their own countries where they pay their taxes. *The development of own MNCs should be oriented towards their rooting into the global network underlying the high technological cost.*

At the same time, the emphasis should be put on the introduction of the rational mechanisms for regulating the MNC activity so that their strategies and the national development strategies would *coincide to great extent if possible*. In particular, the key importance have the issues on stimulating MNCs to make use of the national scientific and technological developments and not their repression (as it is the case now) and also the problems of ensuring the equal competition for the different types of business instead of establishing the oligopoly market regimes. In the event that there is a lack of such mechanisms, the MNCs activities can form the financial and technological dependence from the developed world alongside with the streamlining of own productive capital.

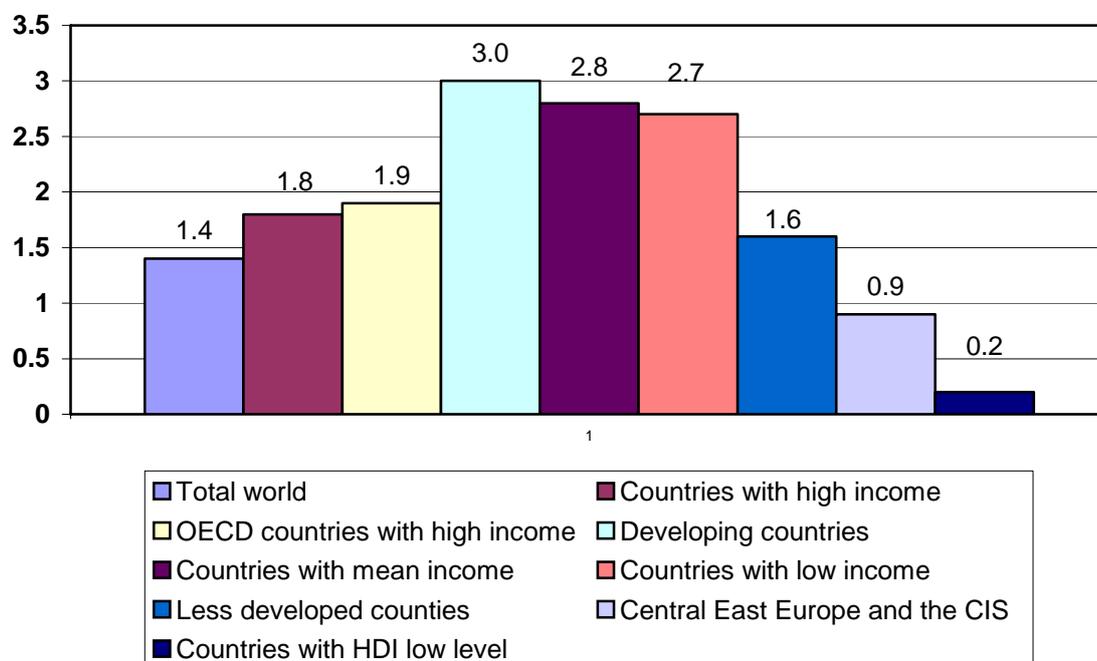
Among the components underlying the globalisation process that have the ambiguous effects for development, *the development of the world labor markets* is also occurring. According to numerous forecasts, in the XXI century for the first time in the mankind's history the labor potential of development will be limited at large. This will strengthen the struggle for the employment of the qualified labor resources. Regrettably, at present we observe the predominance of the negative aspects. On one hand, much autonomy in the movements of unskilled labor resources which is potentially favorable for the buildup of well-being in many less developed countries has been restricted by visa barriers and the numerous demonstrations of discrimination on the markets of the developed countries. On the other hand, the highly advanced countries experiencing the deficit of the qualified labor force and the promising youth create the necessary prerequisites for its outflow from the other countries including Ukraine.

In order to take into account the magnitude of this problem, it should be noted that according to different estimates, in Ukraine more than 2.5 million people are in labor migration, and as a rule, they occupy the jobs that do not meet their qualification levels. In the event that in the near future no conditions are created to satisfy the needs in proper standards of living for at least that part of the population that gets modern education, a significant part of people in working ages can leave Ukraine, thus limiting the resources of the economic growth in the long-run.

But considering the importance of the above-mentioned challenges, the large-scaled social and economic problem of modern global development is *the rise in economic and social*

*inequality in the world.* Despite the ideological slogans about the drift to cut down the gap between the most poor and the most rich countries, this gap is constantly increasing (Fig. 1).

**Figure 1. Per capita GDP average annual growth rates in different groups of countries, 1990-2004**



Source: UNDP (2006). Human Development Report 2006. New York: Palgrave Macmillan, p. 334.

We can see that in the period under review the countries from Central East Europe and the CIS keep company with the group of less developed countries into the marginalization process within the world economy structure. Even despite the fact that they have already overcome, as a rule, a deep transformational recession and today many of them enjoy high growth rates, the gist of challenge for them is as follows: *how to liquidate the consequences of "the lost decade" of the 1990s.*

Taking into account the resource constrains for the economic growth in the world, it becomes obvious that the positive effects of globalisation will be spreading first of all over the countries that have already possessed the effective mechanisms for employing globalisation to secure their own economic development and the rise in well-being. In this respect, the forecasts for the trade global liberalization within the WTO are very indicative. Thus, according to the available predictive estimates<sup>15</sup> regarding the impact of the new round of the world trade liberalization, the share of the European countries with transition economies in the world's gains in well-being provided there is a 40% decline in tariffs for trade in agricultural and manufacturing products is only 0.5 and 2.0% accordingly.

<sup>15</sup> Hertel T., Anderson K., Francois J., and Martin W. Agriculture and Non-Agricultural Liberalization in the Millennium Round / Center for International economic Studies, University of Discussion Paper No. 0016. Adelaide: Center for International Economic Studies, 2000. Estimates based on table 8 of the mentioned work.

For all the importance of finding the effective political answers to each of the above-mentioned global problems, the global challenges are unlikely to get the adequate answer if a search for solution will put aside the paradigm basis for the further development of the new market economies.

### **A paradigm of strategy for the long-term development in the context of the global transformations**

The emergence of the new market economies as a result of the systematic transformation process coincided in time with the widely *scaled transformation process which is occurring within the framework of the world economy* and which is leading to the changes in the system of notions about the nature of the world's social and economic development.

*A new, in many respects, fundamentally different system of notions about the future development* is being established, first of all, it interest the social life and at the same time very largely cultural and economic development with the state's role changing within the system "society- state – personality".

That is why at present it is *necessary to shape the new conceptual scheme (model) for development* and implement such methods and tools relevant to this problem that would have a decisive impact on the definite historic period. This directs us towards *the new paradigm of development both in global and local dimensions*.

In the future, it is necessary to proceed from the point that the new market countries which are striving towards the intensive development *require non-traditional solutions* which would not copy the past (reproduction of the concept for *overtaking development*) but produce the possibilities for making breakthroughs towards the higher efficiency and productivity (*the concept for priority development based on ideology of technological breakthroughs*). In strategic terms, in the context of globalisation the priority task for the mentioned countries will be the implementation of process to achieve *the inclusion into "the new economy" of the world economic system upon the condition that the proper scientific and technological potential is retained*. Within this context, it will be important for the new market economies to obtain the right in the struggle for the free access to markets of high tech commodities and services produced by the most developed countries, to the equal inclusion into the global network of reproduction of value in the high-tech spheres.

On the other hand, *it is not a good thing to change the new market economies, particularly Ukraine, into the region for reproduction of human capital for the needs of the most developed segments of the world economy at present*.

The fundamental conclusion drawn from the changes occurring in the social development of the world civilization during the second half of the XX century has been the point indicating that a *progress paradigm* which dates back to the Renaissance ideology was, is and will be prevailing.

It, virtually, means that despite the increasing constraints regarding the resource development, the achievements in sphere of science, engineering and technologies, education and culture will permit to ensure the progressive advance towards the further improvements to be made to the conditions of mankind's life. The concept of this development has been added to arsenal of those countries which started changing their social and economic system during the last decades of the XX century being oriented towards the establishment and spread of the market institutions similar to institutions from the most developed countries. However, in spite of the initial expectations for the guaranteed economic prosperity, this way seemed to be full of traps. The adherence to the western paradigm of progress paradoxically could lead, within the completely different cultural environment, to the emergence of the *numerous mutants originating from progress* who would throw off the economy and the society for many years backwards.

There are a lot reasons behind it and they are of the exogenous and endogenous nature. First of all, one of the methodological mistakes in selecting the technology for transformational process for Ukraine and a number of other post-Soviet countries has been the point that the paradigm for managing the development includes the incompatible contradictions. This, in the first place, is shown in the following:

- The increasing *social inequality* in the world, the *marginalization* of the considerable part of the Earth's population together with the *expansion of the primitive pop-culture* and the *aggravation of a problem pertaining to the political, cultural and religious self-definition of nations* result in the progressive loss of their cultural basis which not only robs of defining resource needed for development but gives the social foundation for the increasing religious fundamentalism, ethnical nationalism, vulgarly understandable patriotism and chauvinism<sup>16</sup> and, finally, international extremism and terrorism. Because of the expansion of the social basis for international extremism, the recent achievements of the world science, the advanced technologies which basically are human-oriented unexpectedly can be used for the purpose of destruction: particularly, the completely new dangers are appearing – so-called "cyberwars" and the potential hacker diversions bringing forth the unforeseen consequences.
- The *objective boundaries of the environment exploitation and strategies of the economic progress based on the continuous buildup of human-caused burden on the environment* are getting more and more distinct. Owing to this, the struggle for resources (human capital and energy resources) and the habitat conditions between those who go ahead of all and those who are lagging behind, is swelling up, thus leaving the latter without the sufficient resources not only for development but partially for existence. On the other hand, providing the human-caused burden is kept in the future, in opinion of a number of well-known environmental scientists as early as in the middle of the XXI century there could be a degradation in biosphere that would bring about the irreversible processes and global cataclysms.

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<sup>16</sup> S. Huntington warned about those perils in book *The Clash of Civilizations*. Huntington, Samuel (1996). *The Clash of Civilizations and the Remaking of World Order*. New York: Simon and Shuster.

- Along with the globalisation of the economy, the criminal activity is also on the rise: currently, the volumes of illegal turnover made 20% of the world trade, including: money laundering is more than 1 trillion USD per year; illegal trade in drugs 800 billion, counterfeiting 400 billion, illegal trade in arms 10 billion, illegal transfrontier transportation of people 10 billion, illicit transfrontier trade in art objects 3 billion<sup>17</sup>. At the same time, the increasing contribution to this turnover is being made by varmits from the new market countries. This results in the world economy being stratified into legal and illegal parts, international institution crises.
- There is a steady increase in the global crises risks amid the inadequacy of the existing global regulating institutions on one hand, and the efforts of the current leader-countries to retain the geostrategic status quo, thus resulting in the global disagreements between leader-countries and aspirants to leadership being built up. The vivid manifestation of such disagreements was the stoppage of multilateral negotiations within the WTO Doha round in July 2006.

Inability to adjust the above-mentioned differences within the framework of the current development paradigm is the evidence of the necessity to work out the new development paradigm able to systematically resolve the mentioned problems. The case in point is not the special course of development which sometimes is called the third way but the environment for development and modernization of the multipolar world based on the system of values inherent in culture of each country. After all, owing to the features of the national character a synergic effect crops up which permits to reach a unique effect as, for example, it is the case with modern China. Previously it shown itself in East-Asian "tigers". The successful progress made by this East Asian region clearly confirms the idea about the enormous significance of support for the development. This support implies the historically inherited philosophy and stereotypes of human behavior originating from the given cultural *community, the original mentality type and deeply rooted traditions*. This should be one of the main principles for the new development paradigm in contrast to that what has been set up basing on the standardized ideology of the Washington consensus.

The new development model should be aimed at establishing, both for a personality and separate countries, the environment for a comprehensive *socialization and humanization of the economic life*. The global world tendencies of the social and economic development and the scientific researches show that the future world community will neither be a capitalism model in its classic or subsequent forms nor a society of mass consumption in modern terms. It should be characterized by the socially-oriented development based on the dominance and comprehensive development of a personality, it must have a new structure for ownership and power which is to generate the new quality of life on the basis of *humane technologies*.

The future of the countries with the new market economies, including Ukraine, depends on how successful they will be in finding the authentic forms enabling them to adjust themselves to the above-mentioned basic framework.

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<sup>17</sup> Naim M. (2005). *Illicit: How smugglers, Traffickers, and Copycats Are Hijacking the Global Economy*. New York: Doubleday.

However, the implementation of potential opportunity for movement along the mentioned way encounters with some risks. In this context, one cannot but agree with the opinion of the prominent Russian scientist N. Moiseev<sup>18</sup> about the point that on the verge of the XXI century mankind has approached some boarder in its historic development which separate more or less successful history of the human race from the unknown and, probably, very dangerous future. The matter interest not only earlier mentioned disagreements pertaining to the economic, social and ecological globalisation process. The geopolitical factors represent the same risk. Currently, one cannot but catch sight of processes implying the changes in balance of forces and influence in the world. It is shown by aggravation of competition between the USA and the European Union, the Moslem world activation and China and India dominating the foreground, and evident Russia's geopolitical role renewal.

In view of extremely difficult geopolitical situation, the world is on the crossroad and that is why it follows any alternative way. The scenario for further fortification of the West predominance (North-Atlantic civilization headed by the USA)<sup>19</sup> is getting very possible. However, the implementation of such project is impossible without ruining all other planet-like structures which equally pretend to be alternative. Hence there is the *second possibility: this is the renewal of the two-polar system*. However, the second pole is more likely to be presented not by any second superpower (as used to be in the time when the USSR existed). *The new second pole, if it comes into being, is doomed to combination well in advance*, i.e. it could be a strategic alliance of some big powers, regional leaders. It is evident that the existence of such alliance alternative to the West is not at all equivalent to the optimal structure for the global world order – multipolar structure where the main contents implies not the confrontation but cooperation.

Given the risks of the new geopolitical splitting which, of course, could have the significant impact on perspectives for the world economic development, the potential role of the new market nations that could serve as "bridges" for establishing the dialogue between the geopolitical and geoeconomic groupings is rising. In our opinion, they, on certain conditions, may include Ukraine which in case it pursues the policy of neutrality, could take the advantage of its geopolitical and geoeconomic (transit country) status. Using good neighbour status, Ukraine could be a gravitation center for the countries which are not going to join the big alliances. Due to this, there could be a basis for establishing the *medial space* as a stabilizing element of the world architecture.

It should be noted that the result of the global technological competition will be play the important role in geoeconomic and geopolitical order of the future. After all, in opinion of many researches, the XXI century is going to be the technetronic age when the world will see something completely new which represents the synthesis of the recent information and biological technologies rather than mechanical and physical technologies. The unique combination of the new technological discoveries to be implemented during the recent 10-15

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<sup>18</sup> Moiseev N.I. Preserve the Mankind on the Earth // Ecology and Life. 2000. № 1. P.11-12.

<sup>19</sup> The idea that the world during the civilized rivalry has been gained by victorious West headed by the USA and the latter's task is to make it follow their rules was theoretically justified in *The End of History* by F. Fukuyama (Fukuyama F. (1992). *The End of History and the Last Man*. New York: Free Press) and more openly stated by Z. Brzezinski in his *The Grand Chessboard*. Brzezinski Z. (1997) *The Grand Chessboard: American Primacy and Its Geostrategic Imperatives*. New York: Basic Books.

years will present the opportunity to manage the planet's social development in accordance with directions which will mainly be defined by technological leaders by bringing them a leadership in accumulating the financial resources which, in its turn, consolidate this leadership.

This is connected with the extreme efficiency of transactions namely in high-tech sectors. Thus, according to estimates of American experts, a share of value added in production, for example, of satellites makes 2 000%, jet fighters 2 500, supercomputers 1 700, color television sets only 16 and cargo ship 1-1.5%.

Since the mastering of the new technologies presents the possibility for establishing the financial and informational domination in the world, there is a very tough struggle for control over technological discoveries of the new generation. Today, out of 50 macro technologies ensuring the competitive production, the highly developed countries have 46 of which the USA has 20-22 macro technologies, Germany 8-10, Japan 7, Great Britain and France 3-5, Sweden, Norway, Italy, Switzerland 1-2.

Being guided by the interests of securing the technological domination in the world, the USA and a number of other countries (global technological leaders) not only blockade the transfer of modern technologies to less developed countries. Under their pressure the development programs supported by international organizations being controlled by highly developed countries do not look seriously at scientific and technical development.

More over, the modern global economic order creates a real danger for the economic systems of the provincial countries to be transformed into the dead-end systems, without any potential for development. Special threat is presented by technologies called *closing*. i.e. these are the technologies that when implemented imply that the new market capacities being opened by them are significantly are smaller than market capacities closed by them due to the rise in labor productivity they caused<sup>20</sup>.

In this environment, the political and economic elite from the new countries with market economies should timely take the relevant anticipatory measures aimed at occupying the new positions in the changing world. Thus, Russia at the end of the 1990s set a goal that till 2010 it has to master 12-16 macro technologies<sup>21</sup> during the period of up to 2025. Ukraine's leadership intentions are looking at the same direction and are oriented towards the transition to innovative and investment development model. If these plans and the plans of other new market countries achieve a success we shall be experiencing the substantial redistribution of the world technological space.

The main course for such a strategy is the highly educated population as a precondition for the diversified flexible economy. Currently, it is clear more than ever that an issue pertaining to the global competitiveness in the XXI century is, in the first place, the issue of the *power of education system*.

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<sup>20</sup> M.G. Delyagin. The Russia's Path in the Onepolar World // Megatrends of the World Development / Executive editor: M.V. Ilyin, V.L. Inozemtsev. Moscow: CJSC Publishing House Economics, 2001, p. 101-103.

<sup>21</sup> A Path into the XXI Century: Strategic Problems and Perspectives for the Russian Economy / Chief of the writing team is D.S. Lvov. Moscow. JSC Publishing House Economics, 1999, p. 360-362.

Of course, for majority of the new market countries including Ukraine, it is above their strength to build up and manage self-contained systems for international reproduced cycles. But after all, the modern productions and technologies are currently cost-effective only providing the products generated with their help are sold globally. That is why it is crucially important for these countries to reconstruct the international economic order in such a way that would significantly facilitate the equitable international cooperation in high-tech areas based on the guarantees for *more liberal and less burdensome, in financial terms, transfer of technologies and liquidation of all forms of technological discrimination against less developed countries.*

The performed analysis shows that the economic development of the new market systems including Ukraine is threatened by serious global challenges. However, in order to answer them, it is necessary to create the relevant political tools. And if the number of tools is not less at least than the number of goals being pursued (in our case, global challenges of economic development) then, according to the rule, laid down by the Nobel prize-winner Y. Tinbergen, it is real to achieve the mentioned goals set for dynamic and safety development of the national economy within the global environment.

**SESSION I: ECONOMIC GLOBALISATION:  
A CHALLENGE FOR OFFICIAL STATISTICS**

## 1. Summary of the session

During the session, the following main points were made:

- globalisation refers generally to the increasing global connectivity, integration and interdependence in the economic, social, technological and even cultural spheres. It is not restricted to only economic processes. However, the seminar in Kiev focused on the challenges that economic globalisation presents to official statistics;
- globalisation is progressively diluting the concept of national economy in favour of a single world market. It puts forward a number of new challenges for statistical offices, including the necessity of combining different data sources and ensuring better data transparency. The accurate depiction of the economic situation depends on the capacity of statistics to measure economic globalisation and the related socio-economic processes including non-observed/hidden economy and possible data distortions;
- a major issue is how to combine administrative data with available statistical information rather than increase the reporting burden with new data collection. In this context, it is important that statisticians understand the strategy and behaviour of economic agents and constantly interact with them. The design of rather simple models retracing economic flows between all entities of a holding or a group of enterprises might help statisticians to better describe the process of globalisation and avoid distortion of the overall economic picture.

### *Handbook on Economic Globalisation Indicators*

The economic and social analysis of the effect of globalisation generates demand for indicators of economic globalisation. The *Handbook on Economic Globalisation Indicators* (OECD, 2005) constitutes a conceptual and methodological framework for constructing a comprehensive set of quantitative globalisation indicators. The Handbook:

- identifies a set of relevant indicators to enable policy makers and other users to assess how globalisation evolves over time;
- provides methodological and statistical guidance on how to construct the globalisation indicators in compliance with international standards.

The Handbook covers the following domains: foreign direct investment, economic activity of multinational enterprises, the internationalisation of technology, and international trade.

The Dutch experience of implementing the OECD Handbook for the “Internationalisation Monitor” provides an excellent example for the other national statistical offices. According to this experience, the implications for the statistical offices in gathering data and compiling statistics are three fold and require:

- not only a close look at existing data and questionnaires but also identification of linkages between various micro-data sets;

- cooperation with other data gatherers, including Central Banks and international organizations;
- a change in the traditional role of statistics from purely technical (basic data production) to more explanatory (“meta data” production).

## **2. The Internationalization Monitor: the Dutch implementation of the OECD Handbook of Globalization Indicators**

by Fabienne Fortanier, Statistics Netherlands

### **Introduction**

Globalization remains a highly debated issue, not only as regards its effects on economic growth and welfare, but also – and more fundamentally – with respect to the appropriate way of operationalizing and measuring such a multi-faceted and seemingly all-encompassing concept. The *OECD Handbook on Globalization Indicators* was designed with the specific aim to help OECD and non-OECD countries to cope with these measurement challenges. The Handbook identifies a wide range of indicators of globalization, clustered in four different chapters regarding international trade, foreign direct investment (FDI), international flows of knowledge and technology (research and development), and the operational activities of multinational enterprises (MNEs), thus covering the main dimensions of (economic) globalization.

In the Netherlands, the Handbook of the OECD is used and implemented in a project aimed at creating an Internationalization Monitor. This Monitor is intended to become both a hardcopy publication and a dynamic internet webpage with additional information and analysis. This presentation will describe the main features of the Internationalization Monitor Project as well as some of the lessons learned from the Dutch experience in dealing with the challenges of measuring globalization.

### **The Internationalization Monitor**

The Netherlands is a particularly interesting case with respect to globalization: it is among the most internationalized countries in the world, not only in terms of trade (imports and exports) but especially with respect to foreign investment (inward and outward). The Netherlands has welcomed both a large number of foreign firms and nurtured its own multinational enterprises, and is presently 5<sup>th</sup> largest outward investor worldwide, as well as the 7<sup>th</sup> largest recipient of foreign direct investment (FDI). And although Dutch multinationals are increasingly expanding their activities abroad (not necessarily at the expense of activities in the Netherlands), they continue to play a central role in the Dutch economy.

The aim of the Internationalization Monitor is to understand a) the extent of globalization of the Dutch economy, and b) the consequences of globalization for employment, welfare and economic growth. The Monitor is in essence a collection of indicators with clear explanations and annotations, paired with a substantial section of analytical work that describes the main findings and trends, and explores relationships between the various globalization variables and key economic and social outcomes (e.g. productivity, economic growth, employment and wages). Following the OECD Handbook of Globalization Indicators, the Internationalization Monitor consists of four main chapters, on international trade, foreign direct investment, the

internationalization of technology, and operational statistics of multinational enterprises (both Dutch firms investing abroad and foreign firms within the Netherlands). The indicators are compiled from existing datasets within Statistics Netherlands, which are a) mined for existing measures of international activity and b) linked at the micro level in order to construct new and insightful indicators of globalization.

### **Challenges for national statistical offices**

It has frequently been indicated that globalization poses a range of challenges for national statistical offices. Two of the most prominent ones include first of all, the implications of globalization for the construction of macro-economic indicators, including the national accounts and balance of payments. This issue has been addressed by other participants of this conference and shall not be elaborated further in this paper. The second main challenge relates to the measurement of globalization itself, including its effects on national economies, employment, local firms, economic growth and overall welfare. These processes are fundamentally micro-level phenomena, and hence require datasets and indicators at that level of analysis.

Although the two challenges are fundamentally related – the macro-economic indicators essentially constitute the sum of all micro-economic processes – they require different approaches with respect to the collection, adjustments, and use of data.

The Dutch experience so far shows that several important principles help in compiling high quality data, for the appropriate indicators, in a resource-efficient manner:

- **The re-use of existing datasets.**

The Dutch experiences showed that a careful examination of what is already there in the various questionnaires highlighted that in various datasets, longitudinal data was already available on a (limited) number of variables that measured in one way or the other, one of the international dimensions of corporate activity. This could be for example the nature of ownership of an entity (foreign versus domestic), the extent of trade, including intra-firm trade, or the ownership of foreign assets. Using these indicators as relevant stratifying variables in the datasets within which they were collected already provided a substantial number of very interesting measures of globalization. The case elaborated in section 4 below is a prime example of this method of picking and exploiting ‘low hanging fruit’.

But linking these internationalization variables with data from other micro-level datasets exponentially increases their use. In the Dutch case, particularly relevant results are expected from the links between financial, production, and innovation statistics. Existing (preliminary) findings suggest that it is also feasible to link individuals (jobs) to firms (see De Winden, Arts and Luppens, 2007), hereby allowing for an analysis of the employment effects of globalization, including e.g. off-shoring.

Therefore, a substantial amount of statistical and analytical work can hence be done without increasing the administrative burden on firms by including additional items in the questionnaires, with the added advantage of readily available longitudinal data.

- **Cooperation with other data gatherers.**

The collection of globalization indicators crosses all traditional organizational borders within statistical offices, as well as between institutions. A full grasp of globalization is only possible by identifying, using, and pooling the heterogeneous strengths of the variety of organizations active in gathering data on related issues. These organizations include not only the central banks and international organizations, but also specialized bureaus and research institutes (in the Netherlands, for example the Economic Institute for SMEs). Also data sources that are compiled for commercial use (e.g. Dun and Bradstreet, Thomson Financial) may provide interesting additional information.

- **Changing roles from data collectors to data analysts.**

Globalization calls for a greater emphasis on analysis and interpretation of the data in the work of NSOs, because both the phenomenon itself and the data used to describe it are extremely intricate.

First of all, the debate among policy makers and academics on globalization and its effects is both multifaceted and complex. Globalization therefore requires NSOs to invest strongly in conceptualization of the main concepts and relationships in order to identify what indicators are most relevant in the policy debate, and to clarify the findings. In complex debates like the ones on globalization, statistical offices should prevent as much as possible that partial or incomplete (and hence sometimes wrong) conclusions are drawn on the basis of the data provided by them.

In addition, the data that is required to correctly describe and analyze all facets of globalization is often more difficult to collect and aggregate. This implies that data may be less inclusive (small samples instead of nearly entire populations); applicable only to a - relevant but special - subset of firms; require a different treatment of extreme observations; and represent approximations of key (theoretical) concepts rather than exact measurement of easily identifiable indicators.

These two trends combine to imply that while the (traditional) publication of data tables is still necessary, it is not sufficient to adequately inform users about the nature and consequences of globalization. In order to correctly interpret the data it is necessary to firstly, explain very carefully the data that were used to compile the statistics, and secondly, to explain explicitly the key conclusions that can be drawn from the data (also in light of their limitations).

## Literature

Winden, P. de, Arts, K. and Luppens, M. (2007) 'A proposed model for microintegration of economic and social data', Statistics Netherlands Working Paper.

### **3. New challenges to national statistics of Ukraine under the globalisation processes**

by Nataliya Vlasenko, SSCU

International integration or the phenomenon which we call globalisation now has its impact on both economic and social processes occurring in Ukraine and this, in its turn, increases demands for statistical information and requires the continuous improvements to the system of the state statistics and implies the coordination of actions for the public authorities in issues dealing with the organizing the activities connected with the collection and use of statistical information and administrative data.

The development of globalisation creates the serious problems for the measurement and analysis within the framework of the national accounts. Today, the methodology for compilation of national accounts indicators is based on international standard for the 1993 system of national accounts (SNA) which does not reflect the globalisation processes. These issues will be included into the new version of the SNA whose revision is to be finished by 2008.

The inclusion of the globalisation processes into macroeconomic statistics, in particular, the activities of multinational enterprises, will influence such basic indicators of the national accounts as gross national product (GDP), gross national income, gross value added, net lending (borrowing), financial flows and national wealth.

These methodological changes are reflected, first of all, on indicators for external economic relations where a ratio between goods and services will be changed. Taking into account the fact that exports and imports make 50-60% of the GDP, this will result in changes to its volumes and structure by final use categories.

The analysis and estimate of the economic influence, magnitude and intensity of the globalisation process call for the development of the adequate basic statistical indicators. In particularly, this concerns the indicators which are being developed either within the framework or on the basis of data from the system of national accounts, namely: identification of a share of gross domestic product, value added and gross output of branches under foreign control (affiliated companies controlled by non-residents).

In this respect the SSCU has already carried out the first tentative developments. During 2005, the accounts of non-financial corporations sector have been compiled for sub-sector level which, in particular, include sub-sector of non-financial corporations under foreign control. The results show the significant contribution of these enterprises into the country's economy (18.6% of output, 11.9% of gross value added, 9.7% of labor remuneration).

The basic indicators regarding the estimate of direct foreign investment, internationalization of technological expansion, globalisation of trade are produced relating to the GDP. These, in particular, are: share of direct foreign investment, commercial flows and

position of direct foreign investment in percent of the GDP; payment for technologies and profits in percent of the GDP; share of the general exports in the GDP, an average indicator for exports in the GDP; share of domestic final consumption that is covered by imports, share of the GDP generated by the general exports. The calculation of these indicators does not require any additional measures with regard to the GDP.

Since the methodology and information for the SNA are connected with the production of goods and services, then, first of all, it is necessary to make allowance for the relevant possibilities for enterprise statistics. First of all, this concerns the design of statistical observation over groups of enterprises (in the economically developed countries these statistics have been existing for almost thirty years and are actively discussed at the international forums). The relevant information could be obtained both on the basis of the development of ideology for the current statistical observations and through introduction of new surveys. The important role here is played by non-statistical (administrative) sources of information and the direct work with such companies. The organizational complexity of the enterprises group as a statistical unit calls for the revision to be made to the design and maintenance of statistical business register. Ukraine has its own specifics underlying the creation and development of enterprises groups and this, along with the implementation of international recommendations and standards, necessitates the development of national approaches to the compilation of relevant statistics. At present, within the state statistics system of Ukraine the active studies are launched regarding a range of problems both in terms of economic phenomenon and the challenges faced by statistics.

The problem for the CPI production connected with globalisation could be the purchase by the population of goods through e-commerce which is increasingly spreading with every year. The correct registration of such trade transactions within the CPI computations requires the identification of the number of price quotations that refer to e-commerce. However, currently, the program for households' living conditions survey does not provide for collection of information about the purchase of goods through e-commerce.

The problems stemming from the registration of industrial producers' prices due to the influence of globalisation concern the use of toll processing schemes in selected manufacturing industries, namely: enterprises of light and food industries that produce products exclusively from raw materials supplied by customers and are not engaged in selling goods but transfer them to customers on terms of production cost. Also, the frequency of changes in the commodity mix and conditions for sales of products makes the comparisons of prices for the products of similar quality more difficult.

The problems connected with globalisation could refer to the methods for selecting the material resources and construction organizations belonging to foreign companies.

Due to globalisation, the tariffs for services provided by multinational companies (mobile connection operators) are moving closer to each other and this creates the competition for the national companies that provide telecommunication services. The main issue is the influence of MNEs upon the competitive struggle and the consequences of this activity with relation to changes in tariffs.

Since 2002, the list of indicators from the state statistical observations characterizing the activities of enterprises operating in sphere of non-financial services includes an indicator "income from sales of services to non-residents". The movements of data according to this indicator show a significant share of exports of services by Ukraine's enterprises (during 2002-2005, fluctuations ranged from 11 to 17% of the total volume of services sold by Ukraine's enterprises). Besides, there is a group of enterprises functioning on the national market of services which, having the limited number of employees, produces and sells a large amount of services. The volume of funding for the R&D activities by foreign countries is on the continuous rise (from 16% of the total funding in 1995 to 24% in 2005). The mentioned features require an in-depth statistical study by including additional indicators to tools for the state statistical observations over activities of enterprises operating in sphere of services, namely:

- characteristics showing that a respondent belongs to international corporations;
- characteristics showing that a respondent carries out the economic transactions on the territories of other countries;
- information about the completeness of production process when selling services to non-residents;
- information about the usage one's own productive capacities in production or organization of production within the outsourcing environment.

As for crime statistics, a need has arisen to develop the organizational and methodological framework and implement social and demographic sample surveys of victimization with the purpose of collecting, producing and analyzing statistical information about the real situation related to crimes in the country and making international comparisons further.

As for education and science statistics, there is the necessity to develop the organizational and methodological framework and implement surveys of the education quality by relevant criterion with the aim of making international comparisons referring to the implementation of actions on joining the Bologna process and integration of the national system for tertiary education and science into the European educational and scientific space.

Among the components of the globalisation process, it is worth mentioning the development of the world labor markets. The society faces the new challenges: in the first place, a rise in professional competence of every human being as the basis for overcoming and preventing the poverty. The results of the fast-growing globalisation are as follows: the increasing migration flows (including illegal labor migration), poverty among the working population due to the low value of labor force, insufficiency of the qualified staffs in different economic spheres. The measurement of the boundaries of such phenomena poses the new challenges for Ukraine's statistical offices.

At current stage, the economic globalisation should be regarded within the context of sustainable development which provides for the economic component to be taken into account in the economic development. As everybody knows, the changes in the environment occurring due to globalisation of the economy in the countries and arising in selected country are not local problems of this country but are global. During the last decade, Ukraine has ratified the UN Framework Convention on Climate Changes, Convention on Cross-boundary Air Pollution for

Long Distances, the Stockholm Convention on Stable Organic Pollutants, the Basel Convention on Control over Cross-boundary Transportation of Hazardous Wastes, Convention on Biological Diversity, etc.

One of the important aspects for measuring globalisation is a system of indicators available within the state statistical observations which permits to estimate whether the countries participating in this process meet the commitments regarding the use of the natural resources, development pressure on environment and possibilities for its renewal.

Thus, Ukraine's commitments specified by the Convention framework related to the air protection are taken into account by the state statistical observations over the inflow of greenhouse gases into the air from stationary and mobile sources of pollution. Currently, the state statistics offices have statistical information about 130 chemical substances and their groups including greenhouse gases, particularly, carbon dioxide, nitrogen oxide, methane, carbon monoxide, nitrogen oxides, non-methane light organic compounds. And starting from 2008, the record will cover such substances as sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons. It should be noted that the record of emissions of greenhouse gas pollutants from stationery pollution sources is done in accordance with the unified report of the state statistical observation, while the emissions from mobile pollution sources in accordance with some techniques that provide for estimates being made for emissions of pollutants and greenhouse gases that are based on indicators characterizing the usage of fuels by these sources and their emissions. The availability of the detailed statistical data on emissions of pollutants and greenhouse gases permits to reflect them within the national report and cadastre of greenhouse gas emissions that Ukraine submits to the Secretariat of the UN Framework Convention on Climate Change.

The hazardous wastes regulated by the Basel Convention are recorded by the state statistics offices within the framework of the state statistical observation over the generation and treatment of hazardous wastes of the I-III hazardous category. Among the basic indicators included into this statistical observation there are indicators characterizing the following: generation of hazardous wastes, waste input and waste transfer to/from other countries, hazardous waste utilization, waste neutralization (destruction), placement and availability of hazardous wastes at specially designated locations or objects.

In the short term, with the purpose of obtaining the relevant data on hazardous wastes harmonized with the EU countries, apart from recording by hazardous component, provision is made for the employment of the European classification of wastes by materials and the introduction of the new statistical observation over wastes which are beyond the I-III hazardous categories.

Summing up the mentioned above, a conclusion can be made that the solution of issues regarding the adequate reflection of the globalisation processes by the Ukraine's statistical indicators requires a serious work to be done according to the following directions:

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- the employment of methods and expertise to estimate the new phenomena (revision of classifications and selected statistical standards, implementation of the new methods for collecting information including modeling);
  - the implementation of international cooperation and mirror statistics;
  - introduction of specification for the basic statistical indicators needed for the estimate and analysis of the multinational enterprises, their main (parent) divisions and branches;
  - the development of technique to produce the basic indicators for globalisation rate regarding direct foreign investment, the economic activity of the multinational enterprises, international dissemination of technologies, trade globalisation;
  - the implementation of the revised version of the SNA'2008 which will provide for activity of the multinational enterprises and globalisation processes;
  - the production of estimates for the basic indicators of globalisation rate regarding direct foreign investment, the economic activity of the multinational enterprises, international dissemination of technologies, trade globalisation, etc.



**SESSION II: IMPACT OF GLOBALISATION ON THE  
PRODUCTION OF ECONOMIC STATISTICS**

## 1. Summary of the session

Accounting and other financial statements of multi-national companies are based on economic principle (ownership principle) and not on the concept of residence as defined in the national accounts. Financial statements reflect global business and therefore cross-border transactions between two units of the same company located in different countries are not necessarily recorded in an appropriate way for the compilation of economic statistics.

Producers of official statistics have to face the challenge of globalisation for the production of primary economic statistics (micro) as well as for the compilation of macroeconomic statistics (e.g. national accounts and balance of payments). It is therefore important that all national statistical authorities (National Statistical Institute, Central Bank, tax authorities and others) work together in order to capture the actual economic activity of multinational companies within and outside national borders.

In collecting information from multi-national companies, the following are important issues where statistical offices can benefit from adopting the process described below, depending on local conditions.

- Know how the multinationals account for their business – a statistical office can benefit from the setting up of “large business” teams with skills in business accounting, national accounts, and balance of payments and business surveys. These teams will establish ongoing meaningful working relationships with key personnel within the company, to establish how best to collect and access then process information on multi-national companies in order to produce macro economic statistics. Well-prepared company visits should be used to the greatest extent possible.
- Data collection will benefit from the involvement of senior staff in the company – this is particularly true for multi-nationals where the relevant information may only be held at group level, and sometimes not in the country where the data is being collected.
- Be prepared to use many sources such as direct collection, publicly available business accounts, and administrative records (including tax records). If necessary, address inconsistencies in those data to individual multinational company reporters.
- Be aware of the relationship between the money flows and the physical flows: try to tie them up where possible.
- Draw up a list of the biggest companies in the economy, which may well cover up to 70% of value added in the national economy, and concentrate data collection efforts on these companies. This should cover in particular ongoing awareness of the quite frequent changes in multinational structures, accounting and reporting practices, and the impact of these changes on the data reporting.

Work with the companies to persuade them to use tailor made collection tools, for example a spreadsheet where they can enter company style data and balance of payments/national accounts compatible data can be derived.

The presentations and discussion in the session also posed questions for which there were no immediate wholly satisfactory answers:

- Do we have satisfactory definitions of “goods for processing”? Do we really mean goods, which do not change ownership? If the latter, significant problems of industrial classification and country of origin for trade in goods arise.
- Does it make sense to call the company headquarters a manufacturer if what it does is arrange processing of raw materials into finished goods over a variety of countries?
- Is each company in the chain simply a provider of manufacturing services? We seem in danger of removing the industry classification of manufacturing from practical use for multinational companies.
- How should the treatment of the booking of receipts and expenditure with foreign affiliates in the accounts of resident enterprises be tackled?

The suggestion was made that perhaps there is a need for two quite separate systems – a physical flow system where the movements of goods are traced by quantity, and an economic value measurement system which more reflects the financial and structural arrangements of the multinationals.

The questions raised in this session should be fielded to the ISWGNA, AEG on the revision of 1993 SNA and BOP Committee as issues arising from globalisation which will require careful description and guidance in order to avoid different countries adopting different estimation methods for the activities of multi-national companies, with particular reference to goods for processing.

## **2. Data issues on integrative trade between Canada and the U.S. Measurement issues for supply chains**

by Art Ridgeway, Statistics Canada

### **Introduction**

Reduced barriers to the flow of capital, goods, and services, combined with rapid advances in communication and transportation technology, have for many years been fostering increased specialization of production activity, and this trend continues. The same factors have also led large firms, particularly multinational firms, to reorganize how they manage their operations. Firms are increasingly focusing on supply chain management and the choice between make or buy for intermediate inputs and, increasingly, service inputs. Within the make-buy decision are decisions on the location of supply, domestic or international.

These factors have also encouraged the development or emergence of a number of economies that are now growing rapidly by providing lower cost alternatives for many production activities. This includes the so-called BRIC countries (Brazil, Russia, India, and China) and the eastern European economies. For example, China is now the second largest source of Canadian merchandise imports and Brazil is now one of Canada's top ten partner countries in both inward and outward foreign direct investment.

The organization of some multinational enterprises now exhibits a separation of the management of operations and the legal structure of the enterprise. Operations can be managed in units that cross multiple countries, while there are, necessarily, separate legal structures for each country. While this dual structure allows the enterprise to efficiently manage its operations and respond to regulatory and fiscal requirements, neither structure conforms to that required to produce economic data in support of policy. In addition, these structures increase the importance of intra-firm transactions where transfer pricing may be an issue.

A recent international study by a group of national statistical agencies that attempted to coordinate the collection of data for a sample of multinational enterprises revealed that these multinational enterprises are very sensitive about the confidentiality of their data. They were quite concerned with efforts to reconcile across countries how they reported to the participating statistical agencies.

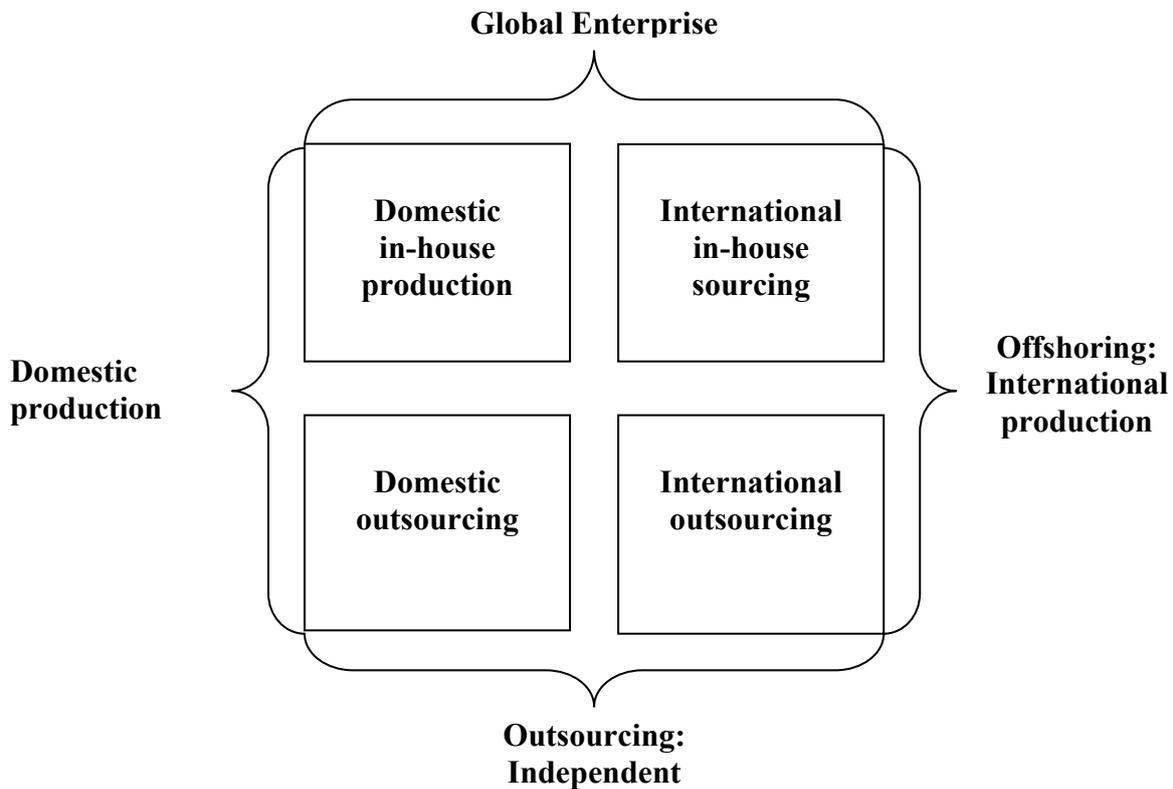
This paper looks at some of the implications of the globalisation trend for economic statistics particularly with respect to the fragmentation of the production process and international trade. The annex provides a brief description of a range of statistical programs and current initiatives at Statistics Canada that are aimed at shedding light on the ongoing trend of globalisation of production around the world economy.

**Implications of globalisation trends for economic statistics**

These ongoing changes have led to the demand for new measures of economic activity and have affected how some traditional data series are gathered and interpreted. The drivers of the growth in globalisation have been innovation and changing business structures and practices. Data on research and development activities have been available for many years, but more recently there have been demands for a broader set of data on innovation and the commercialization of new knowledge, and on the use of new electronic and other business practices. Statistics Canada’s science, innovation, and electronic information program continues to evolve in response to these new demands.

In addition, there have been recent demands to directly measure the globalizing structural changes that are occurring. Offshoring is a phenomenon that users are seeking information on but that is not easily measured. Diagram 1 below presents a simple illustration of the relationship between the global enterprise, domestic production, outsourcing and offshoring.

**Diagram 1. Global enterprises, production, outsourcing and offshoring**



This diagram illustrates the broadest concepts of outsourcing and offshoring. Some analysts use these terms in a more restricted sense, defining them to refer just to those activities that have moved out of in-house or domestic production to independent or international production. Measuring outsourcing or offshoring events as defined by the narrow definition is very demanding, as this involves identifying decisions made at a specific point in time.

However, the most profound implications of increasing globalisation may be in the challenges of measuring some of the core economic indicators. Moving productive activity out of the top left hand corner of the diagram to any of the three other quadrants implies that the ratio of gross flows to value added will increase. Factors that are increasing the measurement challenges include:

- the increasing value of service flows
- the increasing importance of flows internal to the global enterprise
- the increasing proportion of physical flows that are not coincident with changes in ownership

It used to be the case that when goods crossed borders they almost always changed ownership. This is no longer true. This separation of the ownership of goods and the cross-border flows in a multiple step production process is causing major valuation challenges. While there have been occasional instances of this for some time, the separation of ownership and production flows seems to be increasing. Collecting data from legal structures will generally reflect the ownership of resources whereas collection from operating units is more likely to reflect the operational flows of resources. While both are important for the full articulation of the economic data system, the reconciliation of data from the two separate structures is becoming more difficult.

These challenges and the growing demand for new policy relevant data come at a time of declining response rates for many business surveys. Fortunately, the increased use of administrative data for 'simple' businesses has greatly reduced the burden for the small and medium end of the population, while allowing an improved coverage of these units. However, there are a few hundred of the largest enterprises in the country that account for a very large part of economic activity, and the deterioration in their rates of response to surveys is a concern. While declining response to surveys is not uniquely related to globalisation *per se*, the fact that the non-respondents are often large globally oriented firms makes it difficult to get the data needed to measure globalisation.

In addition, the growing importance of the emerging economies in Asia and South America pose challenges for bilateral comparisons as most of these countries have less well-developed statistical systems. Bilateral comparisons of data show large differences but, given the state of development of these statistical systems, it is difficult to assess the reasons for the discrepancies.

### *International efforts*

International organizations have been active in expanding the conceptual basis for measuring activity related to globalisation. The OECD *Technological Balance of Payments Manual* has been in use since its release in 1990. More recently, the OECD has provided the OECD *Handbook on Economic Globalisation Indicators* and the related publication, *Measuring Globalisation: OECD Economic Globalisation Indicators*.

Other statistical manuals currently under revision will provide improved links to the new measures of globalisation. In particular, the SNA manual,<sup>1</sup> the BOP manual,<sup>2</sup> and the OECD Benchmark Definition of Foreign Direct Investment will have additional material on globalisation. It has been announced recently that the manual on Statistics of International Trade in Services will also be updated to harmonize with the new material in the core manuals, including that on globalisation. Statistics Canada has played a key role in all of these international developments.

Two of the most hotly debated issues addressed during the revision process concern the issue raised earlier where physical flows and ownership change are not coincident. The two issues are referred to as *goods for processing* and *merchanting*. The first deals with cases where goods enter a country for processing but the ownership is not transferred to a domestic producer. In merchanting a merchant buys goods, taking ownership, and sells them to a third party, but the goods never enter the merchant's country.

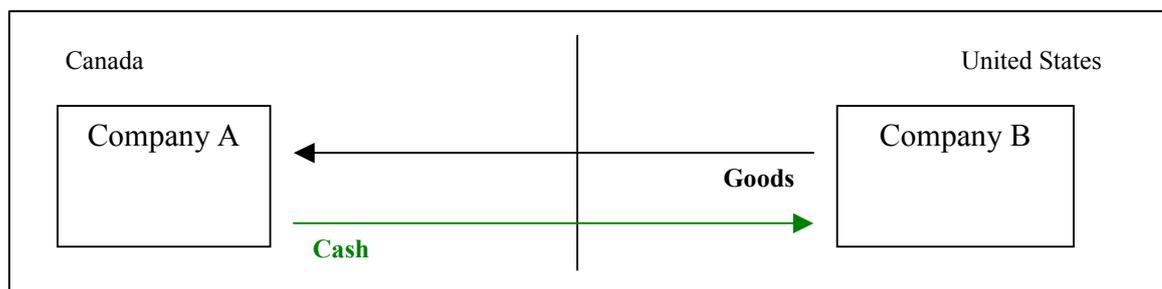
The Canadian response to these challenges is being developed as part of an overall plan to move the Canadian economic statistics program in line with the revised international manuals mentioned above.

### *Goods trade in a simple world*

Goods dominate international trade. To start the exploration of measurement issues, take the simple case of the export of goods across the Canada–US border. There are two firms, one in Canada the other in the US, and one wishes to buy what the other produces. They agree on a contract, specifying the conditions of sale, and in due course the goods arrive at the customs frontier on the way from the seller to the buyer.

In this simple case depicted in Diagram 2 the exporter and the importer of record are the buyer and seller, and the customs documentation would show the flow of goods from one to the other. At the same time, or at least within a short period before or after the shipment, there would be funds transferred from the bank account of the buyer to the bank account of the seller.

**Diagram 2. Traditional view of goods trade**



<sup>1</sup> For additional information on the updating of SNA 93 see United Nations National Accounts Section, Towards 2008 SNA <http://unstats.un.org/unsd/nationalaccount/snarev1.asp>

<sup>2</sup> Additional information on the revision of the BOP Manual see Revision of the Fifth Edition of the IMF's Balance of Payments Manual <http://www.imf.org/external/np/sta/bop/bopman5.htm>

It is a basic tenet of economic statistics such as the national accounts and the balance of payments that transactions should be based on exchanges of economic ownership<sup>3</sup>. In this simple case the goods go from B to A and the money goes from A to B. Since the exact timing of the ownership change between A and B can vary depending on the contract and the payment agreement, as a proxy for change of ownership, economic statistics use the crossing of the customs frontier as the point at which the goods change ownership. It is assumed that this is a good proxy for the change of ownership.

It might be noted that there is no information here on what A is going to do with these goods from B. In the case of Canada and the US we know that often these goods will be used as intermediate inputs in other goods that in turn will go back across the border to the US.

In this simple case, if the industrial activity of each of A and B is known and the location of their business is known, one can build up trade data showing to/from information on a geographic and an industry basis.

The real world, of course, has never been quite that simple, as often transactions are handled via brokers who may affect the timing of certain transactions or at least the recording of transactions. In addition, the timing of payment may vary more widely, and so a debt may be recognized between the supplier and the buyer, which is eliminated as the goods are paid for or delivered if prepaid.

The simple fact of inserting a broker can already cloud the analysis of the data as the customs documentation may well show the industry and location of the broker as one of the transactors and the capacity to undertake industry and geographic analysis is weakened.

The buyers and sellers may be owned by the same owner and thus part of a multinational enterprise. The ownership link is likely to affect the stability of the commercial relationship, but it may also affect the prices of the transactions that are recorded.

The customs data used to measure the great majority of trade in goods between the US and for that matter most countries, is still largely based on this simple model. We assume that the goods change ownership as they cross the border and that the value of the goods declared to the customs officials is a proper market valuation of the goods worth.

### *Goods for processing*

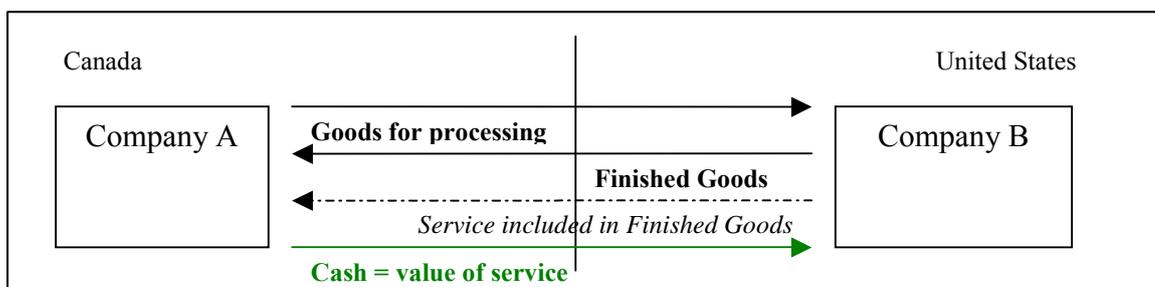
The first deviation from this simple model to be explored in this paper is that of goods for processing. As noted earlier, this is not a new phenomenon as examples have existed for decades but there is evidence that the volume of goods traded under this scenario is growing rapidly.

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<sup>3</sup> The term economic ownership is used to differentiate it from legal ownership, which is generally the same but can differ in cases such as financial leases.

The basic change in the model here is that the goods do not change ownership as they cross the border but the contract between A and B now stipulates that the goods are to remain the property of A but that B will perform some specified processing of the goods and then send them back to A. This type of processing may be between enterprises under common ownership or enterprises operating at arms length. A will pay B a service fee for this processing.

**Diagram 3. Goods for processing – current treatment**



In this scenario the customs process records these goods but they are generally not distinguishable from other goods crossing the border. There must also be a value declared for these goods.

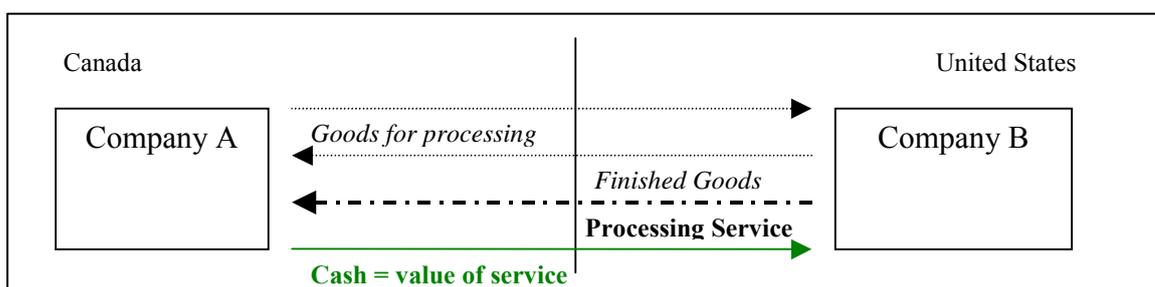
However, the counterpart financial transaction between A and B will be greatly different than if ownership had actually changed as the goods moved between them. In this case only the value of the service will flow from A to B, which will correspond approximately to the net difference between the values declared to customs for the import and the export.

The current treatment of these situations in the economic accounts is to record these goods as if they had changed ownership as they cross the border. The full value of the goods is entered into the trade data in both directions and corresponding financial flows are recorded. The service provided by the processor is buried in the value of the returning goods.

This treatment corresponds well to the construction of supply and use tables such as the Canadian I-O Accounts but does not shed light on the evolving behaviour of business activity and is not in keeping with actual financial flows.

During the recent international efforts to update the conceptual guidance for the System of National Accounts and the balance of payments, it has been decided that the guidance on these types of transactions will be changed to correspond to the ownership principle. While the goods flowing both ways will continue to be included in the customs data, the convention will be to remove these values from the Balance-of-Payments-based trade data used in the BOP and SNA. Instead the service flow and corresponding payment will be reflected in the accounts.

**Diagram 4. Goods for processing – new international convention (SNA & BOP)**

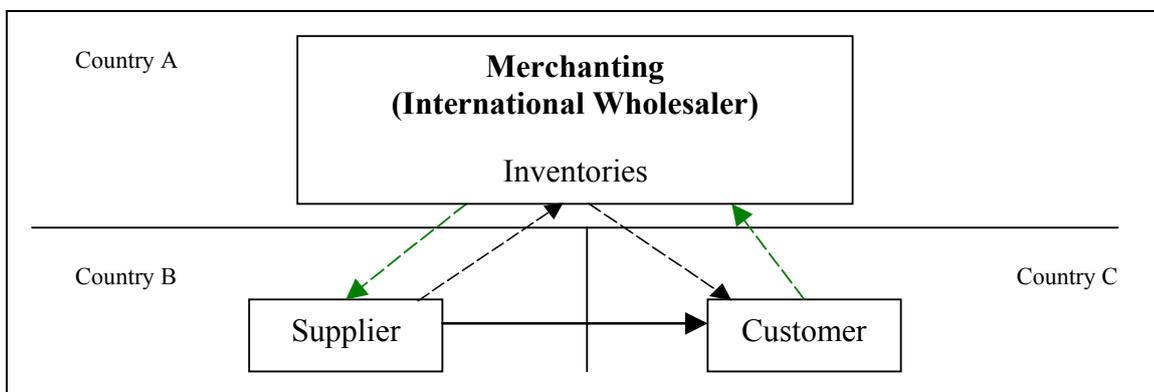


This would require that there be data to differentiate these cross-border flows of goods from traditional transactions. The customs data do not as yet provide such information. The service flows will have to be measured using surveys as there are no administrative sources for these data.

### *Merchanting*

The new world of production can also have instances of what is referred to in the statistical manuals as “merchanting.” Other terms might be international trading or international wholesaling. This is the case where an enterprise in country A buys goods in country B but the goods never enter country A but are sold on to country C.

**Diagram 5. Merchanting – international convention**



While the ownership of these goods moves from B to A and then from A to C, the customs data will record only a flow from B to C. These supplies will enter into the inventories of the merchant in country A. Surveys of wholesale activity will record these inventory changes and given there have been no imports recorded, the economic accounts will look for domestic production, which of course is not there, to balance out the supply use accounts.

The revised BOP and SNA conventions call for the imputation of flows into and out of country A in line with the ownership changes. It may be practical to develop surveys in country A to gather information from the merchant and may be worthwhile if sufficient activity is present in the country that would distort the signals from these inventories owned outside the country. However, the benefits of collecting additional data on these transactions for countries B and C are much smaller and it is unlikely that they will adjust their data, thus leading to discrepancies in bilateral trade data.

### *Goods production*

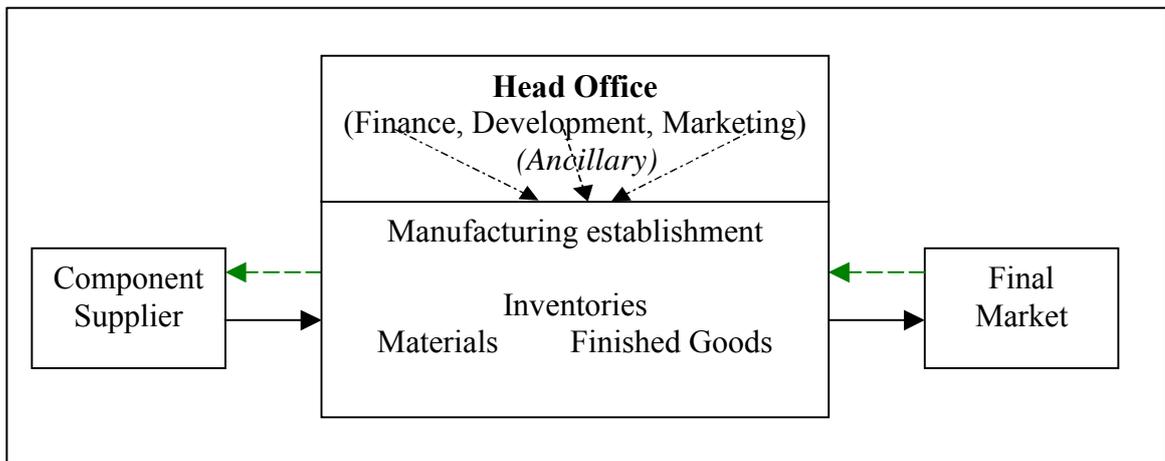
The goal is to have economic statistics for both production and trade that are consistent and thus provide information to policy makers and Canadians in general on how these aspects of the Canadian economy are developing. Therefore, before turning to look specifically at challenges faced in measuring trade in goods in more fragmented production processes, it may be helpful to

review for a moment the traditional way the manufacturing production process is viewed in measuring economic statistics.

Diagram 6 provides a simple case of a producer of goods. The example here has one manufacturing establishment with a separate head office. The head office provides the financing, product development, and marketing, while the manufacturing establishment acquires the other inputs, manages the inventories, and produces finished goods for market.

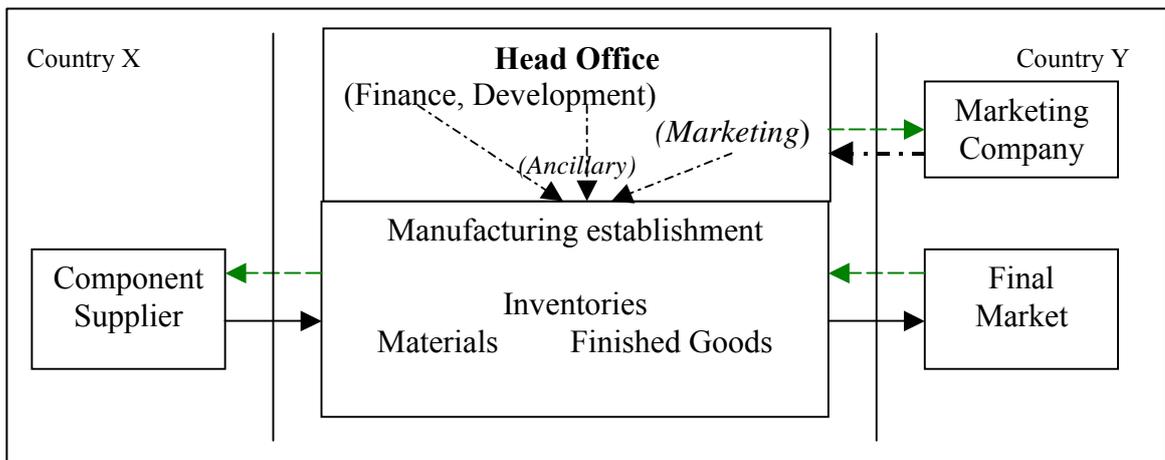
In the model, please note that the activities/outputs of the head office are considered ancillary services provided to the manufacturing establishment.

**Diagram 6. Traditional view of goods production**



The model can explicitly be extended to include trade in goods and services as in Diagram 7. Note that if some of the services provided by the head office in the previous example are outsourced, then they are still treated as being supplied through to the manufacturing establishment.

**Diagram 7. Traditional view of goods production with trade in goods and services**



### *Outsourcing of the goods production*

Diagram 8 provides an example with outsourcing of the procurement of input materials and the manufacturing process. In this case, all of the goods produced are “exported” to a country other than that of the head office or manufacturing plant. One could think of this as a case of line of products produced only for an export market.

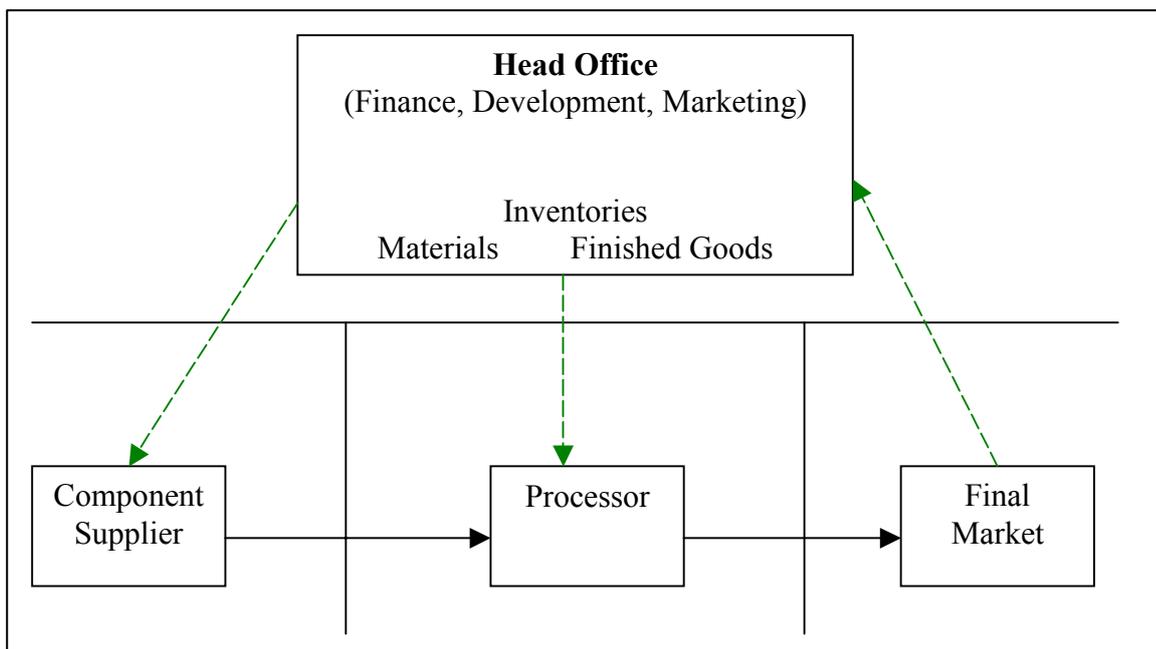
In this example the head office and the manufacturing plant are no longer in the same economy and are two separate enterprises. The head office still produces the financing, product development, and marketing but acquires all other inputs from outside the country. In this case, the head office enterprise buys all of the material inputs and has them sent to the establishment of the processor to be assembled. The head office maintains ownership of these materials as in the goods for processing case discussed earlier. Therefore, while processing may all take place outside of the country of the head office, it is the head office that bears the financial risks associated with carrying these inventories throughout the production process. This case also has elements of the merchanting case discussed earlier, as the head office acquired the ownership of these materials but they never physically enter the country, thus never appear in the customs data.

There are two important differences from the traditional view of the producing enterprise that should be noted:

- Inventories of materials and finished goods have moved from the manufacturing establishment to the head office.
- The services produced by the head office – finance, product development, and marketing – are no longer supplied to the manufacturing establishment.

In Diagram 8 the flows of goods and payments are indicated. It is clear immediately that the path followed by the cash to pay for these transactions does not correspond to the path followed by the goods themselves. Again this is similar to the merchanting example.

**Diagram 8. Outsourcing production for export market – flows of goods and cash**



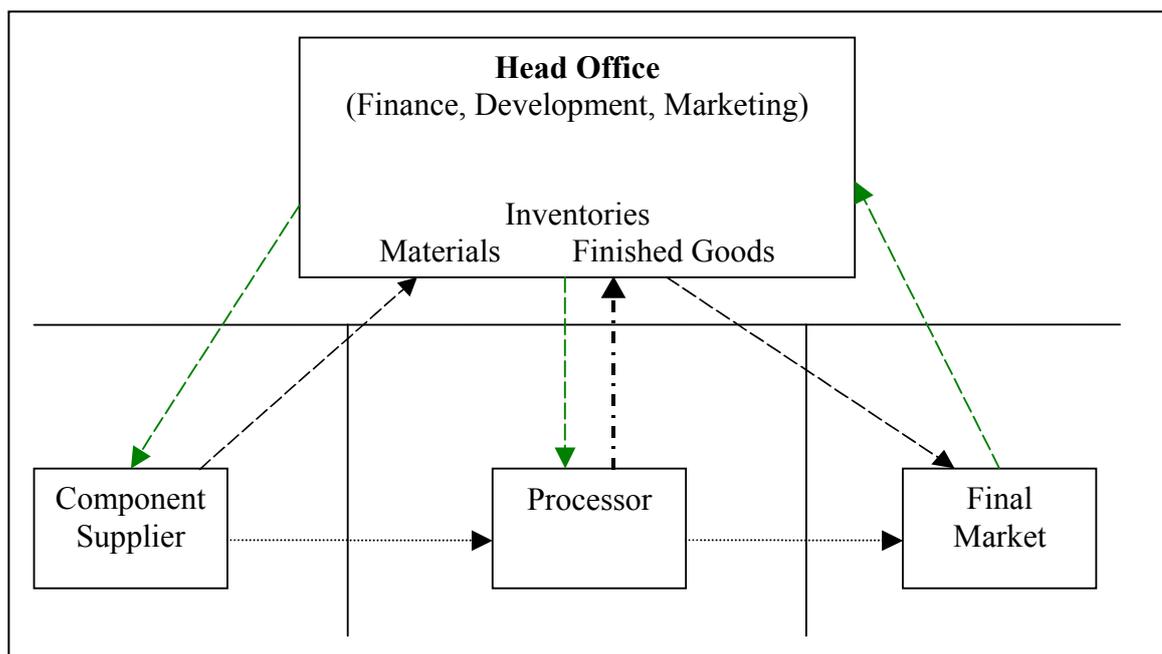
Using the principles noted earlier about ownership as a basis for recording, Diagram 8 indicates how economic data might be recorded to reflect the economic activities rather than the physical supply-use activities of this production process.

The purchase of materials would be shown as a transaction between the head office and the component supplier. The processing services would be supplied to the head office. The final sales of finished goods would be transactions between the head office and the final market economy.

The implication of this presentation of the economic data is that the head office, even though it has no manufacturing facilities or warehousing facilities, is the producer of the finished goods. While this does not correspond to the physical flow of the goods, it does recognize the behaviour of the economic agents in this situation. It is the head office that is undertaking the economic decisions that govern production, whereas the processor is offering a specific service only.

Ideally, to be consistent with this recording of production and trade, the bottom three countries in Diagram 9 would remove the goods flows from supplier to processor and on to final markets from each of their accounts.<sup>4</sup> However, as with the merchanting case described earlier, the information to undertake such adjustments may be difficult to obtain.

**Diagram 9. Outsourcing production for export market – economic flows**



<sup>4</sup> Information on physical flows will still be important for economic development as infrastructure requirements are determined by these physical flows.

### *Measurement issues for goods and services trade*

Diagram 9 shows four different countries. Canada can have enterprises that correspond to those shown in each of the countries. That is, we face the measurement challenges depicted in each of the four fictional countries. This section will take a brief look at the challenges in measuring the activity of each of the four enterprises.

Starting with the component supplier, the challenge is the geographical allocation of trade. The customs data will indicate the country of the processor while if we ask the supplier, the response would be the head office country. Surveys of goods producers such as this supplier ask for little on the geographic distribution of sales of goods, particularly for sales outside the country. This is, of course, because the customs data are used to provide this information. While value-added data will be correct, the information on trade patterns available to trade policy analysts and negotiators will be affected by how these transactions are measured.

Turning to the country of the processor, the information on the transactions between the processor and the head office will have to be collected by survey. Up to now in Canada these cases have been handled on a case-by-case basis, with special reporting arrangements set up with processors. It is not possible to identify the customs records associated with this processing activity and it is unlikely that this would change in the near future. If this activity is limited to a few large players, this case-by-case treatment can be used, but if it becomes (or already is?) more widespread, then this approach is too costly to be applied to a large number of cases.

The case of the final market economy is similar to that of the supplier country, in that the geographical allocation of supply based on the customs data and survey data would differ. Surveys of wholesale and retail firms importing goods do not ask for details on the geography of supply. There may also be a valuation difference if the value of imports declared for customs purposes does not correspond to the full value of the purchase price paid to the head office. Reconciliation of these values will only occur at a macro level in constructing the economic accounts.

The large challenge with measuring the economic activity of the head office is that surveys must be used to collect a lot of detail on the goods and service inputs and outputs of this enterprise. Collecting detailed commodity and geographical information using surveys is very burdensome on the respondent. However without sufficient detail on these commodities, it will be difficult to distinguish the traditional manufacturing operations from those which have outsourced significant parts of the production process.

### *Country of origin and ownership*

Customs officials collect data on the “country of origin” of the product, which is based on customs rules for imports and the country of destination for exports. Also collected is the point of shipment. This transfer process also means that the shipper (exporter) may not know the ultimate destination of the goods, whereas the importer generally knows the country of origin due to the rules of origin.

This can result in significant differences in the bilateral trade figures for some country pairs. For example, Mexico reports about twice the value of imports from Canada as we report exports. The difference is largely goods that the exporter declares as going to the US but that are just passing through.

The case is similar for Chinese goods entering Canada. About half of the Chinese imports on a country-of-origin basis arrive in Canada having a point of shipping of either Hong Kong or the US.

If ownership is to be a fundamental basis for economic statistics, the question arises as to which of the geographical data on the customs record – country of origin or country of shipment – is the best indicator of the counterparty to the transaction. Are the Chinese goods transiting through the US on their way to Canada simply just ‘in transit’ or are they being acquired by an entity in the US which then distributes them (sells them) to a network of North American outlets?

### *Services trade*

Services trade is still the poor cousin but, as seen in earlier examples, fragmentation and reorganization of the production chain may be leading to significant increases in the relative shares of services trade. In the ‘good old days’ as it were, services were less of a concern. It was assumed that most services had to be produced and consumed at the same time so that the international trade in services was limited.

The ease with which producers can travel to other parts of the world and the advances in electronic delivery of many products has certainly changed the potential for international trade in services. In simple volume terms it is still much smaller than goods trade but services trade has seen much greater rates of growth for a number of years now.

The other point that is likely clear by now is that there is a growing fussiness about the differentiation of what a good is and what a service is. Thus, any exercise that is forward looking should cover both.

There are of course no customs documents for services.<sup>5</sup> The data for services trade generally come from business surveys. This measurement approach has very different strengths and weaknesses from the administrative process (customs) used for goods.

In general, businesses can more readily respond to surveys on their sales rather than purchases of inputs, particularly if one is asking about the geography of the transaction and the industrial activity of the counterparty. Whereas for goods the import data are generally of better quality, as customs administrations are more diligent about collecting duties owed and due more recently to security concerns, trade in services is better at measuring exports.

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<sup>5</sup> Customs documents are used to develop estimates of transportation services for the delivery of internationally traded goods.

The use of surveys also limits the amount of detail on geography and commodity detail for services transacted, since asking for very specific detail on the service provided and the location of the counterparty rapidly becomes a very large burden for the respondent.

#### *Cross-border valuation and transfer pricing*

While a significant proportion of international trade has for some time been between affiliated enterprises, it is difficult to identify these trade flows separately due to the use of brokers and other agents. It has been recognized that intra-firm transactions may reflect transfer pricing and thus affect the valuation of economic activity between economies.

The customs 'transactions' depicted in Diagram 3, even if they are with non-affiliated parties, may not reflect arms-length measures of economic valuation as the actual transaction taking place is for a service but the valuations that are being declared, and currently used in economic accounts, are for the goods crossing the border. It is generally assumed that the difference between the value of the goods entering for processing and those returning are equal to the contracted service from the processor.

The customs flows in the scenario in Diagram 9 are also displaced from the actual economic transactions with the customs values both entering and exiting the country of the processor, presumably based on the accounts of the head office.

If values declared for customs purposes are not the same as the actual transaction values then the difference will distort measures of economic activity.

#### *Structural vs. behaviour-based economic data*

A complete picture of the Canadian economy requires data on both the structural aspects of our economy and the behavioural aspects. The national accounts address the need for structural data primarily via the supply-use tables and the structural data published by individual surveys such as the annual survey of manufacturing. The behavioural data is primarily delivered via the sector accounts of the national accounts and related sector-specific data from programs such as those in the Balance of Payments and Public Institutions Divisions.

There is evidence that the organization of production and trade is changing. The challenge for the statistical system in part is to decide when these changes are sufficiently important to change the basic focus of the accounts and underlying surveys. To refocus the statistical system and move away from the traditional models used as the foundation of the economic data would be very costly.

The costs to adjust to a different focus are not only those that the statistical agency will have to bear but also those imposed on respondents if surveys are expanded. Significant changes to the model underlying data production may also cause discontinuities in some data series that will challenge analysts' capacity to understand the evolution of the economy. Of course remaining with the current model may obscure structural changes underway in the economy raising challenges for analysts.

## Conclusion

There are clearly cases of each of the different models of economic activity discussed in this paper in the Canadian economy. What is less clear is the proportion of activity that falls into these different scenarios. The challenge for the statistical system is to find ways to measure these emerging phenomena in a manner that is cost efficient in terms of both response burden and budget. Given resource constraints, which activities — for example, goods for processing, merchanting, trade services — should perceive priority for development?

Consultation with policy makers, business respondents, academics, and other analysts will be important in mapping a way forward to address these important challenges. At the same time the statistical system needs to keep in step with international statistical developments if Canada is to have measures of economic activity that are comparable across countries.

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### **3. Dealing with complex and changing company structures and trading practices in compiling foreign direct investment and balance of payments related statistics in Ireland**

by John Fitzpatrick<sup>1</sup>, Central Statistics Office (CSO), Ireland

#### **Introduction**

This paper examines a small number of practical issues encountered by CSO, Ireland in compiling its foreign direct investment (FDI) and balance of payments (BOP) related statistics. In order to facilitate this examination, a short description of the importance to Ireland of inward foreign direct investment, as well as other types of investment, is given first. This is followed by a very brief reference to Ireland's FDI and BOP collection and compilation system. The selected issues which are the main focus of this paper are then described.

#### **Background and context**

Over the last thirty years or so, the Irish Government has operated a very successful policy of attracting foreign investment into Ireland and it continues to do so. As a result of tax incentives, simplified and effective administrative procedures, the availability of a young and well-qualified work force and other relevant factors (Ireland's membership of the European Union and access to its markets, geographical location, etc.), many multinational enterprises set up operations in Ireland. The resulting investment has essentially resulted in the development of three major sectors: manufacturing, non-financial services and financial services, with a consequent positive impact on the scale and quality of employment.

To date a significant portion of the capital inflows into Ireland have taken the form of what is known internationally as foreign direct investment (FDI). This is a type of investment whereby a foreign investor – the direct investor (DI) establishes a long-term interest in, and a significant degree of influence over an enterprise – the direct investment enterprise (DIE) - located in a different economy to that of the DI. Under the international statistical standards, a minimum of 10% equity investment by the DI in the DIE is taken as evidence of the existence of direct investment. Most of the foreign-owned DIEs in Ireland are engaged in hi-tech manufacturing or service technology. This covers manufacture of computers and computer components as well as production of software, provision of internet services etc. Also included is the manufacture of pharmaceuticals and other chemicals (mostly in bulk form) as well as drinks concentrates.

Over the last twenty years there also has been increasing direct investment into financial service enterprises operating from the International Financial Services Centre (IFSC). The IFSC was established in Dublin under specific legislation in 1987 with a view to creating a significant

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international financial services industry for Ireland. The enterprises set up to engage in international financial service activity cover the following broad activities:

- collective investment (e.g. mutual funds, unit trusts, and related vehicles for pooling of investment)
- banking
- life and non-life insurance and re-insurance
- treasury and risk management
- asset financing, leasing, securities trading, derivatives trading, brokerage, etc.

While some of the foreign capital inflows into IFSC-based enterprises was in the form of direct investment, much of it was in the form of portfolio investment and other investment, as defined in the IMF's Balance of Payments Manual, 5th Edition (BPM5). Some enterprises also engage in financial derivative transactions. In the case of collective investment enterprises (mostly IFSC-located mutual funds, unit trusts, etc.), the inward flows of capital resulted from the pooling of investments by a large number of investors, none of whom met the 10% equity threshold for FDI. The acquisition of fund units/shares by these non-resident investors was therefore recorded as portfolio investment. As the outward investment of these Irish-resident funds was almost exclusively concentrated on the acquisition of foreign equity and debt (bonds and notes and money market instruments), and as individual funds did not meet the fundamental criteria for (outward) FDI, the outflows of this capital were recorded as outward portfolio investment.

Other types of foreign-owned financial enterprises operating in Ireland (engaged in banking, insurance services, asset financing, leasing, etc.) have been regarded as inward FDI enterprises but, apart from inward equity transactions/positions liabilities, they may also have loan or deposit liabilities as well as trade payables and other liabilities. Their inward non-equity transactions and positions are categorised as other investment. On the outward side, the investments of these enterprises may be categorised to direct investment, portfolio investment, other investment and financial derivatives as appropriate.

Table 1 shows Ireland's international investment position (IIP) liabilities (i.e. its end-year stock of liabilities to non-residents), broken down by type of investment.

**Table 1. Ireland's international investment position (IIP) liabilities, 2005 (€ billion)**

Total IIP Liabilities	1,642
of which:	
Direct Investment	141
Portfolio Investment	948
Other Investment *	554

\* Including financial derivatives

It should be stressed that Ireland also exhibits very strong outward investment overall and its IIP assets at the end of 2005 were of a similar magnitude at €1,598 billion.

Table 2 shows Ireland's total IIP liability status at end-2005 compared to a selected subset of countries, when referenced against GDP.

**Table 2. International investment position (IIP) liabilities, 2005 as a ratio of GDP – selected countries**

<b>Country</b>	<b>Ratio</b>
Luxembourg	106.47
Ireland	10.19
Netherlands	5.72
Switzerland	4.67
United Kingdom	4.11
Belgium	4.07
France	2.29
Denmark	2.08
Spain	1.80
Germany	1.71
New Zealand	1.44
Norway	1.42
Italy	1.18
United States	1.09
Japan	0.65

Table 3 shows Ireland's inward FDI position status compared to a selected subset of countries when referenced against GDP.

**Table 3. Inward foreign direct investment position, 2005 as a ratio of GDP – selected countries**

<b>Country</b>	<b>Ratio</b>
Luxembourg	2.03
Belgium	1.32
Ireland	0.87
Netherlands	0.75
New Zealand	0.51
Switzerland	0.49
Denmark	0.47
United Kingdom	0.39
Canada	0.32
France	0.31
Australia	0.30
Germany	0.25
Italy	0.13
United States	0.13
Japan	0.02

As can be seen from these tables, the Irish economy has a strong propensity to attract various types of inward foreign investment.

### **CSO's BOP compilation system**

In order to compile the FDI, BOP and IIP statistics for Ireland, CSO uses a statutory survey system supplemented by internal and external administrative and other data. The latter includes:

- the official foreign trade (merchandise) statistics modified or adjusted by CSO's BOP Division for BOP statistical purposes,
- data from government departments on current and capital transfers, government services, the national debt and related income flows, data on compensation of employees, etc.

Data collected for enterprises by survey cover imports and exports of services, income and investment flows as well as the associated opening and closing financial stock positions for the reference period. Data on valuation and other changes which, together with transactions, account for the difference between the two positions are also collected. In addition, a geographical breakdown by country of residence of counterpart is collected. A standard form is sent to those manufacturing and non-financial enterprises surveyed. For financial enterprises, the collection forms are customised to reflect the activities and accounting arrangements of five broad categories of financial services: collective investment; life insurance and re-insurance; non-life insurance and re-insurance; stand-alone treasury; banking and other financial services. In essence, all survey forms are collecting the same type of transactions and stocks data on a comprehensive basis. Efforts are made to ensure in so far as possible that data are collected and compiled in accordance with the international statistical standards and a large degree of success is achieved. In addition, the data collected serve not only BOP related statistical needs but also those of National Accounts and Financial Accounts in that resident-to-resident transactions and positions are also collected. In compiling all of these statistics across the statistical divisions responsible, the CSO ensures in so far as possible that the results for the larger multinational enterprises are consistent over the different domains (production, turnover, imports, exports and profits). In this way, the preparation of the GDP and GNI results are considered to be as robust as possible.

While the data provided by the great majority of survey respondents is considered to be of good quality, there are some problem cases. In the course of its work, the CSO has encountered a number of compilation issues which, in the first place, can be difficult to detect, and, secondly, can be difficult or slow to resolve.

### **Specific issues encountered**

This paper (and a related paper<sup>2</sup> for this Seminar) is largely focussed on a small number of specific practical issues experienced by CSO in compiling international trade, investment and income statistics in the context of increasing globalisation. The selected issues dealt with broadly cover:

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<sup>2</sup> The Irish approach towards treatment of merchanting and related transactions.

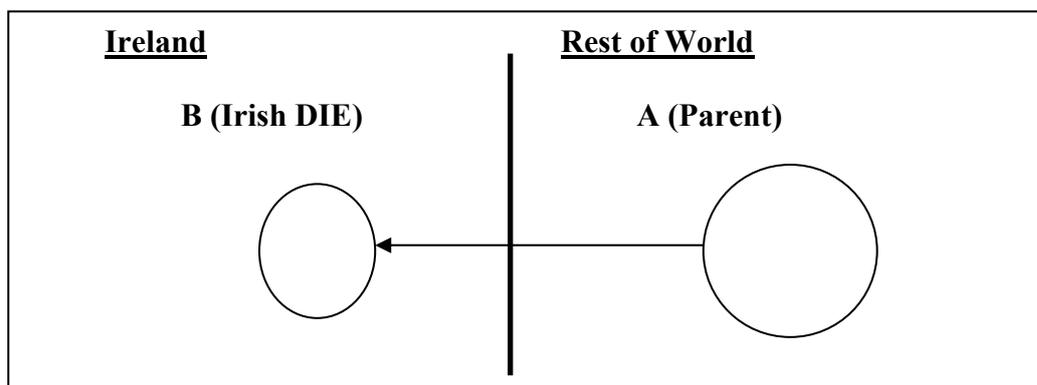
- the existence and residency of statistical institutional units;
- interpreting and understanding the data provided by multinational corporations in terms of their ever-changing structures, trading practices and accounting practices;
- treatment of goods for processing (tolling); commissionaire trading;
- the expanding phenomenon of recording in the compiling country turnover generated abroad, expenses incurred abroad and profits arising; the issue of the treatment of merchanting.

#### *Statistical institutional units and related matters*

An effective statistical register of resident enterprises and the correct determination of the existence and residence of a statistical institutional unit are crucial to reliable BOP and FDI compilation. In Ireland, the incidence of foreign direct investment and inward investment generally has already been highlighted. The range of company structures that CSO has to deal with, and the statistical significance of these enterprises in terms of investment flows/positions, merchandise and service trade, and income flows, are important factors in the compilation of the statistics involved. The trading and income figures for even one large foreign multinational enterprise located in Ireland can have a major impact on the overall BOP, FDI and national accounts (GDP and GNI) aggregates. If the information available to the CSO for such a company is incorrect then the resulting distortive effect on the figures can be very significant.

While the international statistical standards (SNA, ESA) for the definition of an institutional unit are used by the CSO as objectively as possible, there are times when the final determination of the existence and residence of a statistical institutional unit is subjective to some degree. Traditionally, foreign multinational enterprises tended to set up relatively straightforward structures whereby a foreign parent, A, established a physical manufacturing or service enterprise, B, in Ireland i.e. as evidenced by premises, plant and equipment, employment, etc. B could either be a branch of the foreign parent or a subsidiary (generally wholly owned). If B was set up as a branch it would not be incorporated in Ireland; if set up as a subsidiary it would normally be incorporated in Ireland. Figure 1 describes this simple situation.

**Figure 1. Simple example of inward FDI into Ireland**



Assuming that the CSO’s statistical register of enterprises was adequate and that the regular survey operation was effective, then the appropriate investment flows and positions as well as the relevant trading and income flows would be captured and correctly recorded with correct geographical attribution.

More recently, there has been a tendency to set up at least one intermediate holding company (H) in between the ultimate parent and the Irish operation(s). Different structural arrangements can apply to the holding company (ies) and to the physical DIE in Ireland. Figure 2(a) shows the scenario where the intermediate H is incorporated in Ireland and tax resident in Ireland.

**Figure 2(a). Inward FDI into Ireland via intermediate Irish holding company**

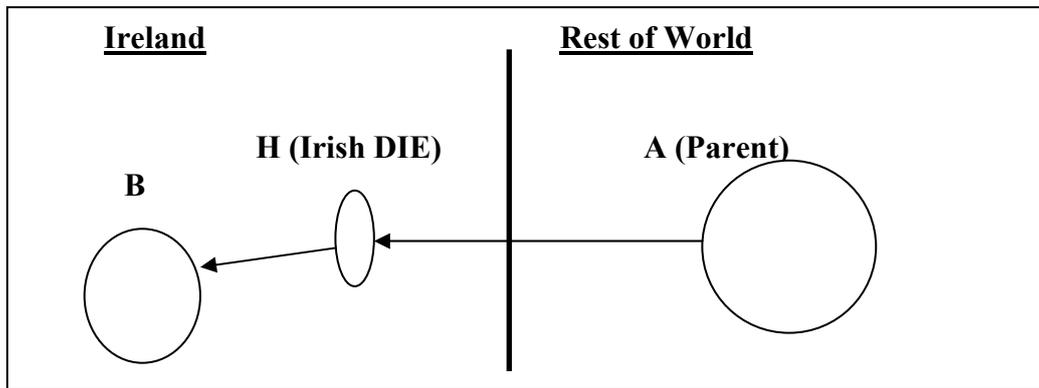
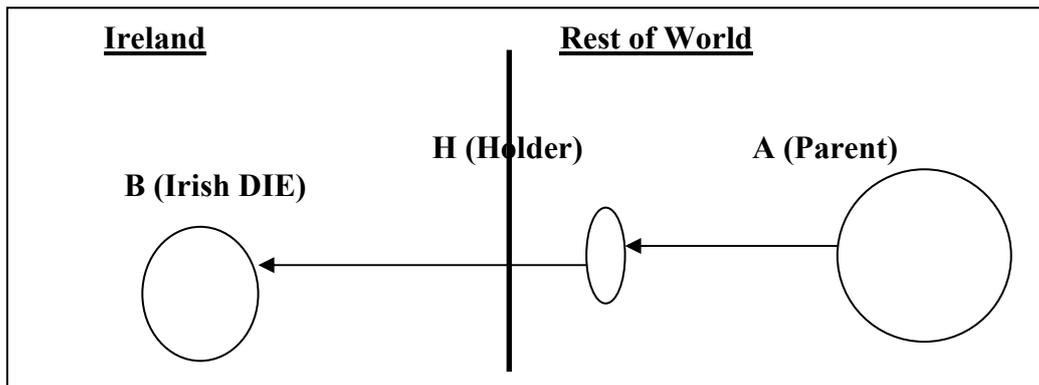


Figure 2(b) shows the same scenario but with the holding company located abroad (either in the same country as A or in another country).

**Figure 2(b). Inward FDI into Ireland via intermediate foreign holding company**



Again assuming both the statistical register and survey systems to be intact, the relevant data can be captured and recorded correctly with correct geographical attribution on an immediate counterpart basis.

Moving to a slightly more complex scenario, if H is incorporated in Ireland but is deemed to be tax resident abroad and H owns B, then the following issues (at least) arise:

- Is H a statistical institutional unit resident in Ireland or abroad?
- If H is deemed to be resident abroad, what is the country of residence of H?

If H is deemed to be an institutional unit in accordance with the international standards, a decision must be made concerning the residency of H. If it is deemed to be a resident of Ireland, then the scenario reverts back to that of Figure 2(a) and the relevant data can be recorded and attributed. If H is deemed to be a non-resident of Ireland then the scenario in Figure 2(b) applies.

If an incorrect residency decision concerning H is made by the compiler, then the following possibilities arise:

**A. If H is taken to be a resident of Ireland when it is not:**

- then transactions/positions between B and H are assumed to be resident-to-resident, and are incorrectly excluded in BOP and FDI statistics of Ireland.
- transactions/positions between H and A (the parent) are assumed to be resident-to-nonresident, and are incorrectly recorded in BOP or FDI statistics of Ireland.

This may not be a major problem where H is simply an intermediate through which flows/positions between A and B occur. Incorrect geographical allocation will be the result if the foreign country of residence of H is different to that of A. However, if H acquires funding in Ireland or elsewhere and on-lends to B then greater complexities arise and the magnitude of incorrect recording in terms of the amounts involved and the geographical allocation increases.

**B. If H is taken to be a foreign resident when it is a resident of Ireland:**

- then transactions/positions between B and H are assumed to be resident-to-nonresident, and are incorrectly recorded in BOP or FDI statistics of Ireland.
- transactions/positions between H and A (the parent) are assumed to be nonresident-to-nonresident, and are incorrectly excluded from Ireland's BOP or FDI statistics.

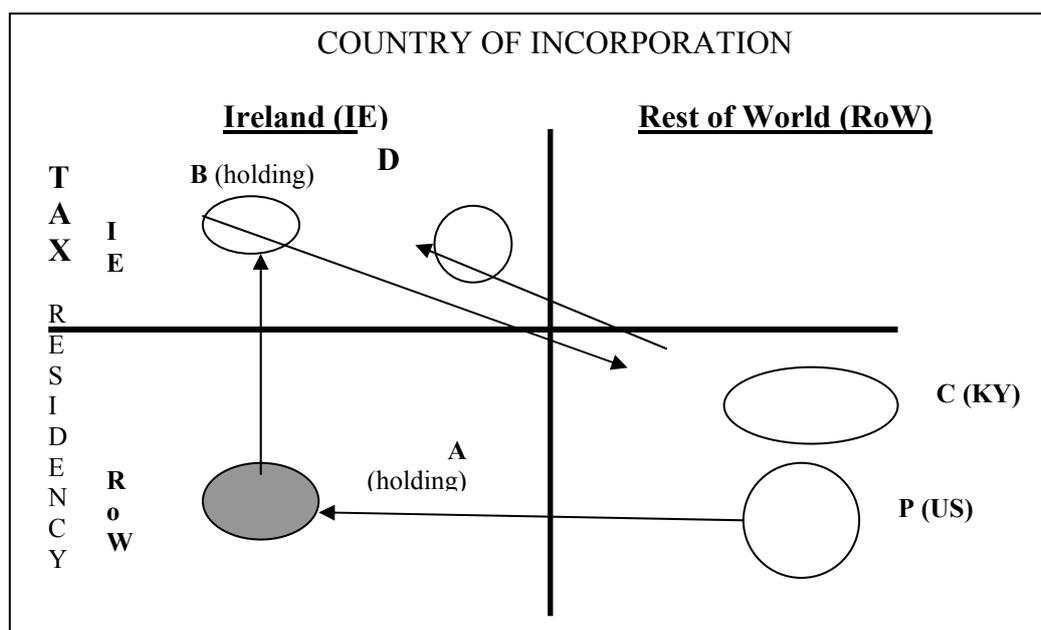
Again, this may not be a major problem where H is an intermediate through which financial flows/positions between A and B occur. Incorrect geographical allocation will be the result if the foreign country of residence of H is different to that of A. However, as in the other scenario, if H acquires funding in Ireland or elsewhere and on-lends to B then similar complexities arise and the magnitude of incorrect recording in terms of the amounts involved and the geographical allocation increases.

The contrary situation where H is a tax resident of Ireland but is incorporated abroad can have corresponding consequences. In addition, the investment intermediate H may have extensive foreign direct investments, so its correct classification as resident or foreign is essential.

The situation can become slightly more complex if B (the manufacturing or service-producing FDI enterprise located in Ireland) is incorporated in Ireland but tax resident abroad or vice versa. However, the treatment generally resolves satisfactorily in that where B has premises, employment, activity, etc. it will be an institutional unit resident in Ireland and the relevant statistics can be recorded as appropriate. In saying this, the important assumption is made that the CSO is fully aware of the situation and has been provided with all the relevant information at the time the data are being collected and compiled. Despite regular and frequent contact with many large enterprises, a small number of cases occur where the correct information only comes to light at a much later date. This can be due to respondents' carelessness in failing to supply correct information at the outset or their not being fully aware of the situation until later. The consequence is that the distortive impact on the resulting statistics can be significant.

In the following example, A is a holding company owned by a US parent P. A is incorporated in Ireland but is tax resident in the Cayman Islands. A owns another holding company B, incorporated in Ireland and tax-resident in Ireland. B owns a company abroad, C, which is incorporated in the Cayman Islands and is tax-resident there also. C has a branch, D, in Ireland which has premises, employment, activity, etc. Figure 3(a) describes the situation.

**Figure 3(a). Inward FDI – country of incorporation/tax-residency**

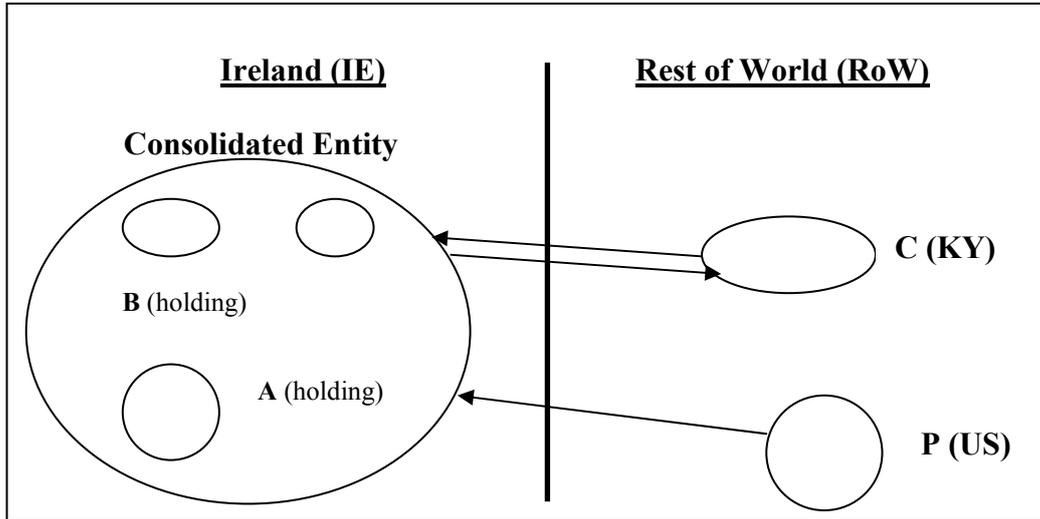


Being able to correctly record the flows and positions here depends largely on how A is treated. Two scenarios can arise in compiling the data for Ireland:

- **if A is treated as an institutional unit resident in Ireland** then it is an inward FDIE of P (US). A's Irish subsidiary B (an Irish-resident institutional unit) has a subsidiary (an outward FDIE), C, in Cayman. D (C's branch in Ireland) in turn is an inward FDIE of C. Reporting for A, B and D as individual resident enterprises may occur. However, as D (the Irish branch) has a real physical presence in Ireland, it and the two holding companies A

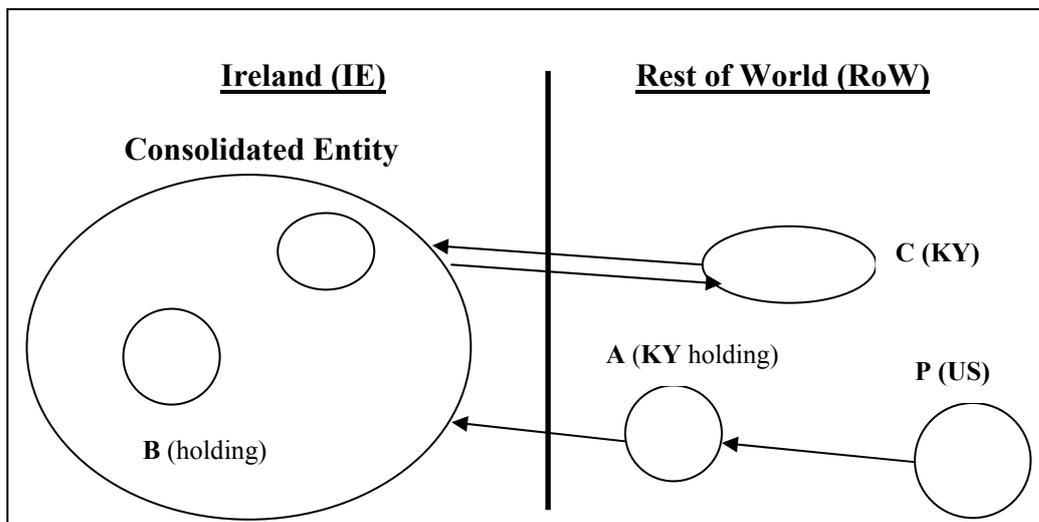
and B might be consolidated to simplify reporting of the inward (from US and KY) and outward (to KY) FDI transactions and positions between Ireland and the RoW. Either approach should essentially lead to the same result (see Figure 3(b) for consolidated scenario).

**Figure 3(b). FDI treatment (assuming consolidation in Ireland data)**



- if A is treated as an institutional unit resident abroad then B, its Irish subsidiary, is an inward FDIE of A (KY) and indirectly of P(US). B (an Irish-resident institutional unit) has a subsidiary (an outward FDIE), C, in Cayman. D (C’s branch in Ireland) in turn is an inward FDIE of C. Reporting for B and D as individual resident enterprises may occur. However, as D (the Irish branch) has a real physical presence in Ireland, it and the holding company B might be consolidated to simplify reporting of the inward and outward FDI transactions and positions between Ireland and the RoW. Either approach should essentially lead to the same result (see Figure 3(c) for consolidated scenario).

**Figure 3(c). FDI treatment (assuming consolidation in Ireland data)**



The difference between the two treatments of A basically seems to resolve to a difference in the geographical allocation of part of the inward investment into Ireland i.e. whether it is allocated to US or to the Cayman Islands. This is obviously important for any geographical analysis, particularly so when International Organizations are showing FDI results for the geographical areas which they cover. However, further significant complications can arise if A:

- provides funding (e.g. debt) to Irish residents or to non-residents of Ireland, or,
- receives funding from Irish residents or from non-residents of Ireland.

The correct recording and geographical allocation of such funding can present problems.

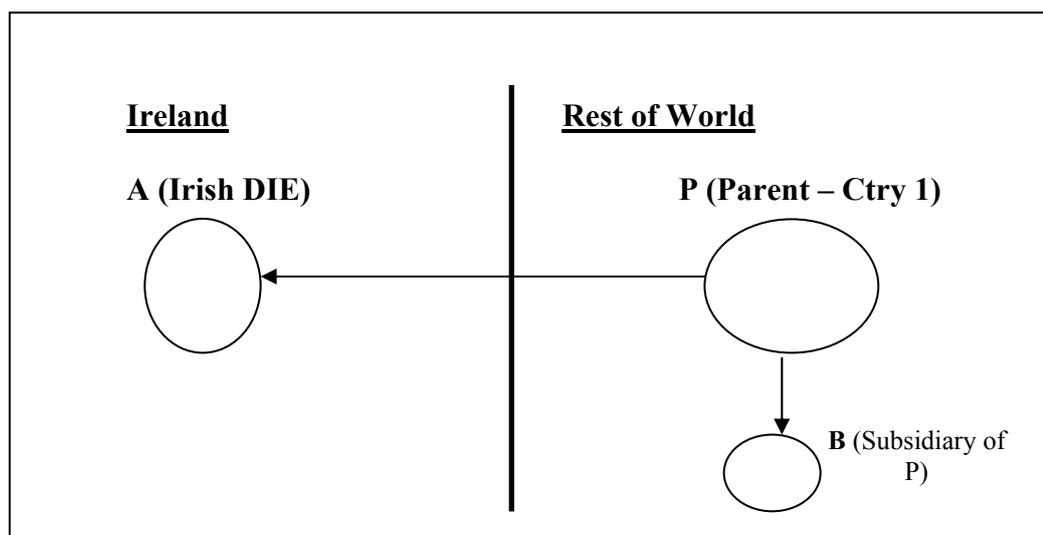
In the scenarios outlined, the major overall compilation issue is that the CSO may be unaware of the facts for quite some time. Statistics compiled in the absence of all the relevant facts are subject to some distortion. This can be significant at times and can give rise to sizeable revisions. However, if the actual facts never come to light then the distortions remain undetected and uncorrected.

**Changing structures, trading practices, accounting practices, access to accounting data and related matters**

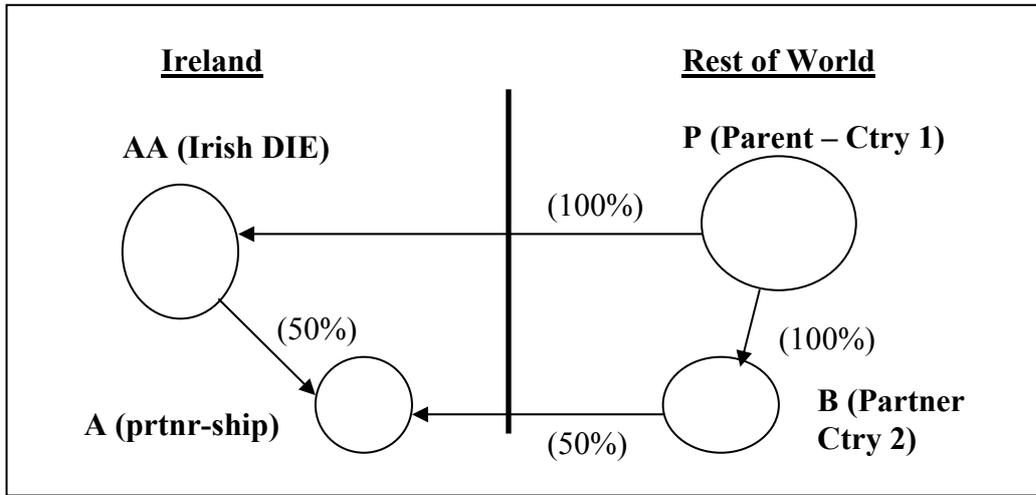
*Changing structures*

Foreign-owned enterprises located in Ireland frequently change their legal structures. For example, a foreign-owned subsidiary called A incorporated in Ireland and with visible presence (premises, employment, activity, filing of accounts, etc.) can change its name to AA and enter into a partnership with a foreign affiliate B, the partnership being called A. The partnership A can then transfer all its assets and liabilities to AA. A later goes out of existence and AA changes its name back to A. Figure 4 (4(a), 4(b), 4(c)) describes this diagrammatically.

**Figure 4(a). Inward FDI – changes in name/legal status - INITIAL SITUATION**

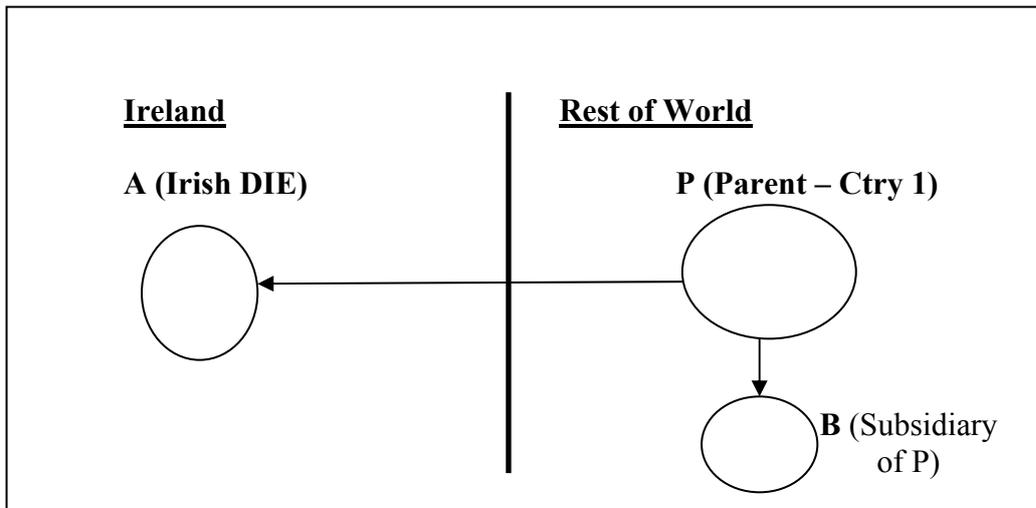


**Figure 4(b). Inward FDI – changes in name/legal status - INTERMEDIATE SITUATION**



Following the transfer of all A’s assets and liabilities to AA, A ceases to exist and AA changes its name to A, i.e. the structure reverts to the original.

**Figure 4(c). Inward FDI – changes in name/legal status – ‘FINAL’ SITUATION**



It would appear that a possible reason for such a structural change is that a partnership may be a convenient and flexible arrangement for distributing not only its profits but also its equity if desired. Frequently, changes of this nature are decided outside Ireland and CSO’s survey contacts may not be aware of the reasons.

If the transition shown above occurs within in a very short period (say one quarter) and is not known to the compiler, the statistics for that period only will be affected. If it covers a longer period (say two years) and the transitional step is not known to the compiler until after the two years then the relevant statistics (investment flow, stocks and income) will be affected. The

distortions caused (mostly geographical) can be very significant in some cases (hundreds of millions of euro for income, billions of euro for investment flows/positions).

### *Trading practices*

Some FDIEs in Ireland use what they call a ‘commissionaire’ trading model. Generally, the Irish operation produces goods which it sells abroad to a final customer. One of the Irish FDIE’s affiliates abroad acts as a selling agent but never takes ownership of the goods. The affiliate receives a fee (commission) from the Irish operation for its selling services. The value of the goods exported from Ireland reflect the production and other local costs in Ireland and also include the costs and margin of the selling agent. The Irish FDIE’s margin is also included.

This scenario can reach extreme proportions in relation to software production. The Irish FDIE may employ relatively small numbers of staff duplicating the software but, as the ‘principal’ entity involved in an international market (often covering Europe, the Middle East and Africa) it records in its books all of the turnover and costs relating to that market. If this arrangement suddenly changes and an affiliate in another country becomes the principal, then there can be a major impact on the sales figures and the profits without necessarily any material change in employment levels or the physical dimensions of the enterprise. Such changes in trading arrangements appear to occur for tax optimisation purposes.

Irish enterprises also engage in ‘tolling’ which involves the movement of goods across national boundaries for further processing (“tolling”) without the goods changing ownership until they are in a finished state. At this point the goods are sold to the final customer. Goods exported from Ireland for tolling generally cover chemicals and pharmaceuticals. The major difficulties for reporters are:

- knowing the country of the final customer, and,
- reporting when the processing and on-selling to the final customer phases have been completed.

The official trade statistics export values (pre-processing) have to be replaced by the BOP compiler with the sales value when change of ownership is known or assumed. The processing fee is recorded as a service import. The lack of full knowledge of this phenomenon and the timing effects can have distortive effects on the statistical data, particularly quarterly data. Similar reporting difficulties do not arise for Irish enterprises engaged in processing of imported goods.

### *Accounting practices and access to accounting data*

Ultimate parents of Irish subsidiaries are usually US - based. The Irish subsidiaries prepare management accounts in accordance with the US accounting standards, Generally Accepted Accounting Practices (GAAP). The quarterly BOP (including FDI) data are generally reported on the basis of such management accounts. There is a statutory obligation to prepare audited accounts of Irish - incorporated entities in accordance with either Irish accounting practices or the International Financial Reporting Standards (IFRS), both of which can notably

differ from the US GAAP. This obviously can lead to problems understanding and interpreting the data with a consequent impact on the compilation of the statistics. In the absence of a world-wide accounting standard it is difficult to see how this problem can be resolved.

Given the different types of legal forms that FDIEs operating in Ireland can take, it is frequently not possible to verify our survey data with accounts filed with the Irish Companies Registration Office (CRO) if the relevant entity:

- is a branch, as accounts for the entire company are filed,
- is an unlimited liability company, as there is no legal requirement to file accounts,
- has its debts guaranteed by another company, as the accounts for the latter company have to be filed, or,
- is a parent, as consolidated accounts can be filed.

*Timing of company accounts data; company staff not familiar with company structure or operations*

As multinational enterprises tend to have central accounting and taxation units, it can be very late in the accounting year before all receipts and expenditure are allocated to the various affiliates. Some costs may not be assigned until after the accounting year end. This can present serious problems for quarterly compilation and even for annual data.

In addition, cases arise where the reporting enterprise staff dealing with statistical reporting are not familiar with the company structure. This leads to incorrect reporting of the specific information required. For example, there may be a lack of knowledge concerning the identity of the immediate parent and sometimes of the ultimate parent. Reporters may not know precisely and fully the transactions undertaken or the counterparts. In addition, there have been incidences of reporting for the complete company rather than for the foreign-owned branch operation in Ireland. Such shortcomings can be difficult to detect at the appropriate time and revisions to the original statistical outputs are inevitable.

### **Concluding remarks**

The intention in preparing this paper was to highlight some practical issues encountered by the CSO in collecting and compiling external accounts data. Doing so may raise doubts about the overall quality of the FDI, BOP and IIP statistics compiled for Ireland. However, it is generally accepted that the results produced are of good quality overall. What is important to stress is that the results are not easy to compile, particularly where large multinational enterprises are so important. As compiler, CSO can never feel satisfied that the issues described in this paper, once dealt with, are completely and finally resolved. There is a need to maintain what is essentially regular and frequent contact with large companies. This contact can be in various forms including telephone, letter, e-mail, etc., but regular company visits with the necessary preparations made by both sides in advance are the most useful. Access to company accounts is extremely helpful in that the information contained therein can provide the compiler with a good insight into the company's structure and operations, and how these factors change. Accounting information can provide a very useful basis for raising questions of a probing nature during a

company visit. In general, such visits prove more useful than contact by telephone or in writing in that company representatives can be a lot more forthcoming with important and relevant information, particularly when they know that it is being used for statistical purposes and that its confidentiality will be protected. While the maintenance of such contact is very resource demanding, it is essential in the interest of compiling useful statistical information in an ever-changing economic environment.



## **SESSION III: COUNTRIES' INITIATIVES**

## 1. Summary of the session

From the pragmatic approaches which were presented in the cases of Canada, Ireland, the Netherlands, Norway and the Ukraine, some issues emerge which should be addressed in the national statistical systems in order to establish a consistent and probably a coherent view on globalisation and its effects on national economies. These issues are:

- be sure that the multifaceted aspects of globalisation *are properly identified* within the statistical programs, and that they are formulated in testable questions and given appropriate attention from a general management point of view (this mostly means sufficient budget and qualified staff to work on it);
- a statistical program should also entail a ‘guided tour’ in *discovering and disclosing new sources* for research on globalisation issues. Using privately owned or commercially exploited microdata could give research on globalisation issues an extra boost (it could also leave you with a terrible hangover). Microdata on foreign ownership, mergers & acquisitions, hedge funds and private equity are in particular demand and are probably at least partially available on the market;
- defining basic globalisation indicators for policy relevant populations of enterprises looks easy. Most of the conceptual work is done by OECD, there is a lot of knowledge within the SNA and BOP departments, the funding is likely to be guaranteed by the government and the *challenge is to construct the appropriate microdata sets* (like the Canadian Importers/Exporters database);
- netting out may remove possible statistical distortions at national level of the effects of incoming and outgoing flows, but analytical information may be lost in answering the question of why flows are as they are;
- legitimate national statistical policy reasons are not necessarily in line with legitimate international policy reasons;
- an account management approach could improve the quality of microdata of large MNE’s. Implementing this management tool in addition to the horizontal integration of different sources such as microdata on finances of non-financial enterprises (at enterprise group level) and microdata from production statistics (at KAU level) may lead to consistent data about the same MNE and its KAU’s;
- the most prosperous way to tackle the present problem of mirror statistics is to identify the measures cooperating countries can undertake within their own legal and fiscal framework. The second step is to adjust the underlying methodologies. Bilateral and multilateral cooperation is the key for successful minimising of mirror statistics differences.

## 2. Statistics Canada programs addressing globalisation

by Art Ridgeway<sup>1</sup>, Statistics Canada

### Introduction

Statistics Canada has several longstanding programs that provide information on globalisation issues. The balance of payments is the macroeconomic core of these measures with specific data available for key supporting programs such as international trade in goods, international trade in services and foreign direct investment. In addition, Statistics Canada has administered the Corporations Returns Act since its inception.

### Review of Statistics Canada programmes

#### *Corporations returns act*

The original Corporations and Labour Unions Returns Act (CALURA) was introduced in 1962. Parliament amended the Act effective January 1999, changing it to the Corporations Returns Act (CRA) and removing the requirement for labour unions to report. Under the CRA, Statistics Canada prepares an annual report to Parliament on the foreign ownership and control of Canadian businesses that examines financial and ownership information on corporations conducting business in Canada. This information is used to evaluate the extent and effect of non-resident control of the Canadian corporate economy. The CRA data are a primary source of information about mergers and acquisitions, foreign control of enterprises, corporate concentration and the legal structure of enterprises in Canada.

The ownership information collected from the returns filed by Canadian corporations under the Corporations Returns Act is publicly available by law and Statistics Canada uses the information to compile an inter-corporate ownership directory showing "which corporation owns which other corporation" in Canada. The directory tracks the ownership of the largest Canadian corporations and provides up-to-date information reflecting recent corporate takeovers and other substantial changes. Ultimate corporate control is determined through a careful study of holdings by corporations, the effects of options, insider holdings, convertible shares and interlocking directorships.

Finally, the data gathered under the Corporations Returns Act have been used to do further analysis on topics such as: the impact of mergers and acquisitions on corporate profits; changes in foreign control under different regulatory climates; the evolution of foreign bank subsidiaries and full-service branches in Canada; mergers and acquisitions and their relationship to foreign control; and foreign control and corporate concentration.

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<sup>1</sup> Director of the Balance of Payments Division of Statistics Canada. Views expressed in this paper are those of the author and not those of Statistics Canada.

### *Foreign direct investment*

Foreign direct investment has been an important source of capital for the Canadian economy for many years. In recent years Canada has also become an important supplier of foreign direct investment to other countries. Currently the net stock of assets resulting from foreign direct investment activities provides a positive contribution to Canada's net wealth, although the balance on portfolio investment continues to be negative.

The latest release of FDI position statistics showed outward FDI positions in around 150 countries. For direct investment coming from abroad (so-called inward FDI) the detailed statistics show investment positions from about 100 countries. Industry detail is also available. Data on FDI transactions and income are available with considerably less country detail (6 regions or countries). Confidentiality requirements constrain Statistics Canada's ability to release detailed FDI flow information, although the increased FDI activity in recent years and organizational and methodological changes within Statistics Canada may mean that additional flows detail and new indicators such as FDI statistics by country of control may be released in future.

In Canada, R&D expenditures are published according to whether they originate from companies under foreign or domestic control so support comparisons of the activities of the two populations.

### *Trade in services*

The increased specialization of production is leading to a greater importance for trade in services, which is relatively difficult to measure. Statistics Canada recently embarked on a three-year project to improve the data for international trade in services.

There are two main objectives for this project. The first aims at improving the accuracy of the annual estimates of total imports and total exports of commercial services within total trade in services. The population of Canadian businesses that are involved in international services transactions needs to be better identified, particularly with respect to small and medium sized businesses. Therefore, improved identification of the target universe is an important part of the business objective.

The second objective is to improve the commodity, geography and industry detail for trade in services estimates.

Commodity detail will be improved by collecting services commodity categories that map easily into the North American Product Classification System (NAPCS), the Central Product Classification (CPC) and the Extended Balance of Payments Service Classification (EBOPS). If it proves feasible, the number of services commodity categories collected on the annual trade in services survey will be increased. This survey currently collects international trade data for 32 services commodity categories.

With respect to geographical detail, a provincial breakdown of Canada's imports and exports of services by commodity will be developed on an annual basis. The project will also explore ways in which Statistics Canada's Balance of Payments program can respond to changing economic conditions and user requirements by modifying, as needed, the partner country aggregations and detail that are published. This approach aims at providing as much useful information as possible, while simultaneously respecting the need to maintain data confidentiality for individual enterprises and limiting the survey response burden.

In connection with the efforts to measure international trade in services more effectively, as part of its redesign of its annual program, Statistics Canada's services industries program is developing a new module that will allow for the collection of additional data on imports and exports of services in selected industries, at the same time as other services financial statistics are collected.

*Trade in intellectual property, licenses for patents, trademarks and copyrights*

Statistics Canada collects data on the technological balance of payments that include payments and receipts for the acquisition and use of patents, licenses, trademarks, designs, know-how and closely associated technical services, as well as for research and development services. The data derive from the Survey of Research and Development in Canadian Industry. The data on R&D services are reconciled with balance of payments data in order to find firms that purchase R&D services but perform no R&D themselves.

*Trade in goods: exporter/importer registers*

The international trade statistics program has produced an Exporter Register database which provides reliable counts of exporting establishments and their value of merchandise exports over the 1993 to 2005 period. An Importer Register database, currently under development, will provide similar data for Canadian importer establishments. Currently, preliminary importer data are available for 2002.

The Exporter Register provides an invaluable longitudinal database on the characteristics, performance and evolution of Canadian exporters. This information is delineated over several dimensions including industrial classification (NAICS), exporter size, destination of exports and province of residence of the exporter. This database provides counts of establishments exporting merchandise and the value of their exports by employment size category beginning with reference year 2000.

The Exporter Registry provides statistics on the characteristics of exporting firms. This is allowing research to be conducted on important policy issues such as the determinants of export success, and the relationship between exporting and productivity. This database provides empirical evidence to aid in the evaluation of many programs aimed at supporting and assisting exporters.

The Importer Register database will provide similar data for Canadian importer establishments. As noted, data are currently available for 2002 and data for 2003-2005 will be available in early 2007.

The union of the Exporter and Importer databases will contribute significantly to current research being conducted on issues such effects of recent exchange rate changes and other topics related to globalisation.

### **Foreign affiliate trade statistics**

The delivery of services to international markets is often accomplished through foreign operations or foreign affiliates. Starting with data for 1999, Statistics Canada has an annual program that provides data on the sales and employment of these foreign affiliates of Canadian firms for both the goods and services sectors. This program shows that this delivery mode is more important than cross-border delivery of services.

#### *Analytical studies*

Statistics Canada undertakes analytical studies both with in-house personnel and by providing access to micro data under specific conditions to external researchers. In recent years, there has been a high concentration of studies concerning the economic performance of multi-national enterprises. Studies have also explored the role of innovation in the performance of the Canadian economy and related this to multi-national enterprises. Recently, these analytical groups have undertaken studies of offshoring and outsourcing activities.

These studies are all available from the Statistics Canada WEB site. In addition, a survey paper covering research on multi-national enterprises is under preparation that will review Statistics Canada's work in this area over the past quarter century. It is expected that this overview study will be released later this summer.

### **Recent developments and future challenges**

More recently, Statistics Canada has taken decisions to reallocate resources to programs that can address data requirements in the general domain of globalisation. The most important are the efforts to improve statistics for services output and productivity. These improvements can be grouped into three categories: (i) improved coverage of core industry data through an expanded annual services industries survey program; (ii) improvements to sub-annual indicators of economic activity and (iii) an expanded program of services price indexes. This note does not cover these, but descriptions are available in other documents.

This section describes some additional initiatives that have started very recently or are in the more advanced stages of development.

### *Globalisation project*

In response to the data demands of policy makers and the new statistics proposed in the OECD *Handbook*, Statistics Canada has allocated funds to a globalisation indicators project. This project is focussing mainly on developing basic infrastructure for the production of additional globalisation related data series. Subsequently, this new infrastructure will permit the development of a suite of globalisation indicators.

An important feature of this project will be the identification of Canadian multinational enterprises (MNEs). While it has been possible to identify the operations of foreign multinational operations in Canada for some time using the Corporations Returns Act, it is only with the recent linking of the foreign direct investment program to the business register that Canadian multinationals can be easily identified.

### *Business register*

Statistics Canada's business register is presently under redevelopment and as part of this effort additional emphasis is being put on recording the international links between Canadian businesses and their foreign parents or subsidiaries. Key characteristics of these linkages will be recorded to support future data development and research.

Several data sources will be tabulated by ownership class (foreign MNE, Canadian MNE, and non-MNE) and by trade status (importers, exporters, both, or neither) to indicate the level of globalisation of the Canadian economy.

### *Global value chains data development – feasibility study*

A study of the feasibility of collecting data on the phenomena of global value chains is underway. The study will be concluded later this year and has made good progress so far in clarifying concepts and definitions, and in reviewing the work done in other countries as well as in Canada. The team is currently drafting questions for testing in the autumn 2007. Detail related to the survey strategy to be proposed is still being worked out. The strategic elements include the choice of observation unit, the proposed survey frame and choice of the survey vehicle. The final sample size will be dependent on the amount of detail to be derived from the sample (geography, firm size, firm ownership and industrial detail).

### *Commercialization*

Funding was also approved by the Policy Research Data Group to undertake a pilot survey of commercialization activities in Canada. This survey will examine how new developments are brought to market, both for projects undertaken in Canada and commercialized here and for projects developed by Canadian firms outside the country to exploit new market opportunities. The survey will be conducted in 2007 for reference year 2006.

### *International labour supply and remittances*

Globalisation is not just a business enterprise phenomenon. With an increasing proportion of the labour supply in many countries coming from temporary and permanent migration, households and extended families are becoming more global.

The large immigrant populations in many countries, including Canada, transfer significant amounts of resources to their home countries to support family members that remain behind. The importance of developing reliable estimates of these international remittances by persons has been recognized by international financial and statistical organizations, as well as by the leaders of the G8 countries at the Sea Island Summit in July 2004. Canadian measures of these flows are poor and the possibility of improving these data is being reviewed.

The Survey of Household Spending (SHS) collects some data on this phenomenon, but the variance is high given that the sample is not designed to ensure adequate representation of the immigrant population for this particular purpose. Furthermore, the SHS does not provide any breakdown of remittance payments by country of destination. It may prove feasible to improve Canadian remittance statistics either through changes to existing survey vehicles or as part of a new household survey. Some relevant changes are planned for the Survey of Labour and Income Dynamics (SLID), including questions about household-to-household transfer payments.

The Longitudinal Survey of Immigrants does pose questions related to international household-to-household transfers. However, a major restriction is that the target population includes only the immigrant people who arrived in Canada between October 2000 and September 2001, which is not representative of Canada's immigrant population as a whole for this particular purpose. Nonetheless, it may be possible to derive some useful conclusions.

Whereas most industrialized countries produce separate estimates for employment income transactions with non-residents, Canada does not. A project to improve statistics regarding international compensation of employees was launched in early 2006. The project is exploiting administrative data. Updated statistics on earnings of foreign residents employed by Canadian employers are expected to result from this project. It may not prove possible to improve statistics on the earnings of Canadians employed by foreign employers via domestic administrative data sources. Therefore, an exchange of statistics with partner countries will be examined. An additional benefit is that some results of this project will likely be useful for improving estimates of other components of the balance of payments such as remittance statistics and a special class of trade in services statistics, identified as "mode 4" in the General Agreement on Trade in Services (GATS), where a service supplier of one country travels to another country to deliver the service.

### *General business survey*

The Policy Research Initiative has recently supported work towards a General Business Survey (GBS) which, in due course, is expected to support longitudinal analysis. The GBS is intended to examine the use, implementation and impact of business strategies in large firms. Core questions are planned, along with recurring cycles of questions on specific topics. The

survey, which starts with a pilot survey in 2008-2009 and moves to a full survey in 2009-2010, could be used to probe trade in goods and services as a business strategy to take advantage of emerging markets. To minimize respondent burden, the intention is to augment the survey database with data taken from other surveys and administrative files.

### 3. The Irish approach towards treatment of merchanting and related transactions

by John Fitzpatrick<sup>1</sup>, Central Statistics Office (CSO), Ireland

This paper focuses on the CSO's treatment of transactions of multinational companies, which are 'booked' through an Irish affiliate. These transactions can be considered to be within the broad concept of *merchanting*, a topic that was briefly referred to in a related paper prepared for this Seminar<sup>2</sup>.

#### Background comment

The earlier paper described the significance of foreign-owned multinational companies (FDIEs) in the Irish economy. It also examined some statistical compilation issues encountered by the CSO concerning their changing structures, activities, trading and accounting practices as well as their BOP/FDI reporting arrangements. The CSO's treatment of merchanting and related transactions is another facet of general practical compilation issues.

#### Merchanting and related phenomena in Ireland

Merchanting is defined in the IMF's BPM5 as the purchase of a good by a resident trader from a non-resident and the subsequent resale of the good to another non-resident, without the good entering or leaving the economy of the merchanting trader. The difference between the value of the good when acquired and its value when sold is recorded as the value of the (merchanting) service provided by the merchant trader.

The focus in this paper is on the approach adopted by the CSO in the treatment of merchanting and related trading matters i.e. on the recording of sales turnover and expenditure of the entity located in Ireland. In the situation being described, the goods and services supplied are not produced by the Irish entity but are sourced abroad and delivered to a foreign third party customer by non-resident affiliates of the Irish operation. The particular type of trading practice outlined is simply one of a number of scenarios that are encountered. Multinational company group structures facilitate the types of arrangements encountered but membership of a group structure is not a strict requirement for the existence of these trading practices. Unrelated third parties may be involved in the supply/delivery of the goods/services.

The CSO approach is fundamentally based on the recommendations of the BPM5 in relation to merchanted goods. However, certain significant modifications are made where considered necessary in the interest of the clarity and understandability of the results. These modifications initially related to the treatment of services outsourced and delivered in association

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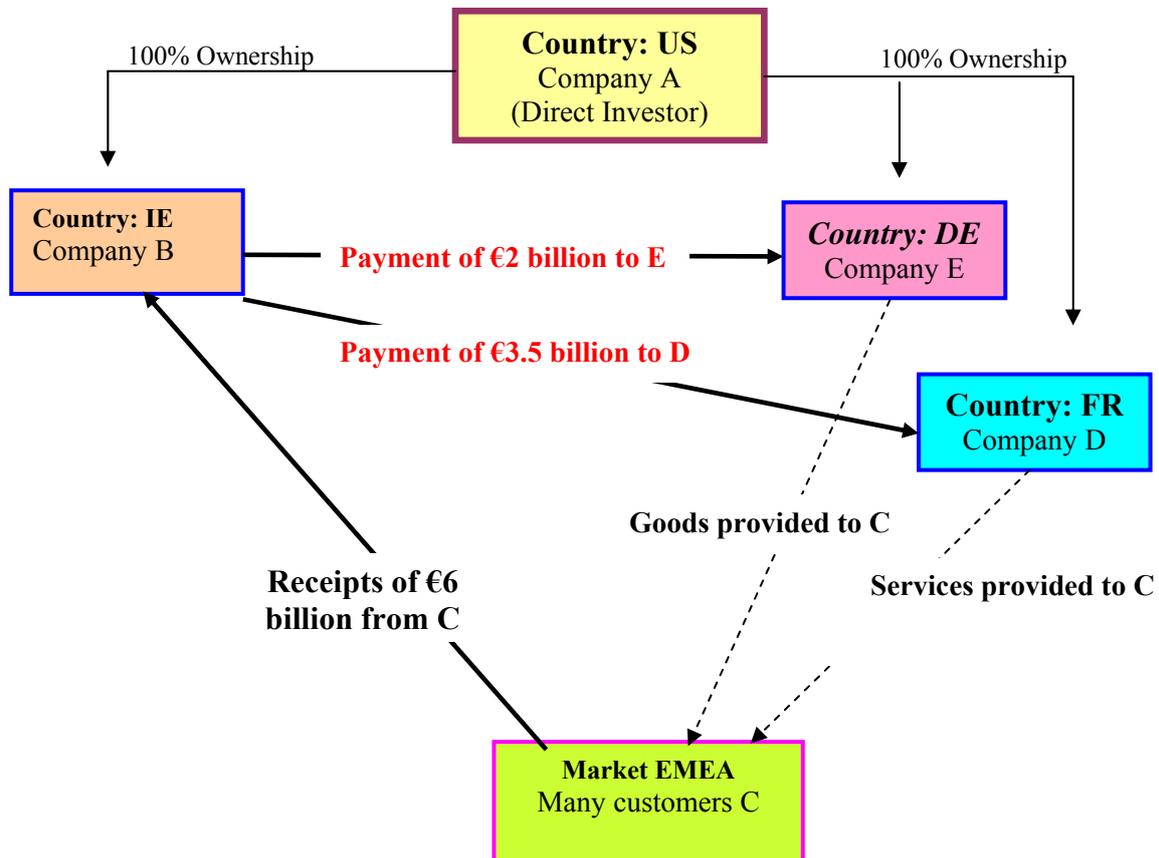
<sup>1</sup> Head of Balance of Payments Analysis and Dissemination Division, Central Statistics Office (CSO), Ireland.

<sup>2</sup> Dealing with complex and changing company structures and trading practices in compiling Foreign Direct Investment and Balance of Payments related statistics in Ireland.

with the supply of goods. They have recently been extended to the treatment of services where goods are not involved.

Consider the following fictitious situation (which is a simplified version of more complicated activities and practices). A foreign direct investment enterprise located in Ireland (B) is owned by a US investor (A). B in Ireland arranges for the supply, installation and maintenance of goods/equipment to a number of unrelated customers (C) in the Europe, Middle East and Africa (EMEA) market, as well as the provision of staff training programmes, etc. concerning the operation of the goods/equipment. The goods and services supplied are not sourced in Ireland by B. The goods/equipment are purchased for €2 billion by B from its affiliate (E) located in Germany while the various services are purchased for €3.5 billion from another affiliate D in France. The two affiliates deliver the goods and services to the customers (C). These customers pay B a total of €6 billion for the goods (€2.2 billion) and services (€3.8 billion) they receive. The Irish trader, B, records in its accounts all payments and receipts arising from the order. Figure 1 describes the situation.

**Figure 1. Merchenting and related transactions**



Under the BPM5 and other international recommendations, the above transactions would (normally) be recorded in the BOP statement under service imports and exports, with, in the case of the goods element, only the net margin (€0.2 billion) being recorded as a merchanting service credit. The related service transactions would appear under services: a credit of €3.8 billion and a debit of €3.5 billion (see Table 1 below).

**Table 1. Recommended recording treatment**

BOP Item	Credit	Debit	Net
	<b>€ million</b>		
<b>Merchanting service</b>	<b>200</b>		<b>200</b>
<b>Other services</b>	<b>3,800</b>	<b>3,500</b>	<b>300</b>
Total	4,000	3,500	500

As both the goods and services delivered to the EMEA customers (C) have been sourced from and delivered by a non-resident of Ireland (i.e. a French D and a German E foreign affiliate of the Irish entity B), the CSO treats the combined transactions for goods and services described above on a net basis. It records the overall net margin of €0.5 billion as a credit (service export) under merchanting services in the ‘Services’ part of the BOP Current Account (see Table 2).

**Table 2. CSO, Ireland recording treatment**

BOP Item	Credit	Debit	Net
	<b>€ million</b>		
<b>Merchanting services</b>	<b>500</b>		<b>500</b>
<b>Other services</b>	-		-
Total	500		500

This is an important extension by the CSO of the BPM5 definition of merchanting (as it applies to goods supplied which do not enter or leave the compiling economy). Under the CSO’s approach for the type of scenario shown in the example, services which are

- sourced abroad by an Irish resident trader and associated with the supply of merchant goods to a customer resident abroad, and
- then delivered to the customer by a non-Irish-resident entity are included on a net basis under *merchanting*.

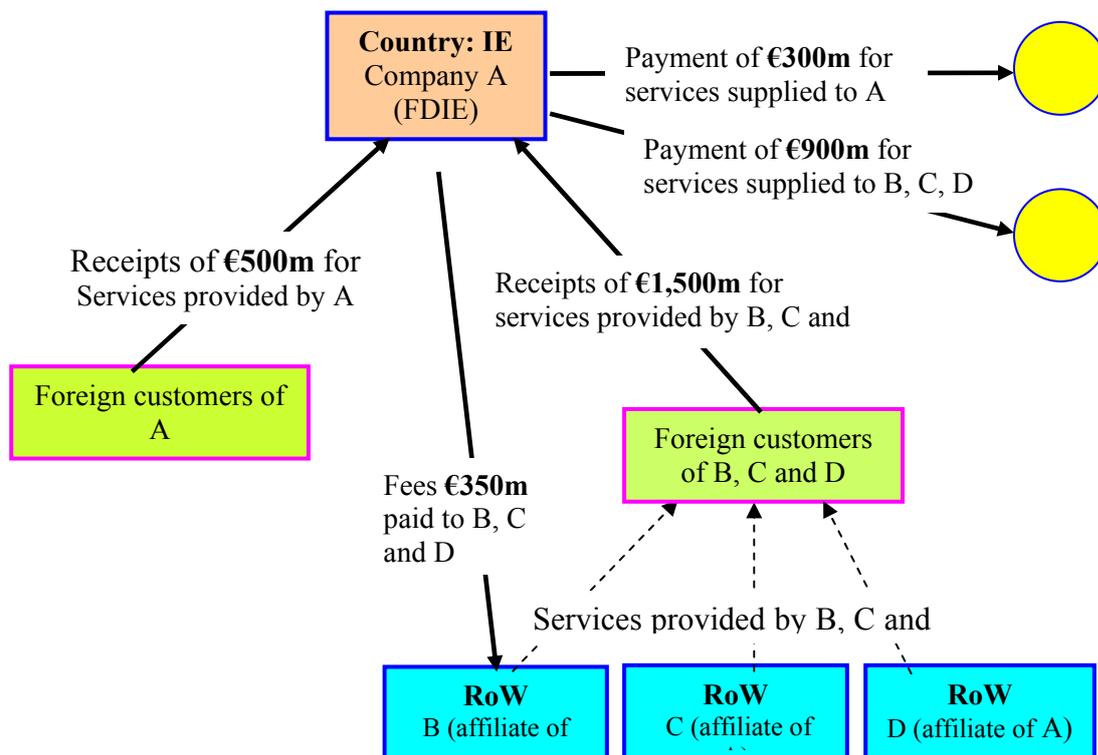
The main reason for CSO’s adoption of this approach is to reduce the potential for statistical distortion arising from these very large transactions in both goods and services sourced and delivered abroad. It does not seem appropriate or meaningful to inflate the services exports and imports data for such transactions, particularly when such large aggregate flows in the statistics presented are referenced against employment levels in a particular industrial activity in Ireland. In saying this, it is acknowledged that net recording by one compiler can lead to distortions or asymmetries where counterpart compilers may have no option but to record the transactions on a gross basis in their BOP statistics.

While the scenario and treatment just described deal with goods and associated services outsourced abroad by an Irish resident trader and delivered abroad by affiliates of the trader, they could also apply where foreign third party enterprises rather than affiliates are involved.

Recently, the CSO decided to extend this treatment to the situation involving transactions in services which are not associated with the supply of goods. Where services are provided to foreign customers by affiliates of an Irish resident enterprise and all receipts and expenditure are recorded in the books of the Irish operation, then the CSO applies a net treatment for recording the relevant transactions involved.

For example, an Irish resident FDIE, A, directly supplies services to non-resident customers valued at €500m. It has three affiliates, B, C and D, located abroad which supply similar services valued at €1,500m to such customers. Invoices are issued from B, C and D on behalf of A i.e. A essentially invoices all of the customers (covering services provided by all 4 companies: A, B, C and D). A pays B, C and D commission fees of €350m covering their costs plus a margin. A also incurs direct expenses of €300m with other non-residents while the expenses of B, C and D combined amount to €900m. A records all turnover and expenditure as well as the profits generated. Figure 2 describes the situation.

**Figure 2. Treatment of receipts and expenditure of Irish FDIE for services partly provided by foreign affiliates**



The CSO records the above transactions in its BOP statement as shown in Table 3.

**Table 3. CSO, Ireland recording treatment for services partly outsourced**

BOP Item	Credit	Debit	Net
	<b>€ million</b>		
<b>Merchanting services</b>	<b>250</b>	<b>-</b>	<b>250</b>
<b>Other services</b>	<b>500</b>	<b>300</b>	<b>200</b>
Total	750	300	450

The €250m recorded under merchanting services results from the netting of A's commission fees of €350m paid to affiliates B, C and D along with the combined service expenditure of B, C and D of €900m against the value of the services they provide to customers i.e. €1,500m. The value of A's direct service exports (of €500m) to its foreign customers is recorded gross under other services (credit); its related expenditure of €300m is recorded gross as a debit. The internationally recommended treatment would be as follows in Table 4.

**Table 4. Recommended recording treatment for services partly outsourced**

BOP Item	Credit	Debit	Net
	<b>€ million</b>		
<b>Specific services</b>	<b>1,500</b>	<b>900</b>	<b>600</b>
<b>Trade-related services</b>	<b>-</b>	<b>350</b>	<b>- 350</b>
<b>Other services</b>	<b>500</b>	<b>300</b>	<b>200</b>
Total	2,000	1,550	450

An important point was mentioned earlier (Section 2 – trading practices). If the Irish entity is the 'principal' enterprise within a multi-national group through which the receipts and expenditure of the various affiliates are routed, then a change in this arrangement can have a significant impact on the data before and after the change. If, for example, the ultimate parent company decides to no longer have the Irish entity as the 'principal' but to transfer this role to an affiliate in another country then significant discontinuities can result in the service data and the profit/loss when the change occurred.

### Concluding remarks

The treatments adopted by CSO and described above are a departure from the recommendations of the international statistical standards. While a gross treatment of outsourced services delivered to a non-resident customer may be implicit in BPM5, there appears to be no explicit discussion of such delivery of services in the Manual documentation or any explicit reference as to how the relevant transactions should be treated. The Manual on Statistics of International Trade in Services, however, does refer to the requirement for gross recording of services purchased by the merchant connected to the delivery of the merchant goods (e.g. transport, insurance, etc.). Similarly, there appears to be very little guidance on the treatment of goods and services provided by affiliates abroad but invoiced by a resident enterprise.

The treatment of merchanting in BOP statistics is being addressed in the BPM revision work currently underway at the IMF. The focus is again on merchant goods and a net

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treatment is apparently being proposed but with, additionally, the gross flows also shown as positive and negative quantities on the exports side. The supply of outsourced services delivered to non-resident customers whether or not associated with the supply of the goods does not appear to be addressed however. It is likely that both compilers and users would benefit from a discussion of the proposed treatment of merchanting and the underlying rationale for it in the new BPM6. Also, it is hoped that some clear guidance will be forthcoming on the treatment of the booking of receipts and expenditure by an enterprise in a compiling economy in respect of transactions of its affiliates in other economies.

## 4. Globalisation and the effect on national accounts: practices<sup>1</sup>

by Nico van Stokrom, Frank Bongers, Leslie Nootenboom, Wim Tebbens, Statistics Netherlands

### Abstract

Globalisation makes an accurate description of the national economy increasingly difficult. On the one hand Dutch companies developed into companies with activities abroad and on the other hand Dutch companies were in their turn affiliated to foreign multinational companies. Many of these companies are considered complex companies since they have led to major inconsistencies among the several source statistics of the National Accounts of Statistics Netherlands. The interpretation of the several source statistics related to multinational enterprises may be problematical. In National Accounts consistency is of primary importance. The System of National Accounts (SNA) and the European System of Accounts (ESA) provide guidelines and definitions to measure the domestic economy and the links between an economy and the rest of the world. Statistics Netherlands uses the guidelines and definitions of the SNA and ESA for the interpretation of source statistics related to multinational enterprises. However, in many cases SNA and ESA did not offer a solution to the problems created by multinational enterprises. Statistics Netherlands is devising tailor-made solutions to solve these problems.

Keywords: Globalisation, multinational enterprises, measurement, territorial principle, ownership of goods, toll processing, steering of production processes, internal and mutual consistency, tailor-made solutions, practical examples, decision diagram.

### Introduction

The System of National Accounts (NA) aims to describe a national economy. This includes a set of coherent, consistent and integrated macroeconomic accounts, balance sheets and tables. The description also comprises an external account displaying links between the national economy and the rest of the world. In the Netherlands (*worldwide*), the development of the national economy (*economies*) is reliant on international relations. Due to rapid changes in the international business community over the last decades Dutch – and foreign – enterprises developed more and more to internationally operating units. As a result, production tends to be concentrated in larger establishments or to be moved to so-called ‘low wage countries’. This increases the flow of goods and services between units of an international enterprise. The disappearance of inner frontiers of the EU and the introduction of the Euro enhanced the transit of goods to a large extent as well. These internationalisation and globalisation trends have a large impact on the description of a national economy. It has become more and more complex to observe flows of goods and services and to classify them properly. ‘Old fashioned’ criteria such

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<sup>1</sup> This paper is prepared for and presented on the Joint EFTA/UNECE/SSSU Seminar “Economic Globalisation: A Challenge for Official Statistics”, 3-6 July 2007, Kiev, Ukraine. It is an updated version of the invited paper prepared for the joint UNECE/Eurostat/OECD Meeting on National Accounts, 25-28 April 2006, Geneva.

as the *ownership of goods* and the *steering of production processes* within multinational enterprises hamper a proper observation. Also, the valuation of flows of goods and services between branches within large enterprises complicates the attribution of output to different national economies involved. Potential solutions to handle the inconsistencies between different data sources in case of **multinational enterprises** (MNE's) are needed, taking into account the intentions of the SNA and ESA systems.

The heart of the problem, as described above, was discussed in an internal document of Statistics Netherlands (SN) [1]. This document was elaborated in a paper that was presented at the IARIW conference in 2004 [2]. The paper discusses aspects of the economic theory and practical statistical problems. Summarizing: this paper (1) elaborates the problems surrounding measuring 'complex enterprises', by detailing the relevant international guidelines, and the demand for consistency between the various statistics; (2) addresses MNE's characteristics by describing several frequently occurring cases including industrial services and processing to order, foreign affiliates and trading companies that co-ordinate sales in a large region, showing how such enterprises can be recognised and how their registration might be changed, criteria used to limit the units and the registration of transactions are discussed; (3) shows some practical examples; (4) follows with conclusions and a summary.

The summary of the paper emphasizes the '*territorial principle*'. It is a basic assumption underlying gross domestic product being the result of production activities of resident units. In order to estimate gross domestic product correctly, it is important to attribute value added to the territory where it was generated. Essential is an exhaustive description of international trade flows of goods and services. The main conclusions were:

- SNA and ESA do not offer solutions for all problems. In practice there are a number of *borderline cases* for which *taylor-made solutions* have to be devised. Doing so, one is dependent upon the information that respondents are willing to provide.
- To satisfy the demand of *internal and mutual consistency of source statistics*, it is important to carefully consider the wider implications of any adjustments. The *key aim* is *consistency* in observation and description.
- The *strategy* should focus on following actual developments as closely as possible. Because of rapid changes in international relations, statisticians run the risk of being overtaken by developments.

This paper focuses on SN's devised tailor-made solutions. It describes briefly some experiences with a more than one year practice in improving the measurement of multinational enterprises under the supervision of a working group 'Mothers & Daughters'.

### **An initiative to try to cope with globalisation**

Ever increasing globalisation poses a threat to the *internal and mutual consistency* of several source statistics for the NA. And consistency is one of the major features of the NA. There is a wide range of underlying reasons for this. Here we are concerned with the organizational approach to the problem, focusing on the design of a system which makes it possible to identify and solve statistical problems caused by globalisation. This is more difficult

than it seems, because the relevant data often are derived from quite different sources and collection systems. The relevant statistics such as *Statistics of Finances of Non-financial Enterprises*, *International Trade Statistics*, *Statistics on Production and Capital Formation* are not consistent with each other at micro-level (*'measurement coordination'*), making it difficult to compile consistent NA.

Within SN a number of steps have recently been taken in the direction of improving the consistency on a micro-level. Detecting problems in statistics due to globalisation are tackled in three ways:

- Mandatory reporting of "suspicious" companies;
- Developing detecting tools;
- Research on the level of the group of enterprises compared to the source statistics.

#### *The project 'Mothers & Daughters'*

It had been known for quite a long time at SN that there were difficulties with the registration of transactions of 'complex enterprises' (multinational enterprises), with all the related problems for the limits of the national economy and the consistency of statistics. However, what was lacking was a central view on how to tackle this, and it was difficult to intervene in the statistical process given the many actors involved. By way of a stopgap, at the level of the NA, i.e. at the very end of the statistical process, adjustments were made for a small number of cases, in order to reach consistency.

In 2003 a project group comprising specialists in the area of measurement coordination and the NA was charged with solving these problems: the Working Group 'Mothers & Daughters' ('M&D'). The central objective was to design and elaborate a theoretical framework, develop a database and a procedure to chart the possible distortions in the source statistics and the NA, and subsequently to conceive solutions and implement these at the beginning of the statistical process. Naturally, in the process, a wide range of definitions from the SNA and the ESA came up for discussion. After a period of discussions and internal research, this resulted in the internal SN document (2003). In addition a *decision diagram* was drafted, which made it easier to detect and solve the problems.

Once the methodological framework was completed, support had to be obtained within the two divisions at SN most involved, i.e. the Division of Business Statistics (measurement) and the Division of Macro-economic Statistics and Dissemination (including NA). Subsequently, concrete steps for the implementation in practice were discussed.

An important first step was the development of a course for all staff involved in measurement. In this course the methodological framework was explained in popular terms to around 300 staff members. The explanation centred on coordination of statistics and the importance of such coordination for the NA. The importance was due to the fact that detection of 'suspected' enterprises could only be realised via staff 'on the job', such as processors, smoothers and managers. All statistical staff were instructed to report possible cases of measurement problems to one central point.

A *database* supports the 'M&D' project. Among other things it serves as an instrument to report progress to management. All documents relating to the treatment of a case are stored in the database. The database corresponds with three stages that each case of 'M&D' must go through. The three stages are described briefly below.

- **Stage 1: Intake.** All suspect enterprises are subjected to an intake. This is done by a project coordinator on the basis of a number of objective criteria, such as the economic relevance of an enterprise. The project coordinator also collects supplementary information from (obligatory) surveys in which the enterprise participates. He also links up with the organizational unit. Stage 1 concludes with the appointment of a sub-project manager, who is responsible for solving the problem.
- **Stage 2: Preparation.** The sub-project manager draws up a time schedule and, via management, appoints members to the project group. The group starts by analysing the statistical state of affairs, with the linking variables of the various statistics as the main item. A small number of key variables is sufficient. Sometimes the enterprise is visited in this stage. If it turns out that the basic statistics are not consistent, solutions must be conceived along the lines of the basic methodology. If there are any doubts or problems, the 'M&D' project group is called for assistance.
- **Stage 3: Implementation.** The proposed solutions are discussed with the enterprise and measurement agreements are laid down. The policy then is to start the new measurement as soon as possible in a coordinated fashion. In spite of the fact that sometimes the adjusted measurement may result in a break in time series. It is certainly not the intention to start a collection of cases and to wait for the next benchmark revision of the NA before implementing. All organizational units involved must act in accordance with each other.

*So the motto is: repair all cases which, as a result of increasing globalisation, lead to distortion, as soon as possible.*

After the first operational year 2005, we have the impression that progress within the sub-projects is accelerating. Staff are getting more and more used to the solutions chosen. The support for quality projects within SN is as good as it can be. The name given to the project, '**Mothers & Daughters**', contributed to this.

The solution to one problem, the consistency between the registration in the Dutch and international accounts has not yet been conceived at SN. How are the countries involved going to coordinate globalisation in statistical-technical terms?

#### *Developing new detection tools*

Computerized checks of data are standard practice during compilation of statistics in the field of production. It would be of help if checks were developed to determine outsourcing. This may be possible using ratios. Moreover it would be possible to inquire about possible outsourcing before the standard questionnaire starts.

### *Combining all sources; CONGO*

SN, now more than ever, is convinced that large businesses need special attention. Their importance for statistical output is huge. An intensive and more laborious approach pays off in terms of quality and coherence of output and is necessary considering the often complex situations. The ongoing globalisation of economic activities makes it simultaneously more important and more difficult to handle large enterprises properly and to maintain and assure the concepts of 'National Accounts'. SN was engaged in an even more exhaustive project than Mothers & Daughters in 2007.

#### **CONGO** In English: **CON**sistent **D**atasets for **L**arge **E**nterprises

In late 2005 SN started the development project CONGO. What is CONGO trying to achieve and what is CONGO doing at the moment?

For the statistical years 2005 and 2006 CONGO is monitoring and investigating the coherence of micro datasets concerning large enterprise groups. The datasets are composed from the most important source statistics and also from external (tax) sources<sup>2</sup>. The data are gathered on the consolidated level of the enterprise group or on the level of the underlying kind of activity units. The project is now dealing with 250 large enterprise groups and their corresponding KAU's<sup>3</sup> (about 4400 in number). Our aim is to detect, investigate, explain and solve all kind of inconsistencies and gaps in the datasets. CONGO does not limit itself to inconsistencies due to globalisation issues as does Mothers & Daughters. CONGO deals with all distortions, whatever the origin may be.

Some more features:

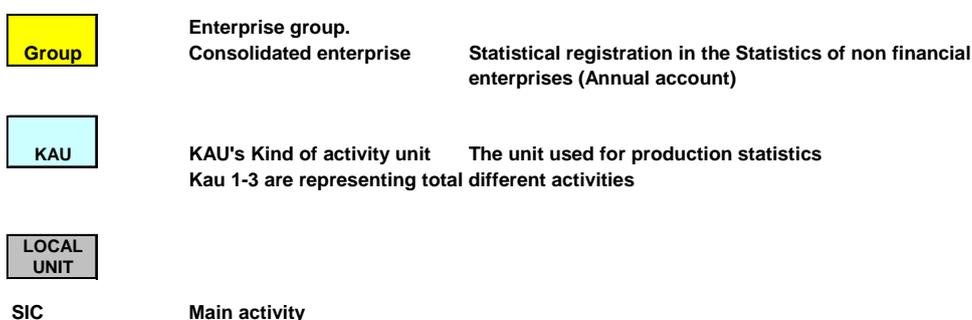
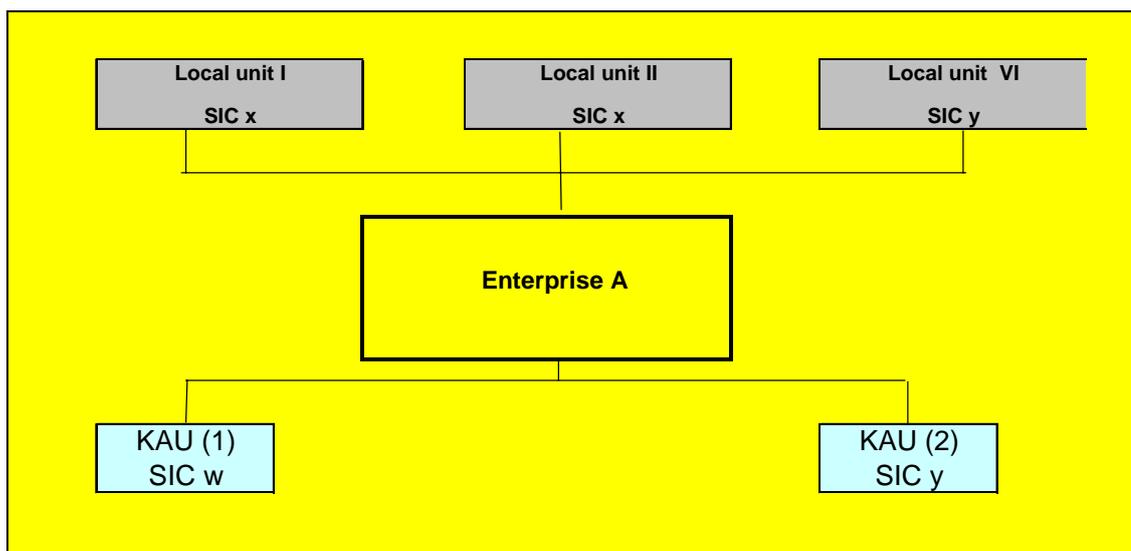
- Some 15 statistical key variables have been defined (such as: Total revenue; net sales, wages, investments, operating result, labour);
- for the moment 8 source statistics and 3 tax sources are used;
- KAU data is aggregated to the level of the enterprise group, so we can also combine and confront Consolidated company accounts with KAU-statistics (such as production statistics);
- for every key variable there are always at least two sources, so it is possible to confront data.

To understand the structure of an enterprise group and the statistical measurements through the so called KAU's, the following diagram is used<sup>4</sup>:

<sup>2</sup> Statistics describing the Finances of non financial enterprises, production, international trade and investments etc.

<sup>3</sup> KAU Kind of activity unit.

<sup>4</sup> Statistics Netherlands, Research Paper nr 9648 Statistical units in international perspective; Ad Willeboordse 1996.



The KAU's (1) and (2) are the units on which the source statistics are based.

The main goal of CONGO is not to check the coherence and to make corrections afterwards, but to *prevent* inconsistencies amongst units and sources and to publish coherent and reliable source statistics from the earliest moment possible. Thus CONGO is developing a new approach, especially for big enterprises. Part of that approach is, if necessary, to redesign the surveying process of large businesses. At the moment testing and developing ways to achieve this is ongoing.

Summarizing:

- The project CONGO will very likely have a growing impact on the organization and the results of the statistical process concerning large businesses.
- 'Mothers & Daughters' will be integrated in the comprehensive CONGO project.

### Examples of tailor-made solutions

In this section some practical examples are given. The main goal of adjustments is to make the best possible distribution of value added over the countries where the units of the multinational enterprise are located. There are more options than the examples show. To keep

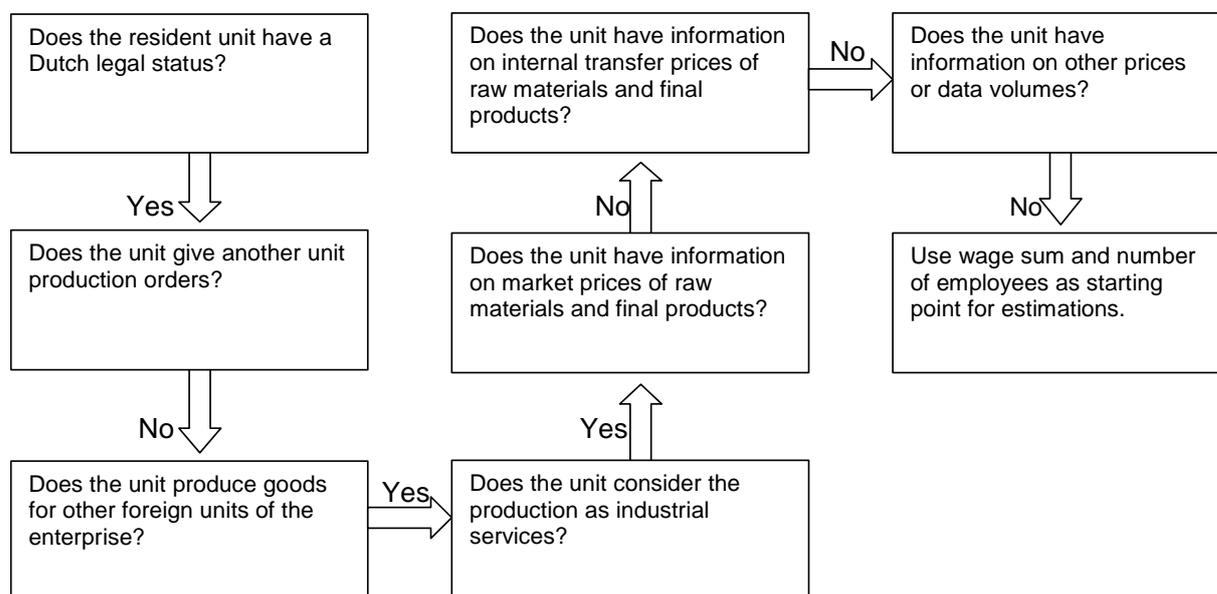
things simple the adjustments are not classified by type of statistic or type of unit. Because the flows of goods and money don't run parallel, adjustments can take place at different levels. The balance of the income account (Statistics of Finances of Enterprises) is adjusted at company level whereas adjustments in the production accounts (Production Statistics) are made at the business unit level. The examples given below are based on actual cases of the 'M&D' project. Nevertheless names and figures are fictitious for reasons of confidentiality.

#### *Example 1*

*A multinational, 'Chempion', with headquarters in the Netherlands, owns a manufacturing unit in the Netherlands which produces chemicals, polymers etc. for a wide range of industries. The manufacturing unit was not able to provide specified data on output and raw materials.*

***Indication of economic relevance: the value added share of 'Chempion' in the total value added of Dutch manufacture in chemicals etc. amounts to 5%; the share of employees to 3%.***

In the survey for the Production Statistics, the Dutch manufacturing unit is not able to provide specified data on output and raw materials. Specifications of *industrial services* and related inputs (energy and other expenses) are provided instead. The Dutch manufacturing unit considers the production of industrial services as its main activity. In this case the ownership of goods and the steering of the production process are in hands of the parent company. It provides the manufacturing unit with raw materials and is responsible for the sales of the final products. The parent company controls all activities in Europe and owns manufacturing units in other European countries as well. According to this form of organization the parent company considers itself a converter. The converter (unit) contracts the production process out to a producer of specialised industrial services. However, the converter and the producer of industrial services can not be part of the same company (reference: definitions used in ESA 3.133 and in international trade, where deliveries between affiliates are instances of imports and exports without the transfer of legal ownership). This is incompatible with the net registration of industrial services in the balance of payments. Criteria such as *steering the production process* or *the legal ownership of the inputs and the finished product* are not relevant in the distinction between producers of industrial services and the production units of multinationals [2]. With help of the '*decision diagram*', the desirable solution in gathering information for estimating gross value added can be found. Figure 1 shows the '*decision diagram*' for this case.

**Figure 1. 'Decision diagram' applied to Champion's Dutch manufacturing unit**

As shown in figure 1, the preferred recording has to be reconstructed based on incomplete information from the manufacturer. This information consists of wage sum and the number of employed persons. The gross value added of the manufacturer can be estimated using these indicators. Table 1 shows the statistics submitted by the Dutch manufacturing unit.

**Table 1. Statistics of the Dutch manufacturing unit**

<b>Manufacturing unit</b>	
<i>Production Statistics</i>	
Industrial services	50
Intermediate consumption	10
Gross value added	40
- wages	35
- other income	5
Number of persons employed	750

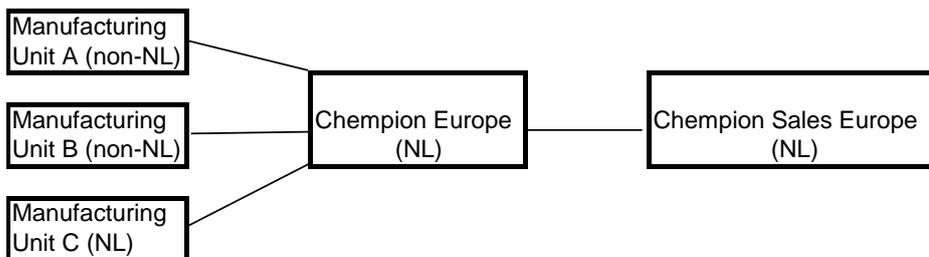
If the manufacturing unit had information on imports and exports, these data could have been used for the estimation of output. However, the manufacturer is not engaged in foreign trade since the parent company is located in the Netherlands. In addition, the parent company established a wholesale unit in the Netherlands that operates separately from the manufacturing unit. This wholesale unit submits data to the survey for International Trade Statistics. Table 2 shows the statistics of the wholesale unit.

**Table 2. Statistics of the wholesale unit**

<b>Wholesale unit</b>	
<i>Production Statistics</i>	
Sales	400
Purchases for resale	350
Intermediate consumption	10
Gross value added	40
- wages	10
- other income	30
Number of persons employed	200
<i>International Trade Statistics</i>	
Imports	100
Exports	300

The wholesale unit operates in the European market. The parent company sells final products to this unit whenever there are customers for the final products. The problem of internal transfer pricing at non market prices (cost prices) might occur in this case. It can be concluded that a part of the exports is produced in the Netherlands. It should be possible to link this with the data of the manufacturing unit.

Figure 2 shows the organizational structure of the multinational enterprise.

**Figure 2. The organizational structure of ‘Chempion’**

SN found out that it makes sense to ask Chempion Europe for data on the manufacturing unit. In SN's Business Register the parent company is considered a small unit as the number of persons employed is small. Usually, small companies are required to submit data on a sample basis. The wholesale unit and the manufacturing unit are required to submit data. In cooperation with the parent company (Chempion Europe) SN managed to obtain data on raw materials and output of the manufacturing unit at market prices. Since the parent company owns manufacturing units in other countries as well, the problem of the demarcation of foreign units arises here. This problem is discussed with the parent and it can provide the necessary data. Information on the Dutch activities can be provided by the respondent by deconsolidating the foreign affiliates from

the books. The problem with internal transfer pricing between the parent company and the wholesale unit does not occur. The data from the wholesale unit (Chempion Sales Europe) show a normal trade margin. The unit does not produce a high gross value added and does not have a high operating surplus. Based on additional information, SN was able to adjust the figures of the manufacturing unit in the NA. Table 3 shows the adjusted figures.

The adjustments are relevant to the production structure of the Dutch economy. Due to the adjustments SN has complete information on intermediate consumption and production of the Dutch manufacturing unit. The adjustment also leads to the consistency between Production Statistics and International Trade Statistics. Without the adjustments the link between imports and exports of Chempion Europe and the production of the manufacturing unit could not be made.

**Table 3. Statistical reconstruction of the Dutch manufacturing unit of 'Chempion'**

	Original	Adjustments	Adjusted
<b>Parent company</b>			
Sales to wholesale unit	-	250	250
Industrial services	-	50	50
Purchases of raw materials	-	200	200
Gross Value Added	-	0	0
<b>Manufacturing unit</b>			
<i>Production Statistics</i>			
Production	50	200	250
Intermediate consumption	10	200	210
Gross Value Added	40		40
- wages	35		35
- operating surplus	5		5
Number of persons employed	750		750
<b>Wholesale unit</b>			
<i>Production Statistics</i>			
Sales	400		400
Purchases for resale	350		350
Intermediate consumption	10		10
Gross value added	40		40
- wages	10		10
- other income	30		30
Number of persons employed	200		200
	<b>Manufacturing unit</b>	<b>Parent company</b>	<b>Wholesale unit</b>
Observation before adjustment	Yes, incorrect	Not applicable	Yes, correct
Observation after adjustment	Yes, correct	Yes *)	Yes, correct
*) This unit is too small for direct measurement and provides only additional information on the manufacturing unit.			

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): no

#### Example 2

*‘Fiasco System International Ltd’ is a producer of hardware and software and supports computer networks. The central sales office is established in the Netherlands, while assembly plants are located abroad. Problems arise with cost calculations within the enterprise (transfer prices).*

**Indication of the economic relevance: operating income/value added of ‘Fiasco’ amounts to 0.3%-point of GDP.**

A summary of the profit-and-loss account for year T is shown in table 4.

**Table 4. Profit-and-loss account of ‘Fiasco’**

Turnover	7500
Cost and expenses	4800
Gross profit	2700
Expenses for development and research	600
Selling expenses	850
Administrative expenses	80
Operating income	1170
Net property income received	-30
Income before taxes	1140

According to additional information the selling expenses consist of wages (70) and expenses charged of group companies (780) at cost price. ‘Fiasco’ claims a supporting role of the group companies. They maintain contacts with customers and draw up the contracts of sale. The Dutch enterprise has the final responsibility for sales and after sales services such as warranties. The group companies receive a compensation for expenses from the Dutch unit. In practice the (foreign) group companies do not have any profits.

Some options for adjustments on the figures:

- Allocation of operating income (value added) to the Netherlands and to the non-resident units in proportion to the number of employees, for example 10% of value added to the Netherlands and 90% to the rest of the world. This implies an upward adjustment of 1050 =

90% of 1170 (operating income) on selling expenses to 1900. Subsequently, operating income of 'Fiasco' is reduced by the same amount. The operating income of the (foreign) group companies will be paid to the Dutch enterprise as 'quasi dividend'. As a result the adjustments do not change income before taxes (see table 5).

**Table 5. Profit-and-loss account of 'Fiasco' (adjusted, option 1)**

	Original	Adjustments	Adjusted
Turnover	7500	0	7500
Cost and expenses	4800	0	4800
Gross profit	2700	0	2700
Expenses for development and research	600	0	600
Selling expenses	850	1050	1900
Administrative expenses	80	0	80
Operating income	1170	-1050	120
Net property income received	-30	1050	1020
Income before taxes	1140	0	1140

- Option 1 was impossible because of insufficient data on the number of people employed at (foreign) group companies. However, additional information is available on the share of the sales for transit abroad. This share is about 99% of total turnover. Only 1% is related to the sales of goods in the Netherlands. Using assumptions on the trade margins for sales in the rest of the world (via non-resident group companies) and trade margins on domestic sales, the operating income of the resident company has been estimated. In this example operating income as a percentage of the transit margin that can be attributed to 'Fiasco' has been fixed at 5. Operating income as a share on the domestic sales margin is supposed to be 40% (equals margin on total sales).

Calculation of the corrections in the table below:

Gross profit = 2700 of which:

99% on goods outside the Netherlands = 2670 (A)

1% on goods in the Netherlands = 30 (B)

Operating income on (A) is 5% = 133

Operating income on (B) is 40% = 12

Operating income on (A) + (B) attributed to 'Fiasco' = 145.

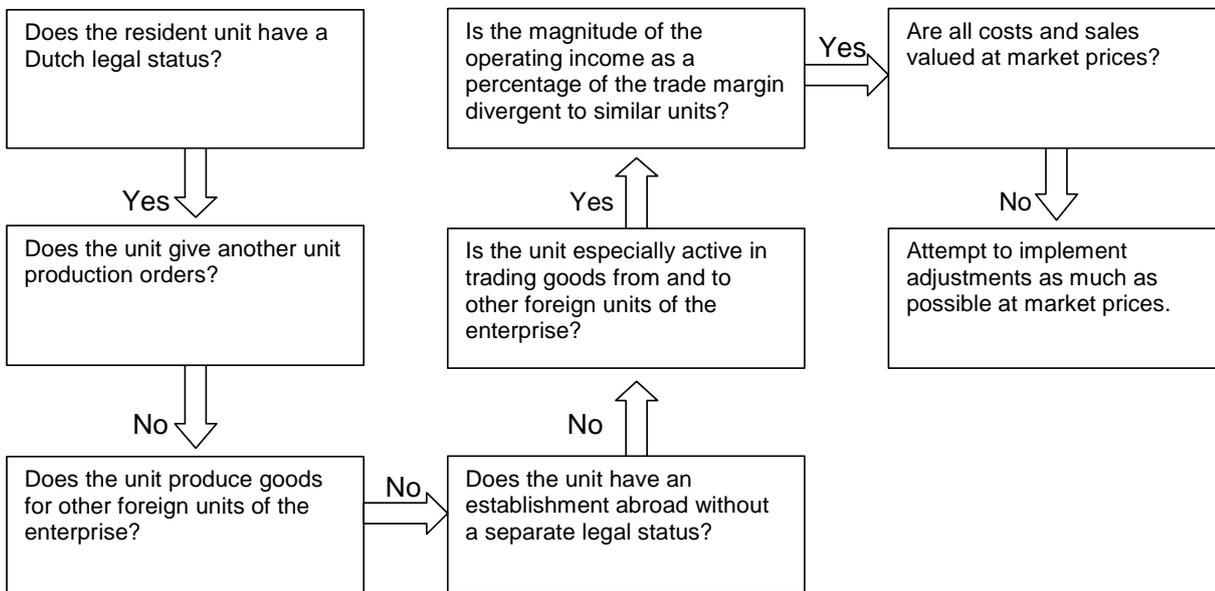
Total adjustment on the operating income of the unit in the Netherlands:  $1170 - 145 = 1025$  (see table 6).

**Table 6. Profit-and-loss account of ‘Fiasco’ (adjusted, option 2)**

	Original	Adjustments	Adjusted
Turnover	7500	0	7500
Cost and expenses	4800	0	4800
Gross profit	2700	0	2700
Expenses for development and research	600	0	600
Selling expenses	850	1025	1875
Administrative expenses	80	0	80
Operating income	1170	-1025	145
Net property income received	-30	1025	995
Income before taxes	1140	0	1140

Figure 3 shows the ‘decision diagram’ for this case.

**Figure 3. ‘Decision diagram’ applied to Fiasco system international ltd.**



To conclude, a substantial downward adjustment on the production account (i.e. the operating income and value added) of 1025 must be applied. The (foreign) group companies pay 1025 as ‘quasi dividend’ to ‘Fiasco’. This correction does not affect income before taxes.

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: no
- GDP (value added): yes.

*Example 3*

*A producer of trucks, 'The Model T-Ford Company Ltd', has a large-scale production plant in the Netherlands. The parent company is established abroad. The Dutch respondent is not able to provide data on outputs and inputs and confines the specifications to industrial services.*

***Indication of the economic relevance: Share of 'T-Ford' in national motor vehicle production amounts to 20%, export share amounts to 14%.***

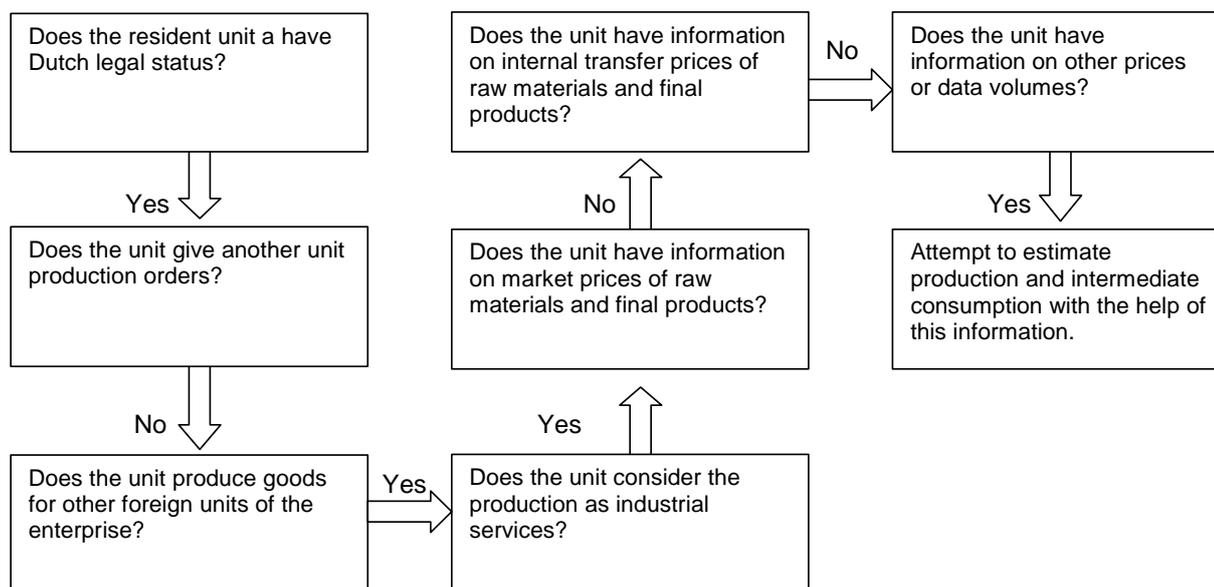
In year T, a producer of trucks, 'The Model T-Ford Company Ltd', established in the Netherlands, was taken over by a foreign (parent) company. From that moment onwards, invoicing has been in the hands of the parent company. The production process in the Netherlands does not undergo any changes. This also applies to the recording of the import of truck components via the non-resident parent company to the resident group company, and the export of trucks in International Trade Statistics. However, the Dutch respondent is unable to continue the provision of data on gross output and inputs, and confines the specifications to industrial services and related inputs (energy and other expenses). The imported components (input) and the sales of trucks inside and outside the Netherlands (gross output) are not recorded anymore in the Production Statistic. This is contrary to ESA article 3.133 that deals with the deliveries between affiliated enterprises. For the time being NA reconstructs data on gross output and inputs with the help of international trade data and the production structure of 'T-Ford' in year T-1. Table 7 shows the adjusted figures.

**Table 7. Statistical reconstruction of the Dutch manufacturing unit of 'T-Ford'**

Year	T - 1	T	T (Adjusted by National Accounts)
Total sales (production)	1400 (of which export 1220)		1440 (of which export 1280)
Cost and expenses (inputs)	1340 (of which import components 1100)	95	1380 (of which import components 1130)
Gross profit (value added)	60	60	60
Wages	55	55	55
Operating income	5	5	5
Compensation by parent company for industrial services		155	

Figure 4 shows the 'decision diagram' for this case.

**Figure 4. ‘Decision diagram’ applied to the model T-Ford company ltd**



Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): no

#### Example 4

*‘Logic International Ltd.’ is a producer of computers with manufacturing units abroad and call centre activities in the Netherlands. The industrial activities abroad are unjustly recorded as resident activities in the source statistics.*

***Indication of the economic relevance: recording ‘Logic’ in the National accounts would raise the production output and value added of the manufacture of office machinery and computers with 80% and 15% respectively.***

This is the case of a holding company of computer activities including a call centre for Europe located in the Netherlands and with foreign affiliates (production plants of computers) in two European countries. Invoicing of the products and the inputs (computer components) takes place via the Dutch holding. According to the information of the respondent, the ‘power of control’ of the production plants is delegated to the local, i.e. non-resident, management. The resident respondent only claims activities with an administrative and fiscal background. The unit is classified in the industry manufacturing of computers.

In this case the gross registration of ‘Logic’ in the Production Statistic is not based on the territory principle. The recording of the industrial activities is motivated by the Dutch ownership of the inputs and the products and steering of the production processes. The value of the inputs includes a certain amount for the industrial services.

On the other hand NA claims a smaller value added (i.e. wages concerning some staff and administration plus attributed operating income to the resident unit) because the production process takes place outside the Netherlands. Moreover the construction of the holding with foreign affiliates excludes the possibility of industrial services. Furthermore, because the resident unit is considered as a 'trading company' and not as a producer of computers, exports (500) and imports (400) of Logic are recorded as re-export.

The adjustments are based on ESA art. 2.04: the limits of the national economy are defined in terms of resident production units; gross domestic product is the result of activities of resident production units (territory principle).

To conclude, the adjustment on the value added of the resident unit relates to the operating income, that is the remuneration for capital that can be attributed to the Netherlands by deconsolidation. Table 8 shows the adjusted figures.

**Table 8. Statistical reconstruction of 'Logic international ltd'**

<b>Reconstruction Logic Int. Ltd</b>	<b>Original</b>	<b>Adjustments</b>	<b>Adjusted</b>
	Profit-and- loss account	Profit-and- loss account	Profit-and- loss account
Total sales (gross outputs)	3300	-3255	45
Cost and expenses (inputs)	3200 *)	-3190	10
Gross profit (value added)	100	-65	35
Wages	30	0	30
Operating income	70	-65	5
Not property income received	10	65	75
Income before taxes	80	0	80
*) Of which industrial services by units outside the Netherlands: 200			

Are the adjustments relevant to:

- The production structure of the Dutch economy: yes
- Inconsistencies between statistics: yes (Production and International Trade Statistics)
- GDP (value added): yes.

## Summary and some conclusions

This paper discussed the problems related to the registration of multinational enterprises in the National Accounts of Statistics Netherlands (SN). Many problems in regard to consistency of data of source statistics are related to large multinational enterprises. The guidelines of SNA and ESA do not offer solutions to all problems. SN devised some tailor-made solutions. This paper focuses on a number of these solutions. Where adjustments are necessary they may have substantial implications for the production structure of the national economy and GDP. A major objective is the consistency between statistics. Noticeable is the rapid increase in the number of respondents in industrial statistics who claim to have changed their regular production processes to industrial services as a result of the reorganization of a multinational. Usually it concerns combinations of several production plants and one central purchasing and sales unit. The legal ownership of inputs and products rests with the (foreign) parent company or central purchasing and sales unit. Problems arise in regard to the measurability of the production unit. It should be noted that SN in principle relies on what the respondents have to offer. However, specifications sent by respondents that stand in the way of an adequate description of the national economy should be subordinate to the interests of good statistics. This requires persistence and creativity of the statistician. At this moment a number of cases are treated in the 'M&D' project of SN in an incidental and individual manner. SN's challenge is if the necessity for methodological reform must coincide with changes in the organization. One can think of a new organization unit focussed on micro integration of MNE's (= consistency in the relevant statistics on the level of enterprises). Concurrently to the 'M&D' project, a new project called Congo has been started. This in time will lead to another statistical production process, where the treatment of larger enterprises will differ from smaller enterprises. Finally, the big challenge is international coordination on the level of enterprises (MNE's). This consistency will only occur when national statistical offices involved exchange information and agree on how to register certain transactions. Possibly international organizations, such as the OECD, can play a coordinating role.

## References

- [1] Roosendaal L. (2003), 'Multinationale ondernemingen', Internal SN document.
- [2] Stokrom, van N. & L. Roosendaal (2004), 'Measurement of the activities of multinational enterprises', Paper prepared for the 28<sup>th</sup> General Conference of The International Association for Research in Income and Wealth (IARIW), Cork, Ireland, August 2004.

## 5. Mirror and reconciliation exercises for external trade statistics between Norway and Ukraine

by Statistics Norway (SSB), State Statistics Committee of Ukraine (SSCU) and State Customs Authority of Ukraine<sup>1</sup>

### Abstract

This working paper presents the results of a joint mirror study between the State Statistics Committee of the Ukraine (SSCU), Statistics Norway (SSB) and the State Customs Authorities of the Ukraine. By using mirror statistics exercises one can reveal differences in the metadata of the datasets that are compared and errors within the trade statistics. The results can give an indication of the quality of the trade statistics. We focused mainly on the years 2005 and 2006 and used trade data from UN Comtrade database together with national statistics both provided by the SSCU and the SSB.

The most extraordinary result was for the case of Norwegian export of fish to the Ukraine, especially frozen herring. From the years 2001 to 2005, there were relatively small differences between Ukrainian import and Norwegian export in terms of quantity, while in value the Ukrainian import made up only about half of the Norwegian reported export value. This could indicate misreporting of import value. In 2006 the results were improved for the asymmetries within value. This could be explained by increasing border control on the Ukrainian border, especially for so-called risk commodities, fish being one of these.

Trade via third countries was considered being an important explanation for a large part of the asymmetries present in the datasets. This implies either unknown final destination country by the exporter or unknown country of origin by the importer. This was especially the case for snow skis and textiles imported to Norway from the Ukraine. The Norwegian export was also subject to a great deal of confidentiality, which also naturally affects the asymmetries present.

From May 2007 the customs in Norway and in Ukraine also have an agreement to exchange detailed data on specific conspicuous cases, something that also can improve the quality of the trade statistics. Concerning trade via third countries, this is a more difficult factor affecting the mirror statistics. Intermediate stops in third countries for some processing of commodities seem to reduce the chance for the exporter or importer to get correct knowledge of either the final destination or the correct country of origin. As globalisation increases, asymmetries due to trade via third countries may increase due to more intermediate stops and processing in other than the exporting or importing country.

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<sup>1</sup> Christine Kleppe and Leif Korbøl from Statistics Norway (SSB), Anatoly O.Frizorenko, Larysa M.Matronich and Olga V.Dyachenko from State Statistics Committee of Ukraine (SSCU), Natalia M.Antonova and Dmytro S.Miroshnichenko from State Customs Authority of Ukraine.

## Background

This paper presents the main results from a joint mirror study between the statistical authorities of the Ukraine and Norway. The starting point of this cooperation was a mirror exercise performed by Anne Berit Dahle (2006) for trade statistics from the year 2002 for the TACIS seminar in Luxembourg in March 2006. This created the initial part of the possible cooperation of a mirror study between the Ukraine and Norway. The main conclusion from this exercise was the conspicuous asymmetry in the trade in fish between Norway and the Ukraine for 2002. The discrepancy between Norwegian export of fish to Ukraine, and the equivalent import of the Ukraine was considerable. While measured in value the Norwegian export exceeded the Ukrainian import but the opposite was the case when measured in quantity. Due to this and other discrepancies found for certain commodities, the need for a follow up examination of this field was proposed as a final comment.

The advantage of cooperation between statistical authorities is the possibility of sharing information and resources and the opportunity of direct communication. This may create greater opportunities for revealing errors both within the national datasets and within the separate systems of managing the data. By regarding this, it is easier to predict the cause of discrepancies also outside the statistical system. A joint study between statistical and custom authorities in both trading countries might be more thorough than a mirror exercise performed by an exterior country, an international organization or only one of the trading countries. This method might also be timesaving since information will be more easily accessible to all parties involved.

Two working meetings have been held, the first took place in Kiev (25-26 January, 2007) and the second in Oslo (19-20 April, 2007). Aide memoirs from both these meetings can be found in the appendix. In addition to the State Statistics Committee of Ukraine (SSCU) and Statistics Norway (SSB), the Customs Authority of Ukraine and the Norwegian Customs and Excise (NCE) have been involved in working meetings and discussions. With these authorities involved, the results from this exercise reaches also the practical sides of the problems concerning discrepancies within mirror statistics and invites to further and more detailed studies in the future.

At the first working meeting in Kiev a draft of the final report was presented with the preliminary results from the mirror exercise. This was based upon initial findings from UN Comtrade and focused on data from 2004 and 2005. During this working meeting the trade of several commodities between Norway and Ukraine was discussed, together with the asymmetries present and potential explanations for these. Fish was an especially interesting commodity, since this is the largest trade commodity between Norway and Ukraine. Data for 2005 and the years prior to this show remarkably results, indicating that the value of Norwegian fish was severely reduced from the point of Norwegian export to the actual import in Ukraine. Before the second working meeting preliminary data for 2006 were exchanged and reviewed upon. During this meeting these sets of data were compared and investigated further, in addition to a closer look upon some selected commodities. One of the main reasons for discrepancies agreed upon in Kiev was trade via a third country. Due to this, extensive datasets over country of consignments for both Norway and Ukraine were prepared before our next working meeting in Oslo in April. These were here discussed, together with the figures for 2006.

This report was finalized in May 2006 after our last working meeting and is based upon these meetings, the discussions and the datasets available for the time period of investigation. Note that especially Norwegian export is subject to extensive confidentiality in the dataset. Where relevant this is mentioned, but still these suppressed figures can not be published.

### *Mirror statistics*

By performing a mirror statistics exercise on a country's registered trade and its trade partner's equivalent trade flows one can compare datasets that are reflecting the same economic relations. While the Ukrainian export to Norway should equal the Norwegian import from the Ukraine, as also for the opposite flows, this is rarely the case. Asymmetries are close to always present, and examining these can give us some indication of the management of the trade statistics in the trading countries and the quality of the trade statistics, and can potentially reveal significant discrepancies caused by errors in one or both of the datasets.

Differences in such equivalent datasets may result in confusion for the users of the trade statistics and the figures may appear as unreliable and inconsistent. Through a mirror statistics exercise, these problems are detected and possible adjustment methods for harmonization between the datasets are presented. Even though discrepancies might also occur after examination and adjustments, these differences will hopefully be perceived as more understandable and accounted for in the use of the trade statistics. The information such exercises present are therefore both useful and necessary within work relating to the quality of international trade statistics.

There are several possible reasons for discrepancies. The most common ones are here shortly mentioned. The valuation of exports versus imports often causes asymmetries due to a FOB valuation of exports and a CIF valuation of imports. This results in a slightly higher import value than export value. Trade via third countries is one of the main explanatory reasons for discrepancies within mirror statistics. The asymmetries arise when a commodity is sent through a third country before ending up in the final destination country. Typically the exporter sends its commodity to a third country and do not know the actual final destination of its product, hence will report the third country as its destination. The same can happen to the importer, through the lack of information of the country of origin, hence reporting the country of consignment as country of origin. Other reasons can be threshold levels of reporting imports and exports, different exchange rates used when converting the values into a common currency and suppression of confidential data. In addition differences in data management such as compilation, classification, editing and revision, together with the trade system used in the comparing countries and time lag in reporting the trade flow, might create discrepancies in the datasets. Finally, errors, both deliberate and unintentional, can create asymmetries between the export and import registered. Some of these reasons may be explained in a straightforward way and can easily be adjusted or accounted for in a mirror statistics exercise between two trading countries. This is such as different treatments of the incoming data, threshold levels for reporting, estimation methods and classification of products. Other discrepancies may also be explainable to a certain degree, but harder to prevent, such as confidentiality in the partner country's trade statistics. Deliberate and unintentional errors in the datasets can be more difficult to both discover and adjust for.

## *Data*

The main source for our data is the UN Comtrade database. The choice of this source is based on easy access in addition to the already transformed trading values into a common currency. This simplifies the exercises and makes the figures more easily comparable.

Both Ukraine and Norway compile their statistics in accordance with the guidelines of the United Nations Statistics Division publication "International Merchandise Trade Statistics: Concepts and Definitions, IMTS" (1998) (Series M, No 52, Rev.2). The Ukrainian data in the UN Comtrade is based on the Harmonized System (HS) version of 1996, while the data contributed by Norway is the equivalent HS 2002. These different classifications seem not to create problems for the comparisons.

Both Norwegian and Ukrainian figures on import are reported according to country of origin, and at a CIF value. Exports are reported with the last known country of destination and at a FOB value. Since the CIF import value includes the transfer costs up to the entry into the country, this value is usually somewhat higher than the FOB export value. The Ukrainian data were reported to the UN in USD, so there was no need for any further conversion. As for the Norwegian import and export figures, these were reported in NOK, and the currency conversion factor in 2005 for the import and export values is 0.155103 and 0.155108 respectively. In 2006 this was 0.156078 both for imports and exports.

In addition to data from the UN Comtrade we also have made use of national statistics. In the case of Norway the source is StatBank Norway, which is the statistic database of Statistics Norway. The figures presented here are equal to those reported to the UN, but have a longer time range. In addition, more specific and detailed data are available. Ukrainian detailed data, on for instance country of consignment, was retrieved directly from the SSCU.

Concerning comparison of data, both countries make use of the Harmonized system up to a HS 6 digit level. On an 8-digit level however, Ukraine and Norway have different systems of classification. This can create errors when comparing trade of certain commodities on such a detailed level, and will require additional information about the commodity codes. Norway does not have an English nomenclature on the commodities' labels beyond a six-digit level. These would require translation for so to be comparable to the Ukrainian 8-digit nomenclature.

The UN Comtrade presents data on a HS6 digit level as a basis. As already mentioned, in Norway several commodities are subject to confidentiality, something that naturally affects the trade data. However, on a total level, this is not the case in the Norwegian national statistics. But only detailed, already suppressed data is sent to the UN, which implies that the totals the UN operates with is subject to confidentiality even for the commodity groups that is not suppressed on an aggregated level.

## Results

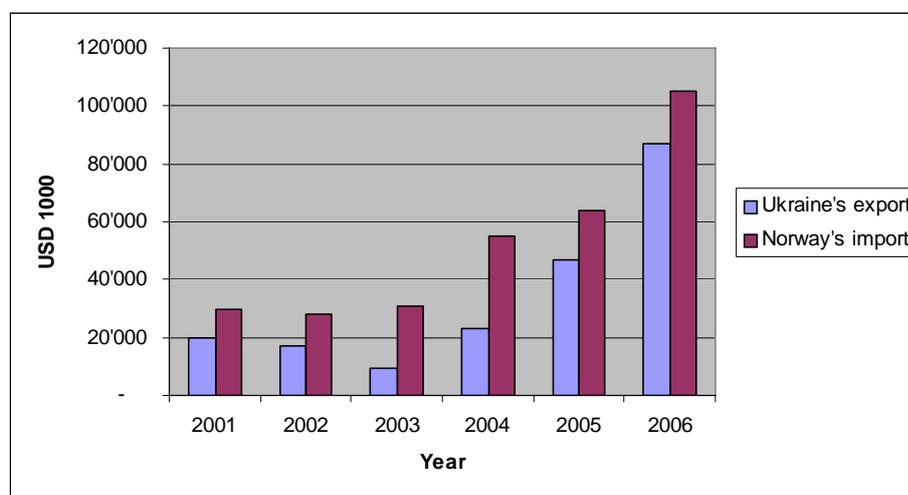
In the next section we will present the results from our findings. We will take into consideration the data that has been analyzed, the metadata for both Norway and Ukraine and the conclusions and outcomes of our working meetings.

This part of the report is split, the first part presenting the commodity flow from Ukraine to Norway, and the other the commodity flow from Norway to the Ukraine. The commodities that will be commented are the products with the largest value flows and the largest discrepancies, and especially those that were discussed in the working meetings. Norwegian export of fish to Ukraine is mentioned in a separate section. This is due to our special attention to this product.

### Trade from Ukraine to Norway

In 2006, less than one percent of Ukraine's export is reported with Norway as the last known country of destination, making the Ukrainian export to Norway significantly smaller than its export to its main trading partners. For Norway as well, imports from the Ukraine constitute only a small part of its total imports, approximately 0.11 percent in 2005 and 0.16 percent in 2006. However, the trend the last years shows a growth in trade between Ukraine and Norway. This can be seen in figure 1 which shows the development between Ukrainian export and Norwegian import from 2001 till 2006, measured in USD thousand.

**Figure 1. Ukraine's export and Norway's import, 2001 – 2006. USD thousand**



Source: UN Comtrade (14.05.2007)

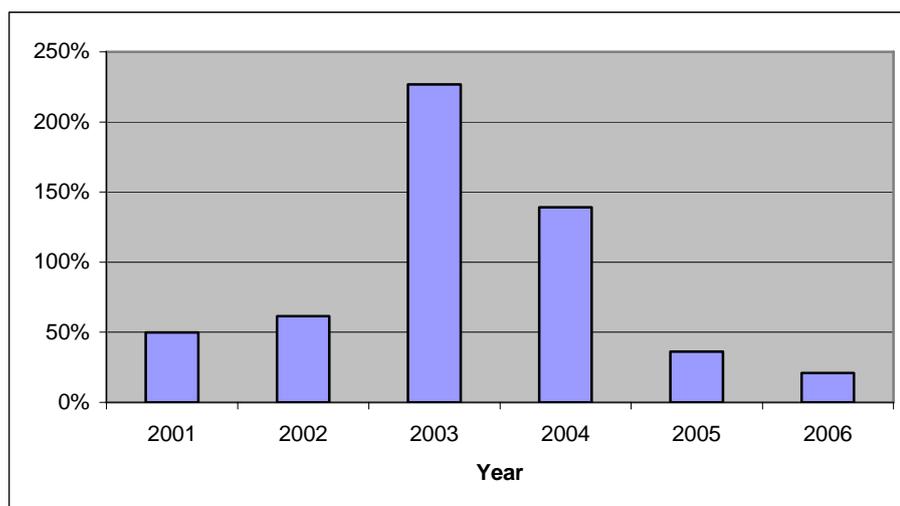
Figure 1 shows a relatively large increase in the trade between Ukraine and Norway from 2001 to 2006, both for the Ukrainian export and the Norwegian import.

The trade of commodities from Ukraine to Norway was relatively low in 2003, valued at USD 9 million, a decrease from the previous year of almost 84 percent. However, from 2003 the Ukrainian export started to increase significantly, and the Ukrainian reported export with

Norway as destination country has close to doubled every year from 2003 to 2006. Ukraine has a registered export to Norway in 2006 of USD 87 million, an increase of approximately 86 percent since 2005. The equivalent results from Norway also reflect this growth in trade of commodities from Ukraine to Norway. From 2005 to 2006 the Norwegian registered import with Ukraine as country of origin increased from USD 64 million to USD 105 million.

As seen in figure 1, the Norwegian import exceeds the Ukrainian import all years we have looked at. However, the relative discrepancies are decreasing. This is shown in figure 2.

**Figure 2. The relative difference between Ukraine's export and Norway's import ((Import-Export)/Export \* 100). 2001 – 2006**



Source: Comtrade (14.05.2007)

Measured in percentages, the Ukrainian export made up 83 percent of the Norwegian import in 2006, as opposed to 74 percent in 2005 and 42 percent in 2004. As seen from figure 2 the largest relative difference between the Ukrainian export and the Norwegian equivalent import is in 2003. This year Ukraine has a registered export of USD 9 million as opposed to Norway's reported import at USD 31 million. The import value, export value and the differences between these can be seen in table 1.

**Table 1. Ukraine's export, Norway's import and the discrepancies. 2001 – 2006. USD thousand**

	Ukraine's export (UA Exp)	Norway's import (NO Imp)	Discrepancy (NO Imp - UA Exp)
2001	19 907	29 844	9 938
2002	17 311	27 936	10 625
2003	9 430	30 807	21 376
2004	23 049	55 093	32 044
2005	46 854	63 785	16 932
2006	87 025	105 236	18 211

Source: UN Comtrade (14.05.2007)

Measured in value the largest discrepancy from the period 2001 to 2006 is found in 2004. This year the Norwegian import was USD 55 million, exceeding the Ukrainian export by USD 32 million. While the discrepancy in 2005 amounted to USD 17 million, the equivalent in 2006 was approximately USD 18 million, constituting approximately 21 percent of the Ukrainian export value.

We will now look into more detailed data, and focus on the different commodities exported from the Ukraine to Norway and examine any discrepancies present within these datasets. The starting point is statistics for the HS two-digit level, and we will concentrate on the main commodities traded and the commodities with exceptionally high discrepancies.

### Commodities from Ukraine to Norway

The Ukrainian domestic production is mainly within the fields of heavy industry. Of the total Ukrainian export to the world in 2006 about 34 % fell under the commodity group of iron and steel (HS 72), this being the largest export article of the Ukraine to the world. This also constitutes the main commodity exported from the Ukraine to Norway. In 2005 this commodity made up 62 percent of the total commodities exported to Norway from the Ukraine, while in 2006 this had decreased to 46 percent. The group of iron and steel (HS 72) together with the other main exported commodities from Ukraine to Norway in 2005 and 2006 can be seen in table 2 and in table 3.

**Table 2. Main commodities exported from the Ukraine to Norway, Norway's equivalent imports and discrepancies. 2005. USD thousand**

HS2	Commodity group	Ukraine's Export (UA Exp)	Norway's Import (NO Imp)	Discrepancy (NO Imp – UA Exp)
	Total	46 854	63 785	16 932
72	Iron and steel	29 167	14 394	-14 774
28	Inorganic chemicals precious metal compound, isotopes	4 730	13 656	8 926
89	Ships, boats and other floating structures	9 501	9 528	27
86	Railway tramway locomotives rolling stock equipment	1 416	1 707	290
44	Wood and articles of wood; wood charcoal	1 004	2 234	1 230

Source: UN Comtrade (09.11.2006)

**Table 3. Main commodities exported from the Ukraine to Norway, Norway's equivalent imports and discrepancies. 2006. USD thousand**

HS2	Commodity group	Ukraine's Export (UA Exp)	Norway's Import (NO Imp)	Discrepancy (NO Imp – UA Exp)
	Total	87 025	105 236	18 211
72	Iron and steel	39 593	6 021	-33 572
28	Inorganic chemicals precious metal compound, isotopes	26 376	55 052	28 676
89	Ships, boats and other floating structures	15 483	10 193	-5 290
86	Railway tramway locomotives rolling stock equipment	1 804	2 132	329
44	Wood and articles of wood; wood charcoal	1 732	2 499	767

Source: UN Comtrade (14.05.2007)

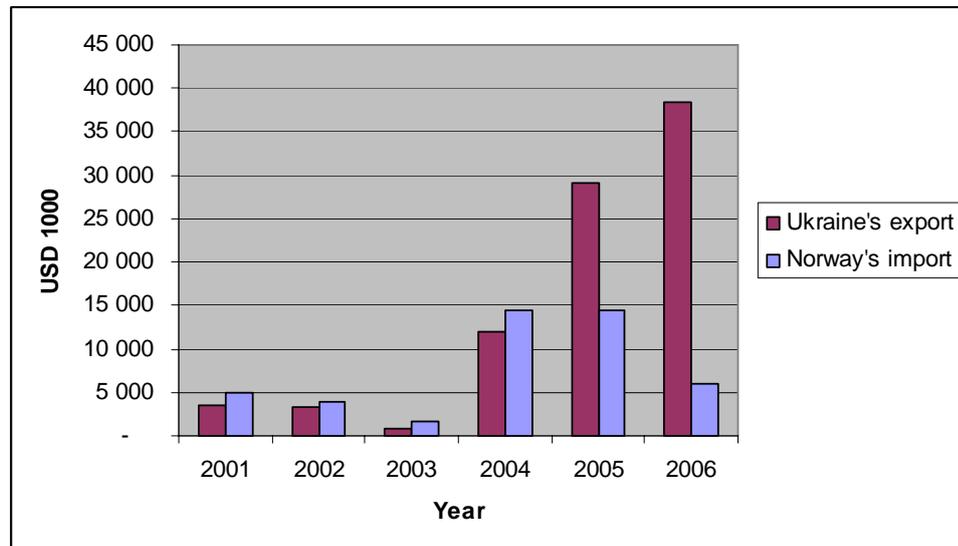
A selection of the commodities traded between Norway and the Ukraine will be reviewed in the following sections.

### **Iron and steel (HS 72)**

As for the largest traded Ukrainian product; iron and steel (HS 72), the Ukraine reported in 2005 an export at a value more than twice as much as the Norwegian reported import. As seen from table 2 this is the only one of the commodities presented that is subject to a negative discrepancy in 2005, meaning where the Ukrainian export is exceeding the Norwegian import. While the Ukrainian export of this commodity group increased with 36 percent from 2005 till 2006, amounting to almost USD 40 million in 2006, the Norwegian recorded import decreased. In 2005 the Norwegian import was valued at USD 14 millions and in 2006 this was reduced to USD 6 million, increasing the discrepancy between the Ukrainian recorded export and the equivalent Norwegian reported import.

Another way to study the discrepancies is to see these in terms of quantity as opposed to value. In quantity the difference within commodity group 72 is even larger. Close to all of the imported goods in Norway under HS 72 fall under flat-rolled products of iron or non-alloy steel (HS 7208). The Norwegian import of this product group made up close to 50 percent of the Ukrainian export value in 2005 while the equivalent for quantity is 36 percent. In 2006 the equivalents are 16 percent when looking at value and 11 percent for quantity. This indicates increasing asymmetries for this commodity group. Figure 3 shows the Ukrainian export and the Norwegian import of flat-rolled products of iron or non-alloy steel (HS 7208) for 2001 – 2006, measured in value.

**Figure 3. Ukraine's export and Norway's import of flat-rolled products of iron or non-alloy steel (HS 7208). 2001 - 2006. USD thousand**



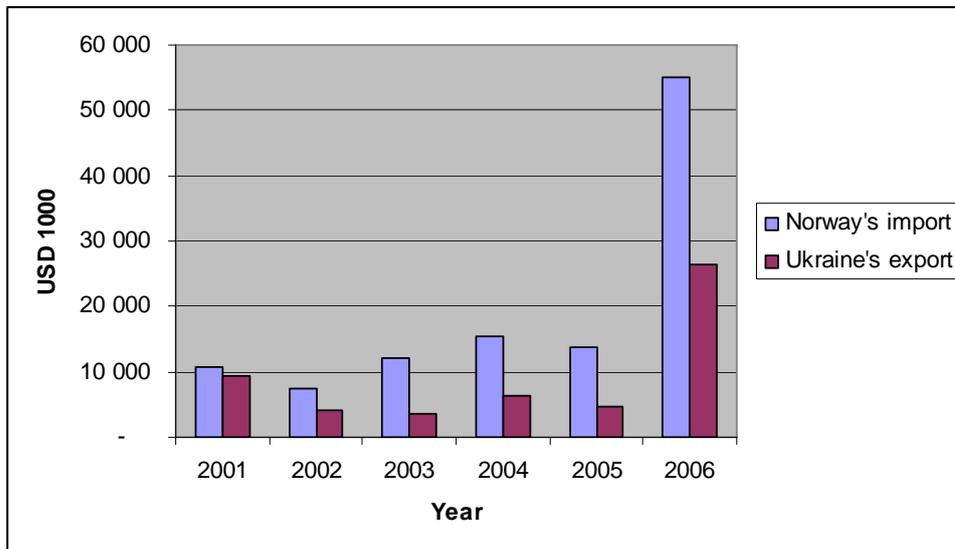
Source: UN Comtrade (14.05.2007)

As seen from figure 3 the Norwegian registered import value is significantly less than the Ukrainian recorded export value in 2005 and in 2006. This is the opposite case for the other years presented. One reason for this discrepancy the two last years could be increasing trade via third countries. When looking at Norwegian detailed data we see that 85 percent of all imports of commodity group 7208 come from Belarus. 15 percent is reported with Switzerland as a country of consignment. Since the Ukrainian reported export is so much higher than the equivalent Norwegian import, there could be a possibility that Norway has wrongfully stated countries like Belarus or Switzerland instead of the Ukraine as the country of origin. This is due to the use of these countries as intermediate trade stops.

### **Inorganic chemicals precious metal compound isotopes (HS 28)**

In 2006 Norway imported commodities within the group of inorganic chemicals for approximately USD 55 million, about four times as much as in 2005. The registered Ukrainian export also increased significantly from just below USD 5 million in 2005 to USD 26 million in 2006. This development can be seen in figure 4.

**Figure 4. Ukraine's export and Norway's import of inorganic chemicals precious metal compound isotopes (HS 28). 2001 - 2006. USD thousand**



Source: UN Comtrade (14.05.2007)

This increase is mainly a result of an increase within anhydrous ammonia (HS 281410), which in 2006 made up more than 99 percent of total Norwegian import of inorganic chemicals from the Ukraine. As seen from figure 4, the Norwegian import exceeds the Ukrainian import all years. In 2005 did the Ukrainian make up 28 percent of the Norwegian import, in 2006 did this improve to 47 percent. A potential reason for this discrepancy can be trade via third countries and for instance unknown country of final destination at the time of the export. For this commodity group there was also some discussions about systematic errors in the datasets. This is difficult to reveal through general statistics, and will be further discussed between the customs.

#### **Other products from the Ukraine to Norway (HS 61, HS 62, HS 95)**

The earlier mentioned mirror exercise for trade between Norway and the Ukraine performed for the year 2002 found remarkable discrepancies for manufactured goods, mainly clothes and sports equipment, and explained these with trade via third countries. This exercise was at that time performed with the basis of SITC 03. We will examine these commodity groups further, but now with the Harmonized system as a starting point. The main commodity groups subject to this are articles of apparel, accessories, knit or crochet (HS 61), articles of apparel, accessories, not knit or crochet (HS 62) and toys, games, sports requisites (HS 95). Together these groups made up 19 percent of the total Norwegian import from the Ukraine in 2005 and 16 percent in 2006. The trade of these commodities measured in USD, together with the discrepancies, is shown in table 4 and 5, for the years 2005 and 2006 respectively.

**Table 4. Ukraine's export, Norway's import and discrepancies of the commodity groups: HS 62, HS 95 and HS 61. 2005. USD thousand**

Commodity group		Ukraine's export (X)	Norway's Import (M)	Discrepancy (M - X)
HS 62	Articles of apparel and clothing accessories, not knitted or crocheted	7 019	5 257 047	5 250 028
HS 95	Toys, games and sports requisites; parts and accessories thereof	1 879	3 778 890	3 777 011
HS 61	Articles of apparel and clothing accessories, knitted or crocheted	0	3 306 416	3 306 416

Source: UN Comtrade (28.11.2006)

**Table 5. Ukraine's export, Norway's import and discrepancies of the commodity groups: HS 62, HS 95 and HS 61. 2006. USD thousand**

Commodity group		Ukraine's export (X)	Norway's Import (M)	Discrepancy (M - X)
HS 62	Articles of apparel and clothing accessories, not knitted or crocheted	0	6 040 223	6 040 223
HS 95	Toys, games and sports requisites; parts and accessories thereof	2 101	5 436 810	5 434 709
HS 61	Articles of apparel and clothing accessories, knitted or crocheted	0	5 173 834	5 173 834

Source: UN Comtrade (30.05.2007)

As seen from table 4 and table 5, the relative discrepancies within these commodities are remarkably large. To further examine the aspect of transshipment in relations to these groups, we focus on some of the largest commodity groups within these and look closer at their country of consignment.

The largest commodity on a six-digit level within the group of toys, games and sports requisites (HS 95) is snow-skis (HS 950611). In the study on 2002 all skis from the Ukraine were reported with Austria as the country of consignment. For 2005, 87 percent of all commodities under snow-skis (HS 950611) from the Ukraine came through Austria. In 2006 this had decreased somewhat, to 77 percent. Sweden is also registered as country of consignment for Norwegian import of skis from Ukraine. In 2005, 8 percent of all snow skis were reported with Sweden as country of consignment; in 2006 this had increased to 22 percent. This could explain some of the discrepancies within these commodities, if for instance Ukraine sends the skis to Switzerland without knowing the final destination of the product.

The figures shown in table 4 and in table 5 may indicate that this aspect also applies to the commodity group of articles of apparel, accessories, knit or crochet (HS 61) and commodity group articles of apparel, accessories, not knit or crochet (HS 62). As seen in table 4, the Ukraine had no registered export in 2005 of commodity group HS 61, while the equivalent Norwegian

import was USD 3.3 million. In 2006 this had increased to USD 5.2 million, while Ukraine still have no registered export to Norway of products within this group.

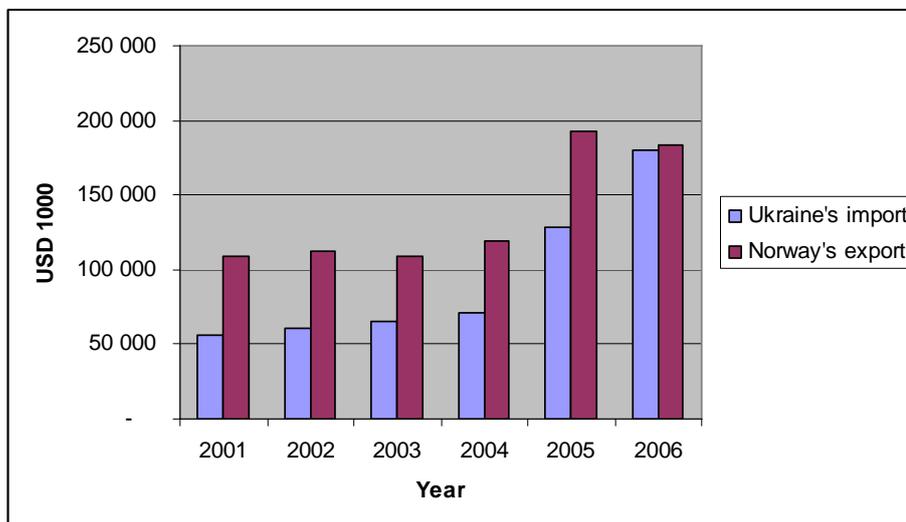
When looking at the Norwegian import figures for HS 61 in 2005, 70 percent of the import of this commodity group came through Denmark, while 15 percent came through Sweden. In 2006 import of this commodity group from the Ukraine with Denmark as country of consignment was approximately 68 percent.

In 2006 Norway has a registered import of commodity group HS 62 valued at USD 6 million. This was an increase of 56 percent from 2005. For products under this commodity group, 51 percent of the commodities from Ukraine in 2005 came through Sweden, 28 percent through Germany and 12 percent through Denmark. This could be an indication that the Ukrainian exporter did not know the final destination of the products. A potential reason could be further detailed processing in the specified countries before sent to Norway.

### Total trade from Norway to the Ukraine

In 2005 Norway exported commodities to the Ukraine at a value of USD 192 million. The equivalent reported import of the Ukraine was USD 128 million. While the Norwegian registered export in 2006 had decreased from 2005 with 5 percent till roughly USD 183 million, the Ukrainian import developed in the opposite direction. In 2006 the Ukrainian import was registered at roughly USD 180 million, a growth of approximately 40 percent since 2005. Figure 5 shows the development between the Ukrainian import and the Norwegian export, both measured in value, for the years 2001 to 2006.

**Figure 5. Ukraine's import and Norway's export, 2001 - 2006. USD thousand**



Source: UN Comtrade (14.05.2007)

Figure 5 shows relatively stable flows from Norway to the Ukraine from 2001 to 2004, with the Ukrainian import valued on average at USD 63 million per year. During this period Norway exported commodities to the Ukraine on average at a value of USD 112 million per

year. However, in 2005 both the Ukrainian import value and the Norwegian export value increased significantly. The development in import value, export value and the discrepancies from 2001 to 2006 can also be seen in table 6.

**Table 6. Ukraine's import, Norway's export and discrepancies. 2001 – 2006. USD thousand**

	<b>Ukraine's import (UA Imp)</b>	<b>Norway's export (NO Exp)</b>	<b>Discrepancies (NO Exp - NO Imp)</b>
2001	55 905	108 985	53 080
2002	60 885	112 186	51 301
2003	65 733	109 005	43 272
2004	70 902	119 252	48 350
2005	128 258	192 383	64 124
2006	179 749	182 993	3 244

Source: UN Comtrade (14.05.2007)

In 2005 the Ukrainian import made up 67 percent of the Norwegian export, while the previous years this was relatively stable around 50-60 percent. In 2006 the discrepancy is significantly smaller, valued slightly above USD 3 million. This is a relative discrepancy of only 2 percent, compared to 95 percent in 2001. This indicates an improvement of the asymmetry between Ukraine's reported import and the equivalent Norwegian reported export.

Theoretically we would not expect the Ukrainian import to be less than the equivalent Norwegian export, since the import is valued at CIF including cost, insurance and freight, while the export is valued at FOB. As already mentioned, from 2005 to 2006 the Norwegian export actually fell while the Ukrainian import increased. The result being that these two indicators are approaching the levels of each other. This could be a sign that the quality of the statistics has improved.

In the following sections we will shortly recap the results for the products that were mainly discussed at the working meetings. The main product exported from Norway is fish, crustaceans, molluscs and other aquatic invertebrates.

### **Commodities from Norway to Ukraine**

The data shows that the major increase in trade of commodities from Norway to Ukraine in 2005 to a large degree can be explained by an increase in Norwegian export and Ukrainian import of commodities within the group of fish, crustaceans, molluscs and other aquatic invertebrates (HS 03), from now on referred to as fish and fish products (HS 03). From 2004 to 2005 the Ukrainian import of fish and fish products (HS 03) close to tripled, from USD 48 million to more than USD 144 million.

The Norwegian export to the Ukraine is more concentrated than the Ukrainian equivalent import. The Norwegian export of fish and fish products (HS 03) made up 93 percent of the total

Norwegian export to the Ukraine in 2005, while the equivalent in 2006 is 88 percent.

Concerning the structure of the import, the total Ukrainian import from Norway of fish and fish products (HS 03) accounted for 80 percent of the total Ukrainian import of Norwegian products in 2006. However, the trade of some other commodity groups have also increased significantly, but is naturally less reflected in the total figures since these are considerably smaller than the figures for fish and fish products (HS 03). Regarding the Ukrainian import, this is the case for the groups of nickels and articles thereof (HS 75), plastics and plastic products (HS 39), nuclear reactors, boilers, machinery and mechanical appliances; parts thereof (HS 84) and electrical electronic equipment (HS 85). Together these made up 12 percent of the total Ukrainian import registered with Norway as the country of origin in 2006.

An overview of the largest commodity groups imported by the Ukraine with Norway reported as country of origin, together with Norway's equivalent export values, can be seen in table 7 and in table 8, for 2005 and 2006 respectively.

**Table 7. Main commodities imported from Norway by Ukraine, Norway's equivalent exports and discrepancies. 2005. USD thousand**

HS2	Commodity group	Ukraine's Import (UA Imp)	Norway's Export (NO Exp)	Discrepancy (NO Exp – UA Imp)
	Total	128 258	192 383	64 124
3	Fish, crustaceans, molluscs, aquatic invertebrates nes	100 127	161 153	61 025
75	Nickel and articles thereof	4 298	0	-4 298
39	Plastics and plastic products	4 066	1 010	-3 057
84	Nuclear reactors, boilers, machinery etc	2 637	5 322	2 685
85	Electrical, electronic equipment	6 571	3 974	-2 596

Source: UN Comtrade (14.05.2007)

**Table 8. Main commodities imported from Norway by Ukraine, Norway's equivalent exports and discrepancies. 2006. USD thousand**

HS2	Commodity group	Ukraine's Import (UA Imp)	Norway's Export (NO Exp)	Discrepancy (NO Exp – UA Imp)
	Total	179 749	182 993	3 244
3	Fish, crustaceans, molluscs, aquatic invertebrates nes	144 011	178 236	34 225
75	Nickel and articles thereof	8 008	0	-8 008
39	Plastics and plastic products	5 662	596	-5 067
84	Nuclear reactors, boilers, machinery etc	4 549	2 966	-1 583
85	Electric, electronic equipment	3 244	5 930	2 685

Source: UN Comtrade

Tables 7 and 8 show the five largest commodity group imported by the Ukraine from Norway in 2005 and in 2006 respectively. Together these groups make up 92 percent of the total Ukrainian import value and 98 percent of the total Norwegian export value in 2005.

In the following sections we will focus on electrical, electronic equipment (HS 85) together with inorganic chemicals, precious metal compound, isotopes (HS 28) and pharmaceutical products (HS 30). Together these commodity groups make up the basis for the discussions that took place in Kiev and in Oslo concerning trade of commodities from Norway to the Ukraine. Concerning the discrepancies between the Norwegian export and the Ukrainian import, noticeable is as earlier mentioned the group of fish and fish product (HS 03), see table 7 and table 8. This is the product group that determines the total discrepancies, and due to this we will regard this commodity group especially. This commodity group was also given extensive attention in both working meetings.

### Electrical, electronic equipment (HS 85)

The discrepancies within the group of electrical, electronic equipment (HS 85) are relatively small, the import value exceeding the export value slightly in 2005, while the opposite is the case in 2006. However, when looking at the different groups within this group, and on HS 4 digits, the differences are noticeable.

The Ukrainian import of the commodity group of radio and TV transmitters, television cameras, amounts to 70 percent of the total Ukrainian import of commodity group HS 85 from Norway in 2005. In 2006 this percentage had decreased to less than 5 in 2006, something indicates large fluctuations in the datasets and also possible errors within this in 2005. To see if this could be a potential explanation for the discrepancies, we look at the results for several years, as shown in table 9.

**Table 9. Ukraine's import, Norway's export and discrepancies of radio and TV transmitters, television cameras (HS 8525). 2001 – 2006. USD thousand**

	<b>Ukraine's Import (UA Imp)</b>	<b>Norway's Export (NO Exp)</b>	<b>Discrepancy (Export- Import)</b>
<b>2001</b>	226 830	17 797	209 033
<b>2002</b>	15 919	74 318	-58 399
<b>2003</b>	3 650	423 965	-420 315
<b>2004</b>	27 550	65 612	-38 062
<b>2005</b>	4 609 114	13 634	4 595 480
<b>2006</b>	150 494	30 750	119 744

Source: UN Comtrade (14.05.2007)

These relatively largely fluctuating results may indicate that at there might be some errors present in the dataset for trade of this product between Norway and Ukraine in 2005.

The Norwegian export of HS 85 on the other hand is dominated by the commodity group of insulated wire and cable, optical fibre cable (HS 8544), amounting to 67.7 percent of commodity

group HS 85 in 2005. The equivalent for the Ukrainian import is 2.2 percent, significantly lower. In 2006 the Norwegian export of HS 8544 had decreased from USD 4 million to USD 0.8 million, while the equivalent Ukrainian import had increased from USD 146 thousand to USD 758 thousand. This indicates different structures for the trade between Norway and the Ukraine regarding this commodity group, but total for group HS 85 is the registered trade similar. This could be a sign of errors within classification of products.

### **Other products from Norway to Ukraine (HS 28, HS 75, HS 39)**

Excluding fish and fish products, the commodity groups traded between Norway and Ukraine make up a relative small part of their total trade. Despite this, there are some interesting results also in these commodity groups. The third largest commodity group imported in the Ukraine from Norway is HS 75: Nickel and articles thereof. Within this group, 88 percent of the Ukrainian import falls under HS 750210; Nickel unwrought, not alloyed. This commodity group made up 3.4 percent of the total Ukrainian import from Norway in 2005 and 4.5 percent in 2006. No commodities are recorded exported from Norway in 2005. A reason for this could be trade via third countries. To see if this might be the case we took a closer look at the Ukrainian import with regards to country of consignment. In 2006, 96 percent of Ukrainian import of this commodity group came via the Netherlands. This shows that these products are sent through a third country, and a potential reason for the discrepancy could be unknown final destination by the Norwegian exporter, which for instance have registered the export with the Netherlands as the destination country.

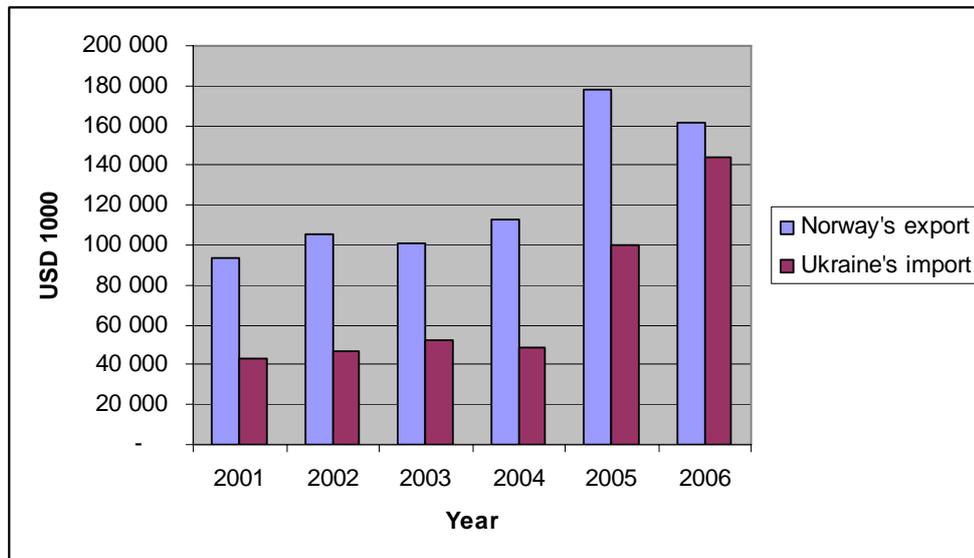
As for the commodity group of inorganic chemicals precious metal compound isotopes (HS 28), Ukraine has a registered import value of USD 1 million in 2005 and almost USD 3 million in 2006. Norway has no reported export of this commodity to the Ukraine in 2006. In 2005 the Norwegian export of inorganic chemicals (HS 28) constituted only 12 percent of the Ukrainian equivalent import. However, a large part of the Norwegian exports of commodities in group HS 28 is suppressed, something that potentially can explain the relative large asymmetries between the Ukrainian import and the Norwegian export. In addition to this, also plastics and articles thereof (HS 39) is in the Norwegian export data severely suppressed.

### *Fish, crustaceans, molluscs and other aquatic invertebrates (HS 03)*

As mentioned earlier, the commodity group of fish, crustaceans, molluscs and other aquatic invertebrates (HS 03) is the most dominant commodity group that is traded between Norway and Ukraine, making up approximately 88 percent of the total Norwegian registered export to the Ukraine in 2006.

The asymmetry between the Ukrainian imports of commodities falling under commodity group HS 03 and the Norwegian equivalent exports amounted in 2005 to USD 78 million. The reported Ukrainian import of this commodity group increased from USD 100 million in 2005 to USD 180 million in 2006. Together with a small reduction in the Norwegian export value from 2005 to 2006 was the discrepancy between the Norwegian export value and the Ukrainian import value reduced to USD 17 million in 2006. The development between the Ukrainian import value and the Norwegian export value is graphically presented in figure 6.

**Figure 6. Ukraine's import and Norway's export of fish, crustaceans, molluscs and other aquatic invertebrates (HS03), 2001 – 2006. USD thousand**



Source: UN Comtrade (14.05.2007)

Figure 6 shows how the Norwegian export had a remarkable increase in its registered export to the Ukraine from 2004 to 2005. In 2006 this decreased somewhat, but still being slightly above the Ukrainian registered import value. Measured in percentage, the discrepancy was relatively stable from 2001 to 2005, the Ukrainian import making up around 50 percent of the Norwegian export, with a peak in 2005 of 56 percent. In 2006 the Ukrainian import made up 89 percent of the Norwegian export value, a significant improvement of the asymmetry.

In the following sections we will focus at more detailed data for the groups of fish. Additionally we will also regard quantity, since the UN Comtrade provides this variable for data more detailed than HS 2 digits.

#### Frozen fish (HS 0303)

On a HS 4 digit level, the main group that the Ukraine has imported from Norway is frozen fish (HS 0303). The value of Ukraine's import of this commodity group was USD 94 million in 2005 and USD 127 million in 2006. Despite this increase, the share of frozen fish as percentage of the total import of fish products from Norway decreased from 94 to 88 percent from 2005 to 2006, indicating a raise in the trade of other fish types between Norway and the Ukraine.

Measured in value, the Norwegian registered export of frozen fish exceeds the Ukrainian import on an average of USD 59 million each year from 2001 to 2005. In 2006 there was however a significant drop in this discrepancy, the Norwegian exports exceeding the Ukrainian imports with no more than USD 3.6 million. However, when measured in quantity, the results are somewhat different and the quantities traded recorded by the Ukraine are smaller than the Norwegian registered export. From table 10 we see how this has developed since 2001.

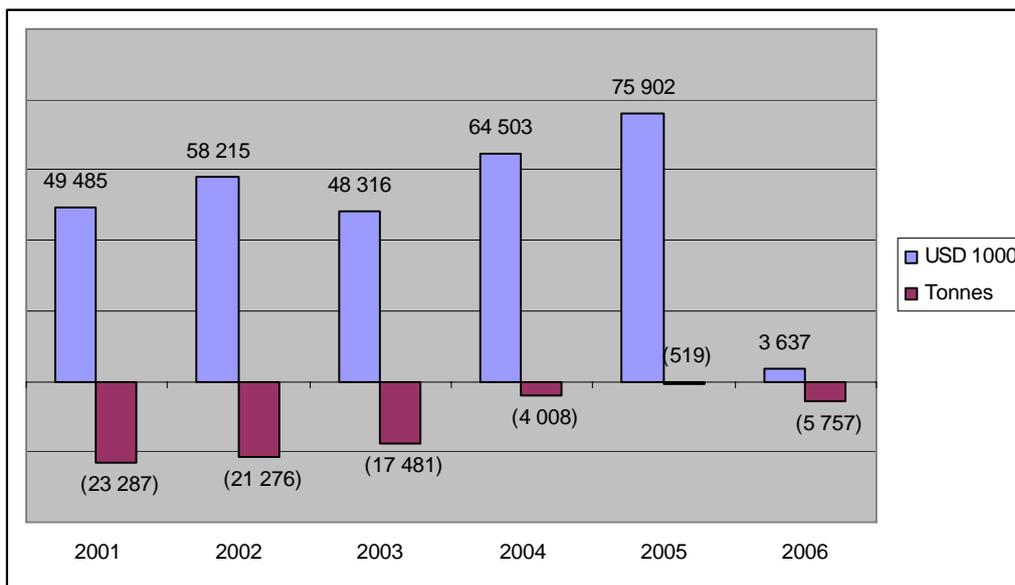
**Table 10. Ukraine's import and Norway's export of fish, frozen, excluding fish fillets (HS 0303). 2001 -2006. USD thousand and tonnes**

Year	Ukraine's import		Norway's export	
	USD 1000	Tonnes	USD 1000	Tonnes
2001	42 809	173 207	92 294	149 920
2002	46 349	169 549	104 564	148 272
2003	51 203	149 451	99 519	131 971
2004	47 010	130 345	111 513	126 337
2005	94 483	159 881	170 385	159 362
2006	127 079	122 380	130 716	116 623

Source: UN Comtrade 14.05.2007

Measured in quantity the discrepancies are much smaller than for value, but in the opposite direction as the Ukrainian figures are greater than the Norwegian figures. In 2005 the Ukrainian import exceeded the Norwegian export with only 519 tonnes, while the equivalent for 2006 was approximately USD 5 800 tonnes. Figure 7 shows the development within the discrepancies for value and quantity respectively.

**Figure 7. Discrepancy (Ukraine's import – Norway's export) for fish, frozen, excluding fish fillets (HS 0303). 2001 - 2006. USD thousand and tonnes**



Source: UN Comtrade 14.05.2007

Figure 7 shows how the discrepancies both measured in value and quantity have developed from 2001 till 2006. Focusing on the years 2001 till 2005, the discrepancy for the group of frozen fish (HS 0303) measured in value has increased while the gap between export and import measured in quantity has become smaller. Looking closer at the figures presented in table 10 we see that the most remarkable result is the large discrepancies within trade value as compared to the discrepancies within the quantities traded. As already mentioned, in 2005 the discrepancy for

quantities traded was just above 500 tonnes, less than one percent of the total Ukrainian import quantity of frozen fish. Since the quantities traded are relatively similar, we would expect the value as well to be somewhat correct measurements in each of the countries. For value however, the discrepancy was negative and made up close to 80 percent of the Ukrainian import value. This could indicate that the value is under- or over estimated in either the import or export country.

The five largest sorts of frozen fish (HS 0303) that is imported in the Ukraine from Norway, makes up 90 percent of the total fish imported in 2005. In 2006 this had decreased to 86 percent. These are distributed according to HS six digit code as shown in table 11 and in table 12, for 2005 and 2006 respectively.

**Table 11. Trade of frozen fish (HS 0303) from Norway to Ukraine. HS six digits. 2005. USD thousand and tonnes**

Commodity		Ukraine's import (M)		Norway's export (X)		Discrepancies (M - X)	
		1000 USD	Tonnes	1000 USD	Tonnes	1000 USD	Tonnes
030350	Herrings	56 490	105 880	104 971	108 997	-48 480	-3 117
030373	Coalfish	9 037	17 373	20 070	16 378	-11 033	995
030374	Mackerel	8 725	8 610	16 912	7 630	-8 186	980
030379	Other frozen fish	8 450	22 841	2 644	5 060	5 806	17 781
030322	Atlantic salmon	7 055	2 517	8 004	1 814	-949	703

Source: UN Comtrade (21.11.2006)

**Table 12. Trade of frozen fish (HS 0303) from Norway to Ukraine. HS six digits. 2006. USD thousand and tonnes**

Commodity		Ukraine's import (M)		Norway's export (X)		Discrepancies (M - X)	
		1000 USD	Tonnes	1000 USD	Tonnes	1000 USD	Tonnes
30350	Herrings	69 016	86 199	72 773	84 414	3 758	-1 785
30374	Mackerel	17 388	9 155	16 638	9 919	-751	763
30373	Coalfish	16 807	14 452	18 087	14 295	1 280	-157
30322	Atlantic salmon	9 214	2 233	11 779	2 222	2 565	-11
30321	Trout	6 871	1 318	6 884	1 274	13	-43

Source: UN Comtrade 14.05.2007

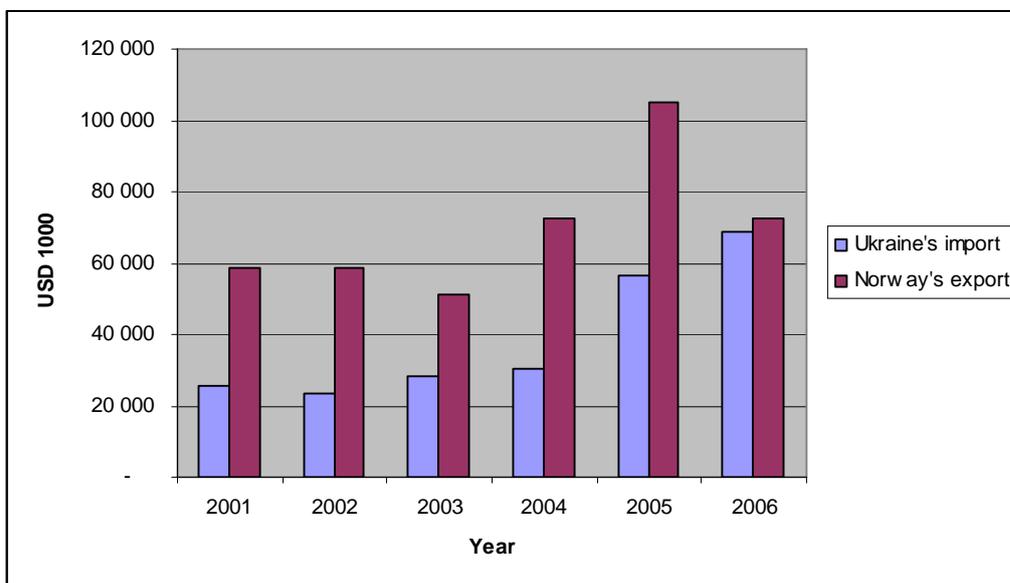
The main Norwegian product that is traded between the Ukraine and Norway is frozen Herring (HS 030350). Tables 11 and 12 show how the trade of the discrepancy within this product has changed remarkably from 2005 to 2006.

This commodity constitutes 56 percent of the total fish products that are imported into the Ukraine from Norway in 2005 and 44 percent of all Norwegian products in total registered

imported. The equivalents for the Norwegian export to Ukraine are 59 and 55 percent. The discrepancy within this group amounted in 2005 to approximately USD -48 thousand, the export exceeding the import. To see whether or not the discrepancies are due to errors within the valuation of the products, we look at the exports and import volumes and compare these to the import and export value. While the Ukrainian import in 2005 was a little below USD 57 million, the equivalent value for the Norwegian export was USD 105 million, indicating close to double the size for the Norwegian export than the Ukrainian import when measured in value. In terms of quantity the scenario is different. While the Ukrainian import amounted to about 106 thousand tonnes, the Norwegian export was reported at 109 thousand tonnes; only three percent of the Norwegian export is not covered by the Ukrainian import. This could be an indication of errors within the valuation of the product, since they report approximately the same traded quantities. One reason could be intentional misreporting of the value which could be economically beneficial for the trader. To have access to Ukrainian import declarations for so to compare these to the equivalent Norwegian export declarations could be helpful for revealing reasons for these discrepancies. Such working methods include the exchange of detailed data and will be further discussed between the customs.

As seen from table 11 and table 12, the discrepancy for frozen herring when measured in value changed noticeably from 2005 till 2006. This can be seen in figure 8 where Ukraine's import and Norway's export, both in value, is presented graphically from 2001 to 2006.

**Figure 8. Ukraine's import and Norway's export of frozen Herring (HS 030350). 2001 - 2001. USD Thousand**

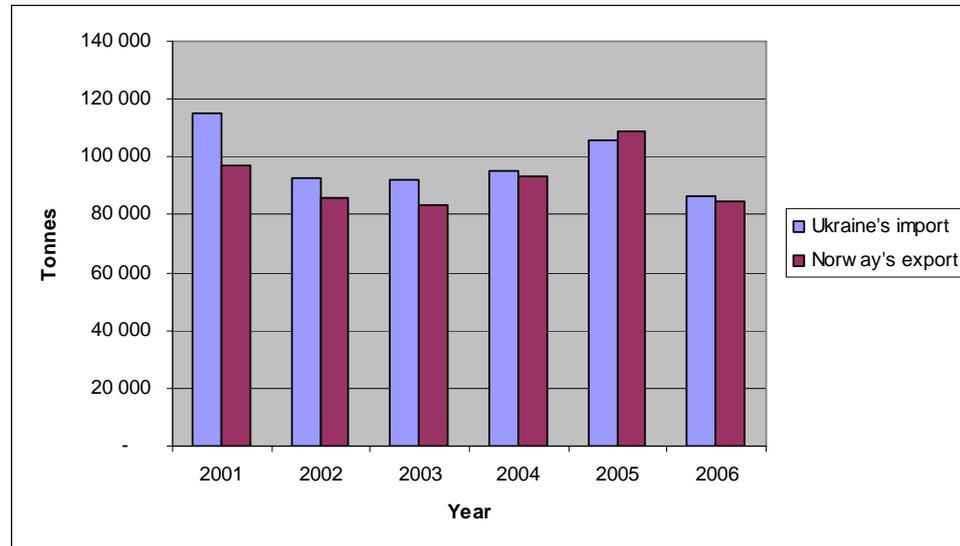


Source: UN Comtrade 14.05.2007

Ukraine's import value constituted on average from 2001 to 2005 about 47 percent of the Norwegian reported export value. In 2006 this amounted to 95 percent. It was discussed that this could be an indication of greater quality within the trade statistics as a result of more intensive control by the customs at the border. However, from figure 8 we also see that the

Ukrainian import value has risen steadily from 2004 to 2006. The following figure shows the same as figure 8, but now measured in quantity instead of value.

**Figure 9. Ukraine's import and Norway's export of frozen herring (030350). 2001 - 2001. Tonnes**



Source: UN Comtrade 14.05.2007

These results show how the quantity traded has been subject to only small asymmetries all the years we are looking at. Since the import and export value in this figure more or less coincides, we assume that these are approximately a correct reflection of the real trade of fish between Norway and Ukraine. If compared to figure 8 we see that the development within the Norwegian export value virtually follows the development for the quantities traded, as registered both by Ukraine and Norway. If we take a look at the export prices, here defined as the export value divided by the export quantity, we see that the Norwegian export price to the Ukraine decreased from 2005 to 2006. This is the same development as the Norwegian export price to other countries as well, such as Russia, Belarus and Poland, all large importers of Norwegian herrings. This is in contrast to the Ukrainian import prices of frozen herring from Norway, which is subject to an increase from 2005 to 2006. As for frozen herring, we can also see the discrepancy between Norwegian export and Ukrainian import measured in value decreasing significantly from 2005 to 2006 also for several of the other groups of fish.

Other frozen fish types that are traded between Norway and the Ukraine is frozen coalfish, frozen mackerel and frozen trout. These all show relatively small discrepancies between Ukraine's import and Norway's export, both in quantity and values.

A noteworthy result besides these mentioned commodities is the trade in fish under commodity code HS 030379 - Other frozen fish. This is a relatively small commodity group, the Norwegian export of this product making up less than 1 percent of the total export of fish to Ukraine in 2006. However, the results are noticeable since as opposed to fish in general and for frozen fish besides this commodity, the Ukrainian import actually exceeds the Norwegian export

both in value and in quantity and for both 2005 and 2006. This could be an indicator that some commodities are wrongly classified, often a problem with groups of “other products”, and could be reasoned by poor labelling in the exporting country.

Another fish type worth mentioning is fresh or chilled whole salmon (HS 030212). Norway has traditionally not much export of this to Ukraine, but there was a significant increase of trade of this commodity between Norway and Ukraine in 2006 compared to earlier years. In 2006 Norway had an export of this commodity of around USD 17 million while the equivalent import for the Ukraine was closer to USD 8 million. This discrepancy is also reflected in the quantity traded; 3.2 thousand tonnes is registered exported from Norway while only USD 1.7 thousand tonnes is registered as Ukrainian import. Fresh or chilled salmon is a large commodity exported from Norway to the rest of the world, and the results for 2006 may indicate that the trade of this product between Ukraine and Norway will increase in the future.

The results from the years prior to 2006 are remarkable as they give a picture of a situation not suited for either trading country. When the import value only constitutes half of what is registered exported, and the quantities are relatively similar, it could be a sign of deliberate devaluation of the fish along its trade route. The greatly improved asymmetries for 2006 is reasoned with increasing control routines in Ukraine for some of the greater commodities imported, one of these being fish.

#### *Ukraine's trade of frozen fish with the rest of the world*

Finally we will take a short look at the other largest countries from which Ukraine imports frozen fish. The USA is the second largest country from which the Ukraine imports frozen fish. While the Ukrainian import volume increased from USD 16 million in 2005 to USD 20 million in 2006, the equivalent import quantity reported by the USA was closer to USD 9 million in 2005 and more than USD 22 million in 2006. This indicates that while the discrepancy is positive when measured in value, meaning that the export value reported by the USA exceeds the equivalent Ukrainian import. This was especially high in 2006 where the difference amounts to USD 16 million. In quantity this was positive in 2005, but negative in 2006. The same results as for the USA was also seen for Canada, with an increasing discrepancy when measured in value, from USD 4 million in 2005 to USD 5 million in 2006. In the case of the Iceland, the Ukrainian import exceeded the equivalent import both years, in value as well as quantity.

#### **Concluding remarks**

These results give an indication of the main discrepancies between the equivalent trade flows for Norway and the Ukraine. The main product traded is the commodity group of fish, crustaceans, molluscs and other aquatic invertebrates (HS 03) and this is also the group where we find the largest discrepancies. The largest differences are to be found in the group of frozen fish and fish products (HS 0303). While the differences between Norwegian export and Ukrainian import measured in quantity are relatively small, the discrepancies when measured in value are in comparison remarkably large. This is especially the case for the years up to 2005.

The main three reasons that were found for discrepancies in these datasets are here shortly summarized. First, trade via third country. This was shown to be a significant reason for several of the commodities traded. When looking at the trail of the commodities, here through country of consignment, wrongfully reported country of origin or country of consignment were indicated. A clear example of this was the trade of snow skis and clothes from Ukraine to Norway. This is a problem increasing with globalisation, as the borders open and intermediate stops for processing become more frequent. The second major reason in some of the commodities was confidentiality in the datasets, only shortly mentioned in this working paper. The most extraordinary result was for the case of fish, as also seen in the study of Anne Berit Dahle (2004). Excluding the years 2006, the export value of the fish was severely higher than the import value, while the quantities were relatively equal. It was indicated that this could be due to intentional devaluation by trading parties. However, the last year the boarder control of the Ukrainian customs have been intensified, especially for certain risk commodities with fish being one of these. Whether or not this reasons the results for 2006, where the asymmetries within value have decreased considerably, is difficult to determine exactly.

The results of the trade statistics between Norway and Ukraine reflect the need for strict border controls of trade, especially in the terms of fish. An agreement between the Norwegian and the Ukrainian customs was made prior to the start of this cooperation, but will be in force May 2007. This will simplify the exchange of detailed data between the customs, and could then lead to better control of the trade between Norway and Ukraine.

## APPENDIX

**Appendix 1. Aide memoir on Ukrainian – Norwegian consultations  
on external trade statistics  
Kyiv, 25-26 January 2007**

Under the EFTA – funded project on "Mirror and reconciliation exercises for external trade statistics between Norway and Ukraine" and further to the previous agreements between Ukraine and Norway, the working meeting of experts on external trade statistics between State Statistics Committee of Ukraine and State Customs Authority of Ukraine and Central Statistical Bureau of Norway took place in Kyiv from 25 to 26 January 2007.

The participants of the working meeting:

from Ukrainian Side:

State Statistics Committee of Ukraine

Anatoly O.Frizorenko – Director, Trade Statistics Department; Larysa M.Matronich – Deputy Director, Trade Statistics Department, Head of External Trade Statistics Department;

Olga V.Dyachenko – Senior economist; External Trade Statistics Department;

State Customs Authority of Ukraine

Natalia M.Antonova – Head; Unit for Statistical Comparisons;

Dmytro S.Miroshnichenko – Senior inspector; Unit for Statistical Comparisons.

from Norwegian Side:

Central Statistical Bureau of Norway

Leif Korbøl – Head; Division for External Trade;

Christine Kleppe – Specialist; Division for External Trade.

In the course of consultations the following issues have been considered:

- organization of co-operation between Ukraine and Norway in the area of exchanging statistical data on external trade;
- comparison of key methodological principles used for production of external; trade statistics in Ukraine and Norway;
- mirror comparison of external trade statistics at the commodity group level ( 6-digit of HS) using the external trade data between Ukraine and Norway in 2005 based on the data included into the database of UNSD Comtrade.

It has been noted that in 2005 Norway used HS 2002, while Ukraine – HS 1996. Statistical threshold in Norway is 1 000 NOK (appr. 130 USD), in Ukraine it equals 100 euro for legal entities and natural persons – entrepreneurs.

When conducting mirror exercise between Norway and Ukraine for 2005 the following discrepancies have been revealed.

(thous.USD)

Commodity Flow	UA data	NO data	Difference	
Norway - Ukraine	128 022	192 383	-64 361	-33%
Ukraine-Norway	46 854	63 785	-16 931	-27%

When comparing commodity groups at the 2-digit level the largest discrepancies are observed for the following commodity groups:

COMMODITY FLOW		thous. USD
<b>Norway's Export – Ukraine's Import</b>		
03	Fish, crustaceans, mollusks, aquatic invertebrates	78 109
87	Ground transport vehicles, excluding railway	510
94	Furniture	389
75	Nickel and articles thereof	- 4 298
39	Plastics and articles thereof	- 3 470
28	Inorganic chemicals precious metal compound isotopes	- 2 874
30	Pharmaceuticals	- 936
31	Fertilizers	- 645
85	Electrical, electronic equipment	- 641
63	Other manufactured textile articles	- 524
<b>Ukraine's Export – Norway's Import</b>		
72	Ferrous metals (iron and steel)	14 774
38	Other products of chemical industry	420
28	Inorganic chemicals precious metal compound isotopes	3 365
62	Articles of apparel, accessories, not knit or crochet	- 5 250
12	Seeds and products of oily plants	- 4 301
61	Articles of apparel, accessories, knit or crochet	- 3 306
44	Wood and articles thereof	- 1 230
23	Residuals and wastes of food industry	- 924
56	Cotton wool	- 782
42	Articles of leather	- 434
95	Toys, games	- 376

For the purpose of data comparison at the 6-digit level of HS the following commodity groups have been selected – 03, 75, 39, 28, 30 (NO export – UA import) and 72, 28, 62, 12, 61, 44 (UA export – NO import) where discrepancies between Ukrainian and Norwegian trade data are the most significant.

When examining the data at 6-digit level the experts suggested the following reasons of discrepancies:

- for commodity groups 28 (appr. 86% of the information) and 39 – due to confidentiality of Norwegian data;

- for commodity groups 75, 30, 72, 62, 12, 61, 44 – trade via third countries;
- for commodity group 03 – price difference occurred at the stage of commodity declaration in Ukraine and Norway.

Also the following factors could impact on discrepancies of statistical data at the 6-digit level of HS:

- differences in commodity classifications used due to application of different versions of HS;
- different approaches for classification of some commodities.

By the results of the consultation held the Sides agreed on the following:

- to exchange with methodology used for compilation of external trade statistics;
- to exchange with i) information on external trade between the countries in 2006 and ii) results of additional analysis of data discrepancy (for 2006).

The Sides considered that it would be useful to have another working meeting of external trade statistics experts to i) consider and discuss methodological principles for external trade statistics compilation and ii) conduct mirror exercise at the 6-digit level of HS for the commodities having the largest discrepancies and that of having the great interest for the Sides. The meeting is planned for the II quarter 2007 (late April) with participation of representatives of statistical offices of both countries and Customs Authorities of Ukraine and Norway, as agreed with Norwegian Side.

Kyiv, 26 January 2007

From and for Ukrainian Side

Director, Trade Statistics Department,  
SSCU

\_\_\_\_\_ A. Frizorenko

From and for Norwegian Side

Head, Division for External Trade,  
Statistics Norway

\_\_\_\_\_ L.Korbol

Head, Unit for Statistical Comparisons  
State Customs Authority of Ukraine

\_\_\_\_\_ N.Antonova

## **Appendix 2. Aide memoir on Ukrainian – Norwegian consultations on external trade statistics**

Oslo, 19 – 20 April 2007

The background for the meeting was the EFTA funded project on "Mirror and reconciliation exercises for external trade statistics between Norway and Ukraine" and was a follow-up meeting from consultations in Kiev 25 – 26 January 2007. The participants were representatives from State Statistics Committee of Ukraine, State Customs Authority of Ukraine, Statistics Norway and the Norwegian Customs and Excise.

### Participants

#### **State Statistics Committee of Ukraine:**

Anatoly O.Frizorenko	– Director of Trade Statistics Department
Larysa M.Matronich	– Deputy Director, Trade Statistics Department
Olga V.Dyachenko	– Senior economist; External Trade Statistics Department

#### **State Customs Authority of Ukraine:**

Natalia M.Antonova	– Head of Unit for Statistical Comparisons
Dmytro S.Miroshnichenko	– Senior inspector; Unit for Statistical Comparisons

#### **Norwegian Customs and Excise:**

Kjetil Løkken	– Adviser, Procedures and Enforcement Department
Kari Rikardsson	– Acting Assistant Director, Procedures and Enforcement Department
Bjørg Lillebo	– Adviser, Procedures and Enforcement Department
Viggo Elster	– Adviser, Procedures and Enforcement Department

#### **Statistics Norway:**

Leif Korbøl	– Head of Division for External Trade
Christine Kleppe	– Senior Executive Officer, Division for External Trade

#### **Agenda for the meeting:**

- Review of the data exchanged for 2006 on a HS 6-digit level, as agreed upon in Kiev in January
- Review of the development with the trade of fish between Ukraine and Norway
- Mirror comparison of data for 2006 with regards to country of consignment
- Comparison of methodological principles in trade statistics between Ukraine and Norway
- Meeting with the Norwegian Customs and Excise for discussions of exchanging data

## Presentations:

- Introduction to international trade statistics in Norway (Olav Ljones, Director of Economic Statistics, Statistics Norway)
- Trade with services (Pål Holmen, Adviser, Division for External Trade, Statistics Norway)
- Introduction to the the Norwegian import and export declaration system (TVINN) (Kjetil Løkken)
- Presentation of Customs region Oslo and Akershus (Roar Weltzien, Senior adviser, Customs Region Oslo, Controller unit)

## Trade between Norway and Ukraine 2006

The following table shows total trade between Norway and the Ukraine measured in value (USD 1000) for the year 2006.

Commodity Flow	Ukraine	Norway	Discrepancy	Import % of Export
Norway → Ukraine	179 749	182 993	3 244	98 %
Ukraine → Norway	87 025	105 236	18 211	121 %

It was found that the most significant change in the trade data from 2005 till 2006 was the decrease in the discrepancy between Norwegian export and Ukrainian import. This was mainly a result of the decrease in the discrepancy for HS 03: Fish, crustaceans, molluscs and other aquatic invertebrates, and under here; 030350: Frozen Herrings.

The Norwegian export of 030350: Frozen Herrings and the Ukrainian equivalent import data for 2006 measured in value and quantity is shown in the following table:

	NO export	UA Import	Discrepancy	UA Import as % of NO export
Value USD 1000	72 627	69 016	3 611	95 %
Quantity Tonnes	84 414	86 199	-1 785	102 %

The discrepancy for this commodity turned out to be significantly less in 2006 than in 2005. The decrease within the differences could be a result of increased control within the Ukrainian customs for so called risk-commodities, with fish being an important commodity group. The next step regarding this is to see the monthly development within this group of fish.

Note that the total data for Norway may deviate somewhat from the results when aggregating all HS6. This is due to confidentiality in Norwegian data on a HS6 level. It was requested to include the confidential commodities in a new HS6 group so the total aggregates would equal. In addition the Norwegian figures that were discussed may differ from the UN Comtrade figures. This is due to the exchange of preliminary figures with the Ukraine.

The main other commodities on a HS 6-digit level and HS 4-digit level that were discussed can be reviewed in the following tables.

**Norwegian Export → Ukrainian Import. 2006. USD 1000**

<b>HS6</b>	<b>Commodity group</b>	<b>NO Export</b>	<b>UA Import</b>	<b>Discrepancy</b>
750210	Nickel, not alloyed, unwrought	0	7 814	-7 814
390410	Polyvinyl chloride, in primary forms, not mixed with any other substances	0	5 183	-5 183
284920	Carbides of silicon, whether or not chemically defined	0	878	-878
300450	Medicaments containing pro-vitamins, vitamins, incl. natural concentrates and derivatives thereof	0	1 444	-1 444

**Ukrainian Export → Norwegian Import. 2006. USD 1000**

<b>HS6</b>	<b>Commodity group</b>	<b>UA Export</b>	<b>NO Import</b>	<b>Discrepancy</b>
281410	Anhydrous ammonia	25 730	54 538	28 808
610610	Women's or girls' blouses, shirts and shirt-blouses of cotton, knitted or crocheted (excl. t-shirts and vests)	0	842	842
620463	Women's, girl's trousers, shorts, synth. fibres, not knit	0	974	974
120890	Flours and meal of oil seeds or oleaginous fruit (excl. soya and mustard)	0	4 056	4 056
441214	Plywood consisting solely of sheets of wood <= 6 mm thick, with at least one outer ply of non-conife	161	703	542
<b>HS4</b>	<b>Commodity group</b>	<b>UA Export</b>	<b>NO Import</b>	<b>Discrepancy</b>
7202	Ferro-alloys	1 214	0	-1 214
7208	Flat-rolled products of iron or non-alloy steel, of a width of >= 600 mm, in coils, simply hot-rolled, not clad, plated or coated	38 379	5 967	-32 413

The reasons for discrepancies were to a large degree explained by trade via third countries. Data to base this decision upon was exchanged in form of import statistics including country of consignment. For frozen fish (0303) 32 percent of Ukraine's import from Norway was registered with Lithuania as country of consignment, while 28 percent was registered with Norway as country of consignment.

Several commodity groups seemed to be affected by systematic errors. Several of these are reasoned with the change of ownership during transportation.

## **Methodological principles**

A list of methodological comparisons was presented by SSB, and principles and differences concerning this list were discussed. This list will be more thoroughly prepared by the SSB and then sent to SSCU who will review and edit the document so it can serve as an appendix in the final document.

The main differences with the methodological factors are the use of HS harmonized system. While Norway used HS 2002 (till January 2007, when HS 2007 will be used) Ukraine follows the standards of HS 1996. Concerning confidentiality Norway operates with a so-called passive confidentiality while Ukraine operates with active confidentiality. This implies that in both countries data shall be considered confidential when they allow an enterprise (a natural or legal person) to be identified, either directly or indirectly. However, in Norway Statistics Norway determine only after a request of the enterprise whether the data are to be disseminated or are to be treated in such a way that their dissemination does not prejudice statistical confidentiality.

## **Other subjects of discussion**

The agreement on exchanging data between Norwegian and Ukrainian customs was discussed. The agreement allows for exchange of detailed data on specific identified cases for trade between Norway and Ukraine. This may be a useful method to reveal reasons for the discrepancies between data on a detailed level. However, detailed data can not be exchanged on basis of statistical findings, e.g. mirror statistics. This agreement is ratified and will be in forced by May 2007. So far the Norwegian customs has received approximately 20 individual cases for review. Ukraine has a similar agreement with Lithuania.

## **Conclusion**

To discover any potential changes in the structure of discrepancies within the mirror statistics, both sides will keep having a close look at the main product groups traded between Ukraine and Norway. Norway will finish the outline of the methodological principles which will be sent to Ukraine for further preparation. This will be an appendix in the report describing the mirror statistics between Norway and the Ukraine.

The Ukrainian customs will identify individual cases for so to send these for review in the Norwegian customs. This will especially be the case for fish, and will aim at revealing where and how the reduction of the value takes place.

## Appendix 3.

Nr.	Subject	Ukraine	Norway	Comments
1	Producer of the statistics	State Statistics Committee of Ukraine (SSCU)	Statistics Norway (SSB)	
2	Sources for trade statistics	Customs declarations (98%) and 2 reports (statistical surveys reporting accounting records of enterprises and organizations) The data are compiled on the basis of customs cargo declarations and enterprises' reports on goods that are not subject to declaration, with adjustments of the SSCU on the basis of current information from the Ministry of Energy (oil) and State Oil and Gas Committee (for natural gas)	Customs declarations (SAD forms) and direct reports from enterprises. (For crude oil and natural gas: enterprises, the Petroleum Directorate and the Department of oil and Energy. For vessels: the Norwegian ship's registers NOR and NIS, and supplementary sources)	
3	Reference period	The month in which the goods are imported or exported, generally when the customs authority accepts the declaration.	The month of the declaration	
4	Trade System	General trade system (Includes all commodities crossing the national boundary of the Ukraine including goods imported into and exported from customs warehouses and free zones. Some peculiarities due to warehouses, depending on the regime)	General trade system (Direct imports recorded at the time of customs clearance. Goods through customs warehouses recorded as imports when they are declared at their entering into the warehouse and as exports at their final clearance for abroad)	Goods from abroad entering a customs warehouse and directly for abroad are not included (transit of foreign goods through Norwegian customs warehouses)

5	Statistical area	The statistical territory equals the customs territory	The statistical territory equals the customs territory which is Mainland Norway, plus the extra-customs-territories being the Norwegian part of continental shelf, Svalbard and Jan Mayen (incl Bjørnøya)	
6	Harmonized System classification	HS 6 extended to a 10 digit level	HS 6 extended to an 8 digit level	Not comparable beyond 6 digits
7	Import statistics	Included in the import statistics: Goods re-imported and goods imported for process or incorporation with other goods	Includes commodities cleared on arrival for free circulation and commodities placed in customs warehouses for processing. Imports directly to installations on the Norwegian Continental shelf is excluded (included directly in BOP).	
8	Registration of imports	With country of origin, at a CIF value	With country of origin, at a CIF value	
9	Inclusive in export statistics	Re-exports not distinguished from exports.	Includes all exports directly from free circulation and Norwegian goods through customs warehouses (including crude oil and natural gas directly exported from the Norwegian Continental Shelf and coal from Svalbard)	
10	Registration of exports	With country of destination, at a FOB value	With last known country of final destination, at a FOB value	
11	Confidentiality	No confidentiality in data	Selected commodities confidential at several levels	Some commodity groups not comparable on a detailed level

12	Data editing/revision	<p>Monthly. Adjusted quarterly trade data and volumes of non-official trade calculated by the National Bank of Ukraine are included in the balance of payments. Some revision within volume (approx. 2 %). Raw oil and natural gas is being revised by volume. This due to the peculiars in how these are being registered. Volumes are also being revised when the goods come from ports, fish in foreign waters and for boats that are not declared</p>	<p>Monthly and yearly.</p> <p>The Norwegian Customs performs certain controls. SSB performs quality controls based upon price, quantities and partner countries. The revisions are monthly, quarterly and annual.</p>	<p>The Norwegian data capture for fish landed by Norwegian vessels may be incomplete. Data for adjustment are not yet available.</p>
13	Seasonally adjusted figures	No	Yes, monthly on value series; quarterly on volume index series	
12	Statistical threshold	Only recorded when value is above Euro 100 for legal persons and Euro 200 for physical persons	Total census of external trade statistics, but only consignments of value above NOK 1000 are included	
14	Transit trade	Not included in statistics (Goods entered from storage in bonded warehouses and afterwards are exported there from are included in the statistics as following the 'general' system of recording).	Consignments of goods in direct transit are not included in the statistics. Excluded are also foreign goods only passing through a Norwegian customs warehouse (Warehousing with no declaration at the arrival)	



**SESSION IV: REVISED INTERNATIONAL  
STATISTICAL STANDARDS, CLASSIFICATIONS AND  
GUIDELINES**

# 1. Summary of the session

## Revision of the system of national accounts (SNA Rev.1)

Participants were informed of the process of updating the SNA and the work that is underway for drafting the 2008 SNA and the development of implementation strategies. Attention was drawn to those issues under review that are likely to have the greatest impact on the GDP estimates or were among the most debated, such as: research and development, military expenditures, capital services, goods for processing, merchanting, and pension schemes.

The implications for new data collections and the potential difficulties in implementing the new recommendations were also mentioned. In conclusion of the discussion on the 2008 SNA, the following points were made:

- the recommendations towards 2008 SNA do not change the fundamental framework, so countries are encouraged to continue development in line with 1993 SNA;
- harmonisation of work on BOP is crucial: the IMF BOP Manual is being updated on a parallel track and this should be taken into account in plans for implementation;
- in view of the big challenges with the implementation of the 2008 SNA, countries are encouraged to start developing national implementation plans. In this context, it is important that priorities for implementing the various recommendations be set up;
- any future technical assistance on the implementation of 2008 SNA should have a regional focus.

## Revision of economic classification (ISIC and NACE)

Participants also discussed the revised economic classifications - ISIC and NACE, the consequences for the data time series and the challenges with their implementation. The experience of the Swiss Statistical Office in developing a national version of the NACE Rev/2 and its implementation in Business registers were presented.

In the discussion that followed, the following main points were made:

- the revision of the economic classifications was necessary in order to reflect economic developments and needs of users;
- the implementation of the new classifications will pose many challenges for the national statistical offices and may affect the international comparability across countries during the transition period;

- national plans for the implementation of the new economic classifications should be developed;
- an important aspect of revising the national economic classification is the communication and coordination with the relevant national partners before and in the course of the revision and the implementation of the new classifications;
- it is important that the impact of implementing a new classification on the statistical data series be analysed. The results of the analyses should be disseminated and explained to users.

### Foreign direct investments

The OECD *Benchmark Definition of Foreign Direct Investment, 4<sup>th</sup> edition* provides a single point of reference for all issues related to foreign direct investment statistics. It addresses both national compilers and data users. This work is conducted by the Workshop on International Investment Statistics under the auspices of the OECD Investment Committee (served by the OECD Financial and Enterprise Affairs Directorate).

The compilation and interpretation of FDI data has been challenged by the effects of globalisation. The *Benchmark Definition* promotes the use of detailed FDI statistics (by partner country and by industry) for policy making. The revision of the *Benchmark Definition*, to be disseminated to the public in the first half of 2008, addresses a number of these concerns. To ensure a timely completion of this manual, work on other unresolved aspects will continue to be studied/discussed as part of the research agenda.

Key challenges of the revision of the 4<sup>th</sup> edition of the *Benchmark Definition* were associated with:

- clarification of exiting methodologies (*inter alia*: 10% threshold; use of market valuation; principles for industry classification, etc.);
- replacement or removal of existing methodologies (*inter alia* the Framework for Direct Investment Relationship (FDIR) for indirect FDI relationship replacing the Fully Consolidated System (FCS); abolition of permanent debt, etc.);
- introducing new methodologies in response to user needs:
  - special purpose entities (SPEs) (i.e. looking through funds passing through SPEs);
  - FDI by type (Mergers and acquisitions, greenfields, extension of capital and financial restructuring);
  - FDI according to ultimate investing and ultimate host countries (as opposed to recording investments for the immediate counterparty);
  - Developing an FDI glossary.

The financing of foreign investment is increasingly based on very complex legal structures that organise the financial operations of multinational enterprises both within and across

different countries, to take advantage of different types of legal entities and the characteristics of specific financial markets. On the other hand, users of FDI statistics show substantial interest in distinguishing different types of FDI in measuring the impact both on source and destination countries and industries.

In this increasingly global world, it may be important to pay more attention to macro indicators beyond GDP, such as GNI. To assure the quality of GNI estimates, it is important to understand and properly measure the income that accrues to owners of productive assets no matter where the assets are resident. As FDI is based on ownership and FDI statisticians have a lot of experience in dealing with these complex international legal structures, they need to be part of the team that is organised to address the effects of globalisation. In many countries, this means the cooperation across multiple institutions if this expertise is to benefit the efforts to better inform users on the globalisation phenomenon.

To support the integration of this expertise, it will be important to find ways to integrate business registers information so that the data from various sources can be brought to bear on the complex issues associated with globalisation.

### **Compilation of consumer price indexes and producer price indexes**

During the session the following main points were made:

- imports and exports make up an increasing proportion of the inputs and outputs of all economies. Therefore, it is important that price sampling take this into account. This is complicated by the importance of transfer pricing in selected cases;
- price variations for exports markets can differ in the short run from those in national markets and will in part depend on the exchange rate regime in effect. This is also the case for imports competing with national products;
- globalisation has also contributed to the evolution of products so that the need to explicitly estimate quality change is an increasing challenge. This is particularly true for services;
- given the potential for price level differences, care should be taken in the selection of index formulation for the component indexes. In addition, the potential for rapid changes in the source of inputs or even the share of output going to export markets means that additional attention is needed to ensure that index weights remain appropriate;
- weight adjustments for known deficiencies in the sources for expenditures should also be estimated when possible to maintain the representivity of the indexes.

## 2. The revision of ISIC and NACE: implications for national accounts<sup>1</sup>

by Tihomira Dimova, UNECE

### Introduction

The international classifications of economic activities have been recently revised. The revision will increase the relevance and comparability of statistics. At the same time it will create significant challenges for the implementation of the new activity structure in various statistical domains and for ensuring international comparability during the period of transition to the new classifications. The paper presents the main changes, focusing on the impact on compilation of national accounts series, and provides an overview of the implementation plans developed by the countries in the UNECE region.

### The revision of economic activity classifications

The first International Standard Industrial Classification of All Economic Activities (ISIC) was adopted in 1948. Since then it has been used worldwide for developing of countries' national classifications. This has led to improved international comparability of data. Periodical reviews and revisions of the classification took place during this period.

The fourth revision of ISIC was initiated in 1999 and the UN Statistical Commission (SC) adopted ISIC Rev.4 in March 2006. The revision was motivated by the rapid development of technologies, especially in the information and communication activities, and by the occurrence of new types of specialization of companies and division of labour. The increased demand for detailed and comparable information in some areas of specific policy interest e.g. environment protection, human health, was also taken into account. The need of international comparability and convergence between different activity classifications used around the world e.g. the General Industrial Classification of Economic Activities within the European Communities (NACE), the North American Industry Classification System (NAICS), the Australian and New Zealand Standard Industrial Classification (ANZSIC), was another factor for the revision. Efforts to ensure continuity were also important element of the process.

### *International family of economic and social classifications*

ISIC is the activity classification developed as guidelines by the UN Statistical Division (UNSD) and recommended for use at world level. However, it is not possible to reflect all the specifics of different regions and countries, especially at the lower level. Therefore different derived and related activity classifications adjusted to the region needs are developed on the base of ISIC. The international family of economic and social classifications is comprised of the

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<sup>1</sup> The paper is based on the introductory guidelines, structure, explanatory notes and manuals for the implementation of ISIC Rev.4 and NACE Rev.2 that have been developed by UNSD and Eurostat. The author would like to thank to Mr. Issoufou Seidou, UNECE for his assistance in preparing this paper.

reference, derived and related classifications, which are registered in the UN Inventory of Classifications.

**Reference classifications** are a product of international agreements and are approved by the United Nations Statistical Commission or another competent intergovernmental board. They are recommended as guidelines for the development of derived classifications with respect to structure, building blocks, character and definition of categories. ISIC is the reference classification of all economic activities at the global level.

**Derived classifications** are based upon reference classifications and are tailored to the needs at national or regional level. Derived classifications adopt the reference classification structure and building blocks in order to ensure consistency of aggregates, and then provide additional breakdown when necessary. NACE is a derived classification of ISIC. Both classifications are identical at the highest levels (sections and divisions), where NACE is more detailed at lower levels to respond to the specific users' needs in the EU.

**Related classifications** are those that partially refer to reference classifications. Usually they differ to some extent in structure or building blocks and therefore correspondence tables are necessary in order to compare statistics. NAICS is a related classification of ISIC. Complete convergence between NAICS and ISIC was not possible in the past. Following the latest revision data aggregated in NAICS can be re-aggregated into two-digit level of ISIC.

#### *Main changes between ISIC Rev. 3 and ISIC Rev. 4.*

There have been substantial changes in the level of detail and the groupings of activities. However, the main principles and overall characteristics for building up the classifications remain the same in order to ensure continuity.

The broad correspondence between ISIC Rev. 3 and ISIC Rev. 4 is presented in Annex 1. It is difficult to describe all the differences between the two classifications. Overall the level of detail in both ISIC and NACE is greater than before: the number of sections goes up from 17 to 21 and that of divisions from 62 to 88. Nevertheless, this increase does not affect all activities. The main changes refer to services, while manufacturing roughly remains with the same breakdowns.

**Table 1. ISIC and NACE: changes in the structure**

	ISIC Rev. 3.1	ISIC Rev. 4	<i>Difference</i>	NACE Rev.1.1.	NACE Rev. 2	<i>Difference</i>
Sections	17	21	+4	17	21	+4
Divisions	62	88	+26	62	88	+26
Groups	161	238	+77	224	272	+48
Classes	298	420	+122	514	615	+101

### *Agriculture*

The sections for A “Agriculture, hunting and forestry” and B “Fishing” have been combined. However, the level of detail under the new section A “Agriculture, forestry and fishing” has been increased in order to take into account the importance of the agricultural sector in many developing countries.

### *Industry*

As far as mining and manufacturing are concerned, one of the important changes is the introduction of specific divisions for support services. Other important changes in manufacturing worth mentioning are:

- “Publishing activities” are moved from section C “Manufacturing” to the new section J “Information and communication”;
- “Recycling” is moved from Section C “Manufacturing” to the new section E “Water supply, sewerage, waste management and remediation activities”.

A new section E “Water supply, sewerage, waste management and remediation activities” has been created. This section groups together activities that are of common policy interest, especially in relation to environment accounts.

### *Services*

The most important changes in the new ISIC are in the services sector. New sections have been added in order to reflect the increased importance of certain services in the global economy. ISIC Rev.4 introduces separate sections for the following activities:

- Transportation and storage;
- Information and communication;
- Real estate;
- Professional, scientific and technical activities;
- Administrative and support service activities;
- Arts, entertainment and recreation;
- Other service activities.

One of the major changes in ISIC is the creation of a new section J -“Information and Communication” that combines activities linked to the production and distribution of information and cultural products, communication, information technology activities, the processing of data and other information service activities. The bulk of the section comes from activities previously classified in “Manufacturing”, “Transports, storage and communication”, “Real estate, renting and business activities”, and “Other community, social and personal service activities”.

Section Q “Human health and social work activities” has been restructured and additional breakdown have been added. It is focused now only on human health, thus replying to the needs

to better measure this important activity and provide information for social care and policy making. As a result veterinary activities have been moved to section M “Professional, scientific and technical activities”.

Another important change is the split of the old section K “Real estate, renting and business activities” into three sections. Real estate becomes a separate section L due to its importance for the SNA. The remaining activities have been moved into two sections M “Professional, scientific and technical activities” that cover activities requiring a high degree of knowledge and section N “Administrative and support service activities” that support the general business operation but do not focus on the transfer of specialized knowledge.

In order to monitor the changes between the different versions of ISIC and NACE, detailed correspondence tables are developed. In addition links to other activity classifications and to the product classifications are also established. These correspondence tables are available in electronic format at Eurostat metadata server RAMON

[[http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP\\_PUB\\_WELC](http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC)].

Similar information can also be found at the United Nations Statistics Division website [<http://unstats.un.org/unsd/cr/registry/regot.asp?Lg=1>].

## **Special aggregation levels and presentations for national accounts**

### *SNA aggregation levels*

On the highest level ISIC Rev.4 provides for 21 Sections of economic activities. However, it was considered that a more aggregated level would be appropriate for global reporting of national accounts data. A request for a top-top level of about 10 categories was expressed by the OECD Working Party of National Accounts, Eurostat and the SNA Advisory Expert Group. In addition, a number of countries demanded that an intermediate level of about 40 categories based on the 88 divisions of ISIC be used.

The two specific SNA/ISIC aggregation levels were developed and finalized after wide consultations with countries and international organizations. These aggregation levels are not part of the ISIC/NACE hierarchical structure but can be easily integrated into it. Table 2 presents the top-top A\*10/11 level that will replace the current level A6. The interim level will include 38 activity groupings.

**Table 2. SNA93 Rev. 1 aggregation level A\*10/11**

Code	ISIC rev 4 sections	Description
1	A	Agriculture, forestry and fishing
2	B, C, D and E	Manufacturing, mining and quarrying and other industry
2a	C	Of which: manufacturing
3	F	Construction
4	G, H and I	Wholesale and retail trades, transport, accommodation and food service activities
5	J	Information and communication
6	K	Financial and insurance activities
7	L	Real estate activities
8	M and N	Business services
9	O, P, and Q	Public administration, defense, education, human health and social work activities
10	R, S, T and U	Other services

Although some ISIC sections are outside the scope of the SNA production boundary, they are still included in the presentation for completeness. These are section U “Activities of extraterritorial organizations and bodies” and part of Section T “Undifferentiated goods and services producing activities of households for own use”.

The Revised SNA will make a reference to ISIC Rev. 4 and will include the additional aggregation A\*10 and A\*38 levels as recommended activity groupings to be used in national accounts. In general, the SNA is not strictly prescriptive. While encouraging countries to use internationally comparable classifications, it also allows them to choose their own detail, which will allow them to have separate items for key production activities or exports, but wrap up other headings if they are considered unimportant. It is, nevertheless, recommended that whatever the national detail is, at least on the top levels national accounts are reported according to ISIC in order to ensure international comparability.

For the EU the activity classification is part of the legislation and is mandatory for the data reporting of the member countries. NACE Rev. 2 was established by a Commission Regulation in 2006. Statistics collected by member states involving classification by economic activity must be compiled according to NACE or a national classification derived from it. The A\*10 and A\*38 aggregation levels developed for the purposes of national accounts will also become part of the European legislation and will be included in the European system of accounts. In addition to that another A65/66 activities aggregation will be introduced for the purposes of input/output tables. The proposed A\*38 and A\*66 SNA/ISIC levels are presented in Annex 2 and Annex 3.

#### *Alternative classifications*

ISIC groups units on the basis of the type of economic activity they carry out. As this distinction has been very important and largely used in national accounts, there are also other

characteristics of the producing units that are important in the SNA, but are not integrated in ISIC.

The market/non-market split is an important feature of the SNA, but is not included in ISIC. A cross-classification according to this principle and ISIC would be anyway useful, especially for the activities where both market and non-market production takes place, such as education, health, art, recreation and other services.

ISIC does not draw distinction between the type of ownership and the legal organization of the production units. Therefore, there is no explicit link between ISIC and the classification of Institutional Sectors in the SNA. Nevertheless for some units certain relation between activities and institutional sectors exists, e.g. most units classified in Section K “Financial and insurance activities” refer to Financial Corporations sector. Cross-classification between institutional units and economic activities is a very common presentation used in national accounts.

ISIC also does not differentiate between formal and informal sector. In some countries, however, policy makers and analysts may require detailed data on the composition and economic activity structure of the informal sector. Therefore UNSD is developing a specific aggregation of ISIC giving separate presentation of the activities where the informal sector is important. These are agriculture, manufacturing, repair services, trade, transport, accommodation and food services. The alternative ISIC aggregation for informal sector will contain about twelve categories. Compared to the SNA A10 level it would show G “Wholesale and retail trade”, H “Transport and storage” and I “Accommodation and food service” separately. Retail trade not in stores (except via Internet) will also be a separate category. On the other hand, it is proposed that activities typically not undertaken in the informal sector like J “Information and communication”, K “Financial and insurance services” and L “Real estate activities” be grouped together.

### **Implementation plans in the countries of the UNECE region**

The switch to the new classifications will be a very costly and complex exercise. It will be very difficult to keep international comparability of statistics during the period of transition to the new classification. Therefore, at its 38<sup>th</sup> Session in March 2007, the UN Statistical Commission reviewed issues linked to the implementation of ISIC Rev.4 and Central Product Classification (CPC), Version 2. The Commission highlighted the need of international manuals, training, organization of meetings and technical assistance. The development of correspondence tables between the new classifications and the previous versions should be made available as soon as possible.

The Commission also considered a timetable for the implementation of ISIC and CPC. The timetable is build around the following milestones:

- Adaptation of national classifications by 2009;
- Adaptation of business registers (where existing) by 2010;
- Use of revised ISIC and CPC in statistical programmes starting in 2011;
- Use of revised ISIC and CPC in national accounts by 2015;

- Use in population census, and so forth, as soon as possible.

It was recognized that there is a need for flexibility in the timetable, allowing the countries to speed up the process of implementation. Countries are encouraged to develop overall strategy and planning for the introduction of the new classifications into their source data and national accounts statistics and link it to the implementation strategy for their national accounts.

In the UNECE region the implementation process will be considerably advanced compared to the timetable proposed at global level. Many efforts have been made, especially at the EU level to ensure synchronized change to the new classifications. The implementation plans of the different groups of countries are presented below.

#### *EU group of countries*

The programme Operation 2007 for implementation of NACE Rev.2 by the EU member states is posted at Eurostat website at <http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/index.htm>

The site contains detailed information, explanatory notes and electronic correspondence tables. Four handbooks providing a general overview of the implementation project, suggestions, common practices, methodologies and different tools will be prepared. Three of them are already finalised and are posted on Operation 2007 website.

The implementation plan has been developed in consultation with experts from various areas of statistics and with the National Statistical Institutes of member countries. The aim is to ensure that in each domain countries simultaneously switch to reporting in the new classification. The dependencies between the different surveys and the links (“feeding”) between source and derived statistics have been taken into account. The main steps in this programme are the following:

- *1 January 2008*: all statistical units in business registers should be classified according to NACE Rev.2;
- *January 2008*: economic activities should be classified according to NACE Rev.2. 2008 will be the first reference year for structural business statistics (to be reported in 2009 and 2010);
- *January 2009*: Short term statistics have to be reported according to NACE Rev.2 starting reference period M1 2009 and Q1 2009;
- *January 2009*: Labour cost index has to be reported in NACE Rev.2;
- *September 2011*: Implementation of NACE Rev.2 in national accounts;
- *2011*: Implementation of NACE Rev.2 in balance of payments and agricultural statistics,
- *2012*: All community statistics will be produced according to NACE Rev.2.

The aspects of NACE Rev. 2 implementation in national accounts have been discussed in the last couple of years at the Eurostat National Accounts Working Group. They include the aggregation levels to be used for the separate national accounts series, the production and

transmission of back data. Although a final decision on all these issues is not taken yet, the discussion with member states has focused on the following proposals:

- Level A6 will be replaced by SNA/NACE level A\*10. It will be used for transmission of quarterly accounts and the annual accounts derived from them. A\*10 will also be used for regional accounts.
- Level A17 will be replaced by NACE Rev. 2 at section level (21 categories). However, this aggregation level will have only limited use in national accounts.
- Level A31 is replaced by SNA/NACE level A\*38. This level will be used to report annual national accounts.
- Level A60 will be replaced by SNA/NACE level A\*66. This level will be used for reporting of supply and use and input/output tables.

Final decision on backcasting and length of time series is still not taken. The European Central Bank and other users would like to have long time series starting in 1980 at the minimum. However, this is not considered feasible by many member states because of the lack of input data. Most likely an agreement will be reached around a proposal for reporting A10 series back to 1990 for the Euro area countries, Denmark, Sweden and UK and back to 1995 for the other states. The series in A\*38 breakdown would start in 1995 and in A\*66 breakdown - in 2000. The starting year for regional accounts would be 1999.

#### *North America*

In 2006 OECD conducted a survey among its non-European member countries about their plans for introducing the revised activity classification in national accounts. Canada and the US are using the North American Industry Classification System, which was revised in 2002, with a second revision to be introduced in 2007, and is now consistent with the high level of ISIC Rev.4.

Canada will implement the revised NAICS in its industry surveys in 2007. National accounts will switch to the new classification in 2010. US will also start to supply data in the revised breakdown in 2010, the series going back to 1998. Both countries should be able to provide to the OECD A\*10 and A\*38 levels for annual data.

#### *CIS and Western Balkan countries*

In the spring of 2007, when the national accounts questionnaire was distributed, UNECE asked the CIS and Western Balkan countries about their intentions for introduction of the revised activity classifications in their statistics, and in particular in national accounts. This information will help UNECE to better plan the data collection and dissemination, as well as the revision of the questionnaires. In addition, it could be used by the countries in the region to develop their national plans, by taking into account the calendar of neighboring countries. Most importantly, region specific needs for technical assistance could also be identified. About half of the countries replied. Some countries indicated that they do not yet have detailed implementation plans and they are expecting translation into Russian of ISIC Rev.4.

It should be noted, that CIS and Western Balkans start from a very different base than the EU member countries. Therefore a synchronized approach as in EU countries is not possible and a number of additional difficulties will be faced in the transition phase.

All EU countries have well established business registers and relatively stable time series in NACE Rev.1, going back to 1995 as a minimum (for the new member states). At same time the business registers of many Western Balkan and CIS countries are still in process of development. Most countries have only recently finalized a difficult revision of their statistics, changing from the so-called Classification of the Branches of the National Economy (CBNE), based on the material product system to ISIC Rev.3. A few countries are still using national activity classifications derived from CBNE.

So far, from the group of the CIS countries only Ukraine have reported more detailed plans for implementation of ISIC. They are generally in line with the timetable discussed at the 38<sup>th</sup> Statistical Commission: the adaptation of the national classification will be finished in 2009 and the first annual national accounts in ISIC Rev.4 will be available in 2012.

Two countries, Armenia and Republic of Moldova, have replied that they were currently translating ISIC Rev.4/NACE Rev.2 and developing a national version. It is expected that the process will be finalized by the end of 2007 in Moldova and in 2008 in Armenia. The implementation in business statistics will start in 2008. More detailed plans, including the introduction of ISIC in national accounts, will be elaborated at a later stage.

Kyrgyzstan is expecting that the CISSTAT provide the Russian version of ISIC Rev.4. Only after that more detailed discussions on its implementation will begin.

There is a group of four countries, Belarus, Tajikistan, Turkmenistan and Uzbekistan that are currently in process of switching from CBNE to ISIC Rev.3. Belarus expects to complete the revision this year, and Turkmenistan - in 2008.

The two Western Balkan countries that are candidates to the EU will try to align their implementation plans with those of the EU member states to the extent possible. The former Yugoslav Republic of Macedonia has finished the translation of the correspondence tables and will complete the translation of the detailed structure and explanatory notes of NACE Rev. 2 by the end of this year.

Serbia intends to follow fully the timetable developed by Eurostat. The new NACE will be introduced in business statistics in 2008 and in national accounts in 2011, providing back data up to 2000.

The UNECE member states are currently working on the implementation of ISIC Rev.4/NACE Rev.2 in their statistics. In 2008/09 the business registers of the majority of countries will be coded in the new classification. UNECE expects that by 2012 the most countries would have implemented ISIC Rev.4 in their national accounts. By that time the national accounts questionnaires will be amended to reflect the new SNA/ISIC aggregation levels. It is clear that the international comparability of data in the transition period will be

affected. Adjustments need to be done to maintain special and temporal comparability and to produce regional aggregates.

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## APPENDIX

## Appendix 1. Broad correspondence between ISIC Rev.3 and ISIC Rev.4 Sections

ISIC Rev. 3 – NACE Rev. 1		ISIC Rev. 4 – NACE Rev. 2	
Section	Description	Section	Description
A	Agriculture, Hunting and Forestry	A	Agriculture, Forestry and Fishing
B	Fishing		
C	Mining and quarrying	B	Mining and quarrying
D	Manufacturing	C	Manufacturing
E	Electricity, gas and water supply	D	Electricity, gas, steam and air conditioning supply
		E	Water supply, sewerage, waste management and remediation activities
F	Construction	F	Construction
G	Wholesale and retail trade: repair of motor vehicles, motorcycles and personal and household goods	G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Hotels and restaurants	I	Accommodation and food service activities
I	Transport, storage and communications	H	Transportation and storage
		J	Information and communication
J	Financial intermediation	K	Financial and insurance activities
K	Real estate, renting and business activities	L	Real estate activities
		M	Professional, scientific and technical activities
		N	Administrative and support service activities
L	Public Administration and defense; compulsory social security	O	Public administration and defence; compulsory social security
M	Education	P	Education
N	Health and social work	Q	Human health and social work activities
O	Other community, social and personal services activities	S	Other service activities
		R	Arts, entertainment and recreation
P	Activities of private households as employers and undifferentiated production activities of private households	T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
Q	Extraterritorial organizations and bodies	U	Activities of extraterritorial organizations and bodies

Note: ISIC Rev. 3 had 17 sections and 62 divisions. ISIC Rev. 4 has 21 sections and 88 divisions.

## Appendix 2.

### SNA93 rev. 1 aggregation level A\*38

	A*38 code	ISIC rev 4
1	A	Agriculture, forestry and fishing
2	B	Mining and quarrying
3	CA	Manufacture of food products, beverages and tobacco
4	CB	Manufacture of textiles, wearing apparel and leather products
5	CC	Manufacture of wood and paper products, and printing
6	CD	Manufacture of coke, and refined petroleum products
7	CE	Manufacture of chemicals and chemical products
8	CF	Manufacture of pharmaceuticals, medicinal chemical and botanical products
9	CG	Manufacture of rubber and plastics products, and other non-metallic mineral products
10	CH	Manufacture of basic metals and fabricated metal products
11	CI	Manufacture of computer, electronic and optical products
12	CJ	Manufacture of electrical equipment
13	CK	Manufacture of machinery and equipment n.e.c.
14	CL	Manufacture of transport equipment
15	CM	Other manufacturing and repair
16	D	Electricity, gas, steam and air-conditioning supply
17	E	Water, sewage, waste management and remediation
18	F	Construction
19	G	Wholesale and retail trades
20	H	Transportation and storage
21	I	Accommodation and food service activities
22	JA	Publishing, audiovisual and broadcasting activities
23	JB	Telecommunications
24	JC	IT and other information services
25	K	Financial and insurance activities
26	L	Real estate activities
26a		Of which: imputed rents of owner-occupied dwellings
27	MA	Legal, accounting, management, architecture, engineering, technical testing and analysis activities
28	MB	Scientific research and development
29	MC	Other professional, scientific and technical activities
30	N	Administrative and support service activities
31	O	Public administration and defense
32	P	Education
33	QA	Human health services
34	QB	Residential care and social work activities
35	R	Arts, entertainment and recreation
36	S	Other services
37	T	Activities of households as employers of domestic personnel and undifferentiated goods and services production of households for own use
38	U	Extra-territorial organizations and bodies

**Appendix 3.**

## ESA aggregation level A\*66

<b>Sequential number</b>	<b>NACE Rev. 2 divisions</b>	<b>Description</b>
1	01	Crop and livestock production, hunting and related service activities
2	02	Forestry and logging
3	03	Fishing and aquaculture
4	05-09	Mining and quarrying
5	10-12	Manufacture of food products, beverages and tobacco products
6	13-15	Manufacture of textiles, wearing apparel and leather
7	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
8	17	Manufacture of paper and paper products
9	18	Printing and reproduction of recorded media
10	19	Manufacture of coke and refined petroleum products
11	20	Manufacture of chemicals and chemical products
12	21	Manufacture of pharmaceuticals, medicinal chemical and botanical products
13	22	Manufacture of rubber and plastics products
14	23	Manufacture of other non-metallic mineral products
15	24	Manufacture of basic metals
16	25	Manufacture of fabricated metal products, except machinery and equipment
17	26	Manufacture of computers and electronic and optical products
18	27	Manufacture of electrical equipment
19	28	Manufacture of machinery and equipment n.e.c.
20	29	Manufacture of motor vehicles, trailers and semi-trailers
21	30	Manufacture of other transport equipment
22	31-32	Manufacturing n.e.c.
23	33	Repair and installation of machinery and equipment
24	35	Electricity, gas, steam and air conditioning supply
25	36	Water collection, treatment and supply
26	37-39	Sewerage, waste management and remediation activities
27	41-42	Construction of buildings and civil engineering
28	43	Specialized construction activities
29	45	Wholesale and retail trade and repair of motor vehicles and motorcycles
30	46	Wholesale trade, except of motor vehicles and motorcycles
31	47	Retail trade, except of motor vehicles and motorcycles
32	49	Land transport and transport via pipelines
33	50	Water transport
34	51	Air transport
35	52	Warehousing and support activities for transportation
36	53	Postal and courier activities
37	55-56	Accommodation and food and beverage service activities
38	58	Publishing activities

39	59	Motion picture, video and television programme production, sound recording and music publishing activities
40	60	Broadcasting and programming activities
41	61	Telecommunications
42	62	Information technology
43	63	Other information service activities
44	64	Financial intermediation, except insurance and pension funding
45	65	Insurance, reinsurance and pension funding, except compulsory social security
46	66	Other financial activities
47	68	Real estate activities
47a		of which: imputed rents for owner-occupied dwellings
48	69-70	Legal, accounting and management consultancy activities; head offices
49	71	Architecture and engineering activities; technical testing and analysis
50	72	Scientific research and development
51	73	Advertising and market research
52	74-75	Other professional, scientific and technical and veterinary activities
53	77	Rental and leasing activities
54	78	Employment activities
55	79	Travel agency, tour operator and other reservation service activities
56	80-82	Security and investigation, services to buildings and landscape and other support activities
57	84	Public administration and defence; compulsory social security
58	85	Education
59	86	Human health activities
60	87-88	Social work activities
61	90-92	Arts, entertainment and museum activities
62	93	Sports, amusement and recreation activities
63	94	Activities of membership organizations
64	95	Repair of computers and personal and household goods
65	96	Other service activities
66	97	Activities of households as employers of domestic personnel
67	99	Activities of extraterritorial organizations and bodies

### 3. Implementation of the revised classifications of economic activities (ISIC and NACE) in business registers

by Fabio Tomasini<sup>1</sup>, Swiss Federal Statistical Office, Switzerland

#### Introduction

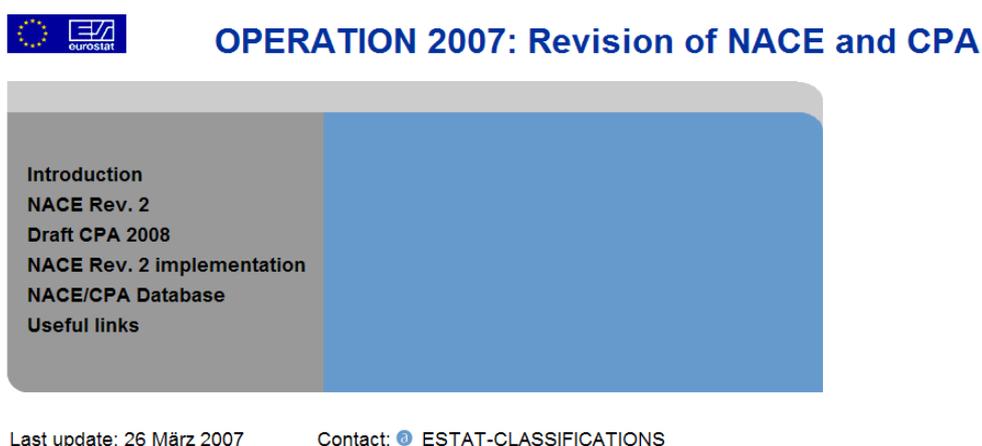
This paper examines the experience of the Swiss Federal Statistical Office in the implementation of the revised classifications of economic activities. A description of background, the different tasks, the challenges in the coordination activities are the main subjects that will be addressed. The model of the revision system in the statistical system will be also presented.

#### Background and context

The Eurostat /UN working group on the classification of economic activities, made up by all the countries which cooperated for the revision process, has conceived an accompanying system for the classification's revision.

The coordination between the creation of the new classification and its implementation program may be considered one of the keystones of the revision project. Participating countries could rely not only on the usual information sources (the classification structure and the correspondence tables), but the following papers were also at their disposal: « Setting up an implementation plan », « Implementation in Business register », « Handbook on methodological aspects related to sampling designs and weights ». All this information is available on the revision support internet page.

<http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/index.htm>



**OPERATION 2007: Revision of NACE and CPA**

- Introduction
- NACE Rev. 2
- Draft CPA 2008
- NACE Rev. 2 implementation
- NACE/CPA Database
- Useful links

Last update: 26 März 2007      Contact: ESTAT-CLASSIFICATIONS

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We have thoroughly followed the instructions provided by the working group. Two handbooks have proved to be particularly useful for us during the first phase of the implementation: « Setting up an implementation plan for NACE Rev. 2 in National Statistical Institutes » and « Implementation in Business register ».

First we elaborated a national (Swiss) implementation plan. Without this document it would have been impossible to gather the resources necessary for the implementation. Then, based on the paper established and published by Eurostat in March 2006, we prepared the implementation in the Swiss Business Register.

In our country the revision work must be carried out with special care as the classification is used beyond statistics circles. The classification elaborated by our office is also employed in other fields and is used by other data bases (e.g. Orell Füssli- Teledata<sup>2</sup>, Creditreform<sup>3</sup>, Swiss Chamber of Commerce<sup>4</sup>). Banks and insurance companies make use of it to organise their fields of activity. The code we produce is therefore used as a general reference code for the coding of enterprises, which makes it highly marketable. In order to continue playing a central part on the Swiss classifications field, it is necessary to integrate external users into our implementation plan.

Another specific element is the structure of our register, as well as the updating procedure employed for the attribution of the code of activity. The Business Register<sup>5</sup> includes all the public and private enterprises and businesses/companies, from all economic sectors, established in Swiss territory.

**Table 1. Number of records in the business register by type of unit (04.06.2007)**

	Active	Inactive	Cancelled	New Or Reactiveted	Fictive	TOTAL
Legal unit (principal)	687'389	37'425	500'247			1'225'061
Legal unit (secondary)	8'774	219	5'666			14'659
Enterprise	477'227	199'378	500'247	35'618	12'591	1'225'061
Local unit	550'149	216'712	554'272	38'915	90'981	1'451'029
<i>above the threshold</i>	<i>462'483</i>					
<i>Sector 1</i>	<i>72'889</i>					
<i>Enterprise census univers</i>	<i>389'594</i>					
<i>under the threshold</i>	<i>87'666</i>					

Threshold for the Enterprise Census: only the active local units with more than 1 person working 20 hours per week are included in the Enterprise census 2005

This information makes possible to consider the amount of units that needed recoding in a first stage. The Swiss Business Register relies on a dense network of sources for updating the units.

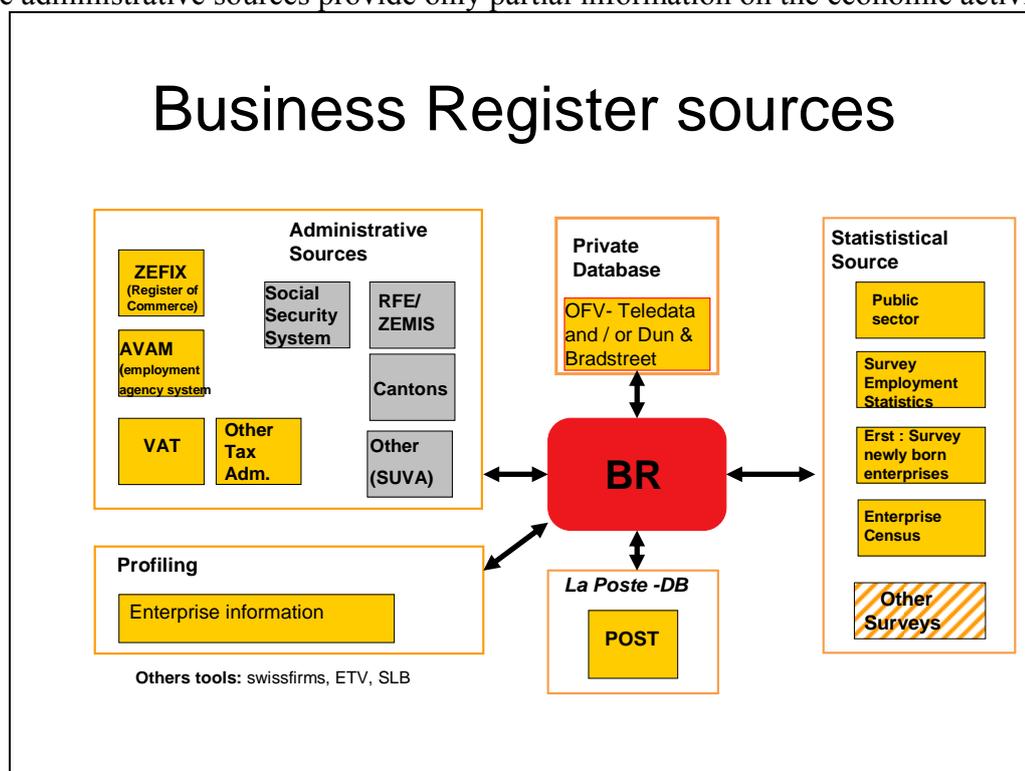
<sup>2</sup> [http://www.ofwi.ch/en/Teledata/Pages/standard\\_Firmen\\_BranchenInfo.aspx](http://www.ofwi.ch/en/Teledata/Pages/standard_Firmen_BranchenInfo.aspx)

<sup>3</sup> <https://secure.creditreform.ch/index.php?id=13&L=1>

<sup>4</sup> [http://www.swissfirms.ch/en/recherche\\_avancee.asp](http://www.swissfirms.ch/en/recherche_avancee.asp)

<sup>5</sup> Detailed information on Business Register available on this address:  
[http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/inv\\_reg/02.html](http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/inv_reg/02.html)

In the chart below, the interrelationships are highlighted. For the updating of the activity code, the administrative sources provide only partial information on the economic activity.



The coding of a company's economic activity is performed according to precise rules when enquiries are conducted by our Office. As a matter of fact, when it comes to company coding, that is the only source we can count on. In Switzerland, an Enterprise Census<sup>6</sup>, takes place every 3 or 4 years. During this process, all units are contacted: the active ones (corresponding to the limit of at least one person working 20h/week) and the new ones (about 450'000 local units). The last census took place in September 2005 and the next one is programmed for September 2008. There is also a Quarterly Survey<sup>7</sup> which treats all the new entries in the Business Register. Each year between 40'000 and 50'000 new units are questioned. It is at this time that the classification of the economic activity is carried out.

The organization of the Business Register's recoding work was organised on the basis of the information collected during the 2005 Enterprise Census and Newly Born Enterprises Quarterly Surveys. It was thus not necessary to develop any particular tools or methods for automatic coding.

### Implementation within the business register

We will now present the process of implementation of the new classification in the Business Register. As agreed with Eurostat's working group, a plan for new classification's implementation was elaborated. We presented this plan to our Office's direction board in

<sup>6</sup> [http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen\\_quellen/blank/blank/bz/01.html](http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen_quellen/blank/blank/bz/01.html)

<sup>7</sup> [http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen\\_quellen/blank/blank/erst/02.html](http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen_quellen/blank/blank/erst/02.html)

February 2006. In this plan, the several points as well as the resources necessary for their fulfillment were described as follows:

- Development of 1st version of National Classification due in March 2006
- Development of 2nd version of National Classification, due in March 2007
- Development of definitive version of National Classification, due in October 2007
- Broad consultation with statistics users, professional associations, regional statistics offices, universities, etc (about 800 addresses)
- Organization of a first internal consultation for development of the Business Statistics revision plan.
- Request for resources for recoding
- Beginning of recoding process: September 2006
- Preparation of a new codification auxiliary tool available in June 2007
- Development of a probabilistic conversion matrix
- Development of a conversion simple matrix based on the probabilistic conversion matrix mentioned above.
- Request for financial resources necessary to operate changes in the Business Register software
- Implementation of the new classification according to the international planning on the 1st of January 2008
- Double coding NACE Rev. 1.1 (NOGA 2002) and NACE Rev. 2 (NOGA 2008) during 5 years minimum.

The implementation plan presented was accepted and it was possible to carry out the work according to the scenario originally set up. Without the unconditional support of the direction board and of our colleagues in charge of the statistics, it wouldn't have been possible to set up such a tight-scheduled implementation plan requiring considerable extra financial resources. In fact such a support must be viewed as the key element contributing to the successful achievement of our project.

Throughout the implementation plan's development, several problems had to be solved. In order to recode the Register's units, we could make use of scanned survey questionnaires from the Enterprise Census and the Quarterly Survey. We had to decide whether to recode all units or only the ones belonging to the codes that had been split as a consequence of the remodelled new classification's structure. Of the 350'000 units that had to be reclassified, nearly half could be treated by the means of a conversion matrix. The remaining approximately 150'000 splitting cases were to be treated manually. Because of practical reasons and for making good use of the resources at our disposal, we decided to treat the 150'000 splitting cases in priority. As for the remaining cases the procedure consisted in checking exhaustive lists containing units' names and codes. This system guaranteed an efficient usage of resources and allowed us to track and correct eventual codification mistakes among the cases covered by the conversion matrix.

Another problem which arose was that of double coding. For Eurostat the year 2008 is critical. All statistics must be coded according to both classifications. This means that, for certain surveys having 2008 as their reference year, data will still be processed in 2009, or even in 2010. It is the Register's responsibility to provide the best support to all the statistics so that they can

respect the revision timetable as well as fixed dates of reference. Considering the difficulties involved, we decided to provide our customers with uninterrupted double coding during at least 5 years starting from 2008. For the implementation a practical, economic and easy solution was required. Double coding procedure, supported by eventual semi-automatic tools was therefore adopted. From June 2007 on, coding will be conducted according to the NACE Rev. 2 (NOGA 2008), the result of which will be immediately recoded according to the NACE Rev. 1.1. (NOGA 2002) by means of a conversion matrix. The existing splittings will be treated manually or on the basis of the conversion simple matrix, directly within the Business Register's Database according to proposed codes. In order to make such a treatment a reality, changes had to be implemented in the software of the Business Register.

While work on the new national classification's definitive version was going on, the register's recoding was being completed. Between September 2006 and April 2007, the 350'000 units that had been coded by 2005 Enterprise Census were treated. Between March 2007 and May 2007, units having participated at the Newly Born Enterprises Quarterly Survey were also treated. Cross checking and quality controls were realised on the whole of the units, and, more specifically, in the fields having been identified as problematic.

**Table 2. Human resources needed for the recoding**

Enterprise Census Recoding				Manual coding per day and by person
Manual coding	Persons	Months		
148000	5	8	148	

Survey Newly born enterprises				Manual coding per day and by person
Manual coding	Persons	Months		
37000	5	2	148	

The final version of the National Classification was published in May 2007. It contains the structure as well as the explanatory notes in four languages: German, French, Italian and English. The Correspondence Tables were also published. Contrary to the policy applied in the past, it was decided that the information related to this classification was to be available free of charge. This was determined by the increasing usage of this Classification in our country<sup>8</sup>.

An additional step was also taken by putting online the Coding Assistance Tool (KUBB)<sup>9</sup>. For this reason, we are able to provide our work partners and classification users with a basic tool to help the coding process, the coding handbooks and other useful information. By opening up to the public, we hope that the key words' list used as guide for our coding tool may be improved and fed thanks to users' experience. The current version includes 11'000 key words.

<sup>8</sup> [http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/nomenklaturen/blank/blank/noga0/revision\\_noga\\_2007.html](http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/nomenklaturen/blank/blank/noga0/revision_noga_2007.html)

<sup>9</sup> <http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/nomenklaturen/blank/blank/noga0/programme.html>

The switch to NACE Rev. 2 (NOGA 2008) occurred on 14 June 2007. The Business Register software was totally modified so as to allow double coding. We had to reshape the procedure of automatically treating changes provided by administrative sources. As for our work partners, they also had to adapt their own IT environments in order to coordinate the 14 June 2007's switch. From this date on, users accessing the Register will dispose of two activity codes. For statistics users, that means they will be able to start analysing the back casting strategies and prepare their revision plans.

In accordance to the implementation plan, the official publication's reference date is 1 January 2008. This is when all partners will also be allowed to publish the new codes.

Training is an important step for the Register team to make the transition to the new classification. This means that the collaborators' coding mind frames which are currently linked to the NACE rev 1.1. (NOGA 2002), are to be reformatted, so that the new coding philosophy may take place and be adopted instead. The Coding Handbook is a basic tool that will have to be used by the coding team. This paper contains the evolutionary coding rules. Continuous training will be necessary to provide teams with the knowledge necessary to work in this new environment.

Other tasks must be completed until the end of the year. The 2001 and 1998 Enterprise Censuses will be also recoded according to the same methodology, that is, by giving priority to the splitting cases, based on information from the stored surveys. This will allow business statistics users to have at their disposal three reference points in the past, so that they can rebuild the time series.

### **Implementation in the statistics**

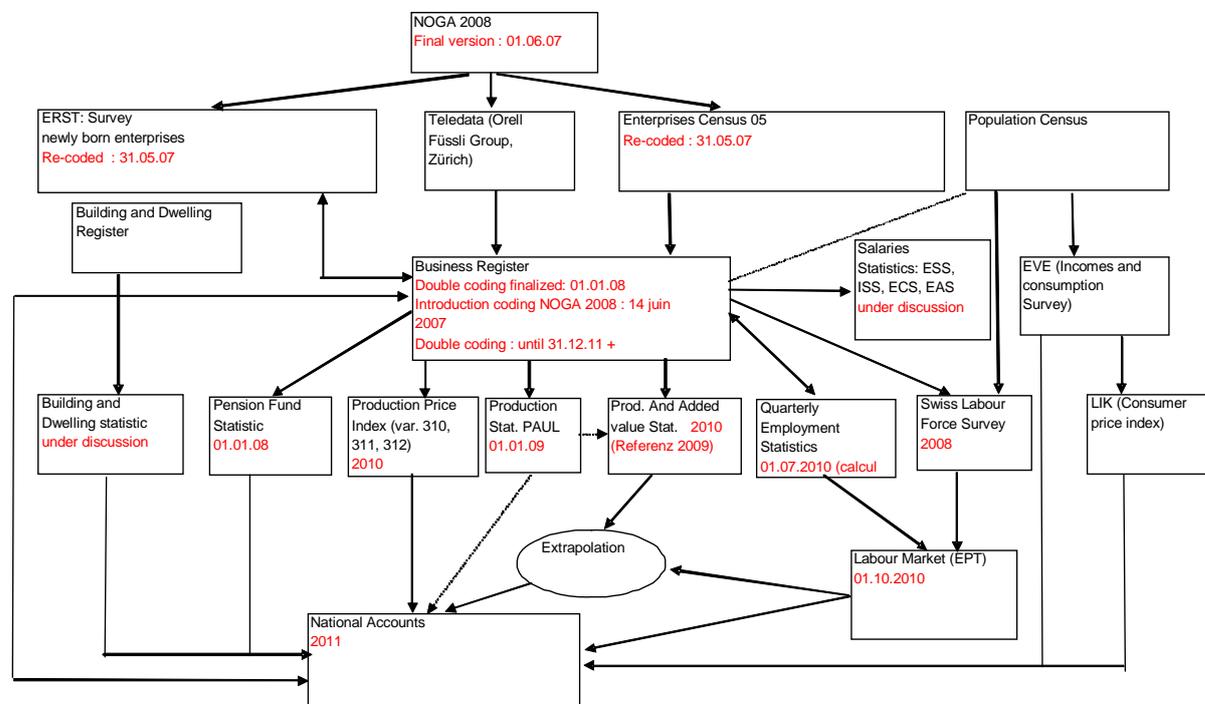
Once the recoding work and the implementation in the Business Register will be achieved, the most complex part will begin. It concerns the introduction of the new classification to the overall business statistics system. During the first stages of the Classification's revision, persons in charge of the statistics had to be informed and warned about the fact that this revision was to radically change the structure of the classification being used until then. Persons in charge of the several statistics also had their attention drawn to the time and resources which would be necessary to evaluate the impact such a modification would have in their field of action. At first, however, our call was not properly heard, because the persons in charge of the statistics initially were too much concerned with their production deadlines and the short-term difficulties they were faced with. It is indeed not easy to free one's mind from one's everyday problems and to embark on a journey into a future, which one has very little concrete notion of, and thereupon plan the necessary steps to reach it.

Our work was also greatly supported by the setting-up in 2005 of a group which was to be responsible for the coordination of the revisions in the field of Business statistics. The idea was to define a general method for revisions of the kind, but the Classification's revision soon proved to be the perfect case study for the implementation of such a revision. Thus, starting from the activities of this group, it was possible to determine the stages of a coordinated implementation of the new classification. A chart presenting these stages was drawn up and was used as a

working tool with which the persons in charge were to find their position in the production system of business statistics.

## Basic statistics: links between them and National accounts

### Introduction NOGA



The person in charge for the revision of this classification in our office and its implementation in the Business Register was chosen to coordinate the group which must now carry out the revision plan. This activity starts in 2008, involves approximately thirty statistics and is supposed to end in 2011 with the National Accounting introducing the new classification as the last step. It will be necessary to accompany the persons in charge of the statistics during this revision, to ask them to prepare work schemes for the back casting, new samples, as well as the publication of the results according to the new classification. It is the responsibility of each person in charge to determine the extent of the revision of time series.

So far, the Enterprise Census and the Newly Born Enterprises Quarterly Survey are the only two fields where work has been finished. The publication plan is still to be elaborated, but the recoding work has already been concluded for the whole of the data.

Various statistics currently prepare their revision programs which will have to be carried out during the year 2008. The survey framework based on information of the Register will be available with the two classifications as from June 2007, which leaves the persons in charge of the methods sufficient time to develop their work strategies. The person in charge of the Classification and the Business register must accompany those revision projects. This implies an additional workload for them.

The process has been described. It is now a matter of putting the implementation into practice. And that is the most difficult part because, in our field, the chronic lack of resources as well as the pressure on the deadlines weighs heavily on the project. Compared to the whole of the revision project, the implementation in the statistics is the phase which contains most uncertainties.

### **Concluding remarks**

In this document, we have tried to explain how the implementation of the new classification was carried out in our country. Switzerland is not a member of the European Union, but we took an active part in the revision of this classification. This classification is a fundamental element in the comparability of the economic statistics as well as in the widening of its comparability to the other classification systems. The system of the Swiss Business statistics needs this tool to provide useful instruments of analysis and to allow comparability at all levels. Therefore in our office we did our best to carry out this project.

If difficulties appeared all along the project, the need for succeeding led us to find bearable cost/benefit solutions, while guaranteeing a maximum quality. The most important aspect of this revision was communication and the implication of all relevant actors, before and during the project.

To complete this work, it is now a question of finalizing the project in the field of the statistics.

## 4. Benchmark Definition of Foreign Direct Investment, 4th edition. OECD revises international standards for foreign direct investment statistics

by Ayse Bertrand, OECD<sup>1</sup>

### Introduction

*OECD Benchmark Definition of Foreign Direct Investment* (Benchmark Definition) sets the world standard for foreign direct investment (FDI) statistics as it is fully compatible with the *IMF Balance of Payments Manual* (BPM). It also follows the general economic concepts set out by the *System of National Accounts* (SNA).<sup>2</sup> OECD conducts this work under the auspices of the Investment Committee (IC)<sup>3</sup> and its technical subsidiary body, Workshop on International Investment Statistics (WIIS). Before its release to the public in 2008, the *Benchmark Definition* will be submitted to the approval of the OECD Council.

The main focus of the *Benchmark Definition* is FDI statistics encompassing direct investment positions and related direct investment financial and income flows. In terms of detail and breakdowns, the *Benchmark Definition* goes beyond the aggregate statistics of the functional category “direct investment” of the balance of payments financial account and of the international investment position. It provides guidance on how to compile comprehensive breakdowns of FDI by partner country and by industrial activity. By setting the global standard for FDI measurement, the *Benchmark Definition* complements the *OECD Handbook on Economic Globalisation Indicators* (*Globalisation Handbook*).

### *Objectives of the Benchmark Definition*

The *Benchmark Definition* serves several objectives. It provides:

- a single point of reference for foreign direct investment statistics;
- clear guidance for individual countries as they develop or change their statistical systems for recording direct investment;
- international standards for FDI taking into account the effects of globalisation;
- the basis for economic analysis of direct investment, especially in international comparisons, to the extent that progress is made in reducing national deviations from the standard;
- practical guidance to users of direct investment statistics including the relations of FDI to other measures of globalisation; and

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<sup>1</sup> Ayse Bertrand, Manager International Investment Statistics, Investment Division Financial and Enterprise Affairs, OECD.

<sup>2</sup> The Benchmark Definition was first issued in 1983 and revised twice in 1992 and 1996.

<sup>3</sup> The Investment Division (Directorate for Financial and Enterprise Affairs) acts as the Secretariat servicing the IC and WIIS ([www.oecd.org/investment](http://www.oecd.org/investment)).

- an objective basis for measuring methodological differences that may exist between national statistics that need to be taken into account both for cross-country and industry analysis of FDI.

### *Why revise the OECD benchmark definition*

Since the publication of the first edition of the *Benchmark Definition*, compiling countries have made important progress in revising FDI measurement systems towards greater compliance with its requirements and definitions. To measure the extent to which statistical systems have implemented the recommendations on direct investment statistics, IMF and OECD have, since 1997, conducted the Survey of Implementation of Methodological Standards for Direct Investment (SIMSDI) which also provides standardised information on data sources and collection methods, and reporting practices for national direct investment statistics.<sup>4</sup>

However, the removal of legal and regulatory restrictions on cross-border operations in many countries has complicated the task of statistical systems that historically depended largely on reports from national financial institutions. As economic activities become more global, investors have more and more recourse to overseas financing and may establish complex structures to obtain optimal benefits from their investments and for efficient management of the funds and related activities. These developments have had an adverse impact on the capability of traditional statistics to respond to user needs for adequate analytical information on direct investment. They have also reinforced the need for adopting a harmonised analytical framework for constructing meaningful, comprehensive and internationally comparable statistics on cross-border investments. The next edition of the *Benchmark Definition (4<sup>th</sup> edition)* sets out the methodology to address those concerns.

The implementation of new standards will be subject to a planning by the OECD WIIS in close co-operation with its partners. The present document provides the background to the revision and introduces selected features of the OECD *Benchmark Definition, 4<sup>th</sup> edition*.

## **Establishing future FDI standards**

### *International co-operation*

The revision of the Benchmark Definition coincided with the revision plans for the IMF Balance of Payments Manual. To maintain consistency and to implement a harmonised approach for the revision of FDI statistical standards, IMF/OECD created a joint Direct Investment Technical Expert Group (DITEG) to discuss basic methodologies. DITEG conducted its work under the auspices of the IMF Committee on Balance of Payments Statistics and the OECD WIIS. Work arrangements for the revision process are further described in text box 1.

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<sup>4</sup> SIMSDI results are analysed in *Foreign Direct Investment Statistics: How countries measure FDI*, IMF and OECD, 2003. Results of subsequent revisions of SIMSDI are posted on IMF and OECD web sites. <http://www.imf.org/bop> and <http://www.oecd.org/daf/simsdi>. SIMSDI also serves as the metadata for statistics published in the OECD *International Direct Investment Statistics Yearbook*. Moreover, it facilitates the exchange of information between reporting economies for bilateral data comparisons.

OECD WIIS and the IMF BOPCOM were able to reach a consensus on core issues (See Annex 1 for selected items).

### *Guiding principles*

Discussions throughout the revision process have been guided by the following considerations:

- *Need to consider evolving user requirements* was confirmed to be the central issue when establishing the methodological standards. It was recognised that one set of statistics could not meet all user requirements. Balance of payments (BOP) statistics which include FDI aggregates under financial accounts should provide the overall cross-border flows based on the general asset/liability principle. FDI statistics which provide bilateral data (by partner country) and FDI by economic activity respond to other user requirement which cannot be met by the aggregate BOP statistics. However, the consistency between the two sets of data is essential taking into account their complementarity. On the other hand, further breakdowns for FDI statistics are driven by the user demands, namely in conjunction with other globalisation statistics, such as those dealing with the activities of multinational enterprises described in the OECD *Handbook of Economic Globalisation Indicators*, namely the statistics on the Activities of Multinational Enterprises (AMNE). Several new areas of research work were identified in response to such user needs: identifying transactions/position to isolate the activities of Special Purpose Entities (SPEs) set up by MNEs for transferring or managing their investments; identifying ultimate host/ultimate investing country; identifying mergers and acquisitions; providing complementary data series according to the economic calculation of stocks (versus financial), etc. (see also Annex 4 for FDI globalisation indicators).
- *Need for clarity*: Experts agreed that even though existing recommendations were renewed as they remained valid, these recommendations were not always well understood by national compilers or by the users of the statistics. They recommended more clarity overall for revised manuals.
- *Need for continued international co-operation to achieve harmonised standards*, e.g. with the System of National Accounts (SNA), *OECD Handbook on Economic Globalisation Indicators*.

Issues reviewed/resolved by WIIS can be categorised as follows:

- *Existing recommendations remain unchanged and/or are reinforced and improved*. These include *inter alia*: 10% threshold; use of market valuation; principles for industry classification, directional principle, etc.
- *Replacement/removal of existing recommendations*. These include *inter alia* the Framework for Direct Investment Relationship (FDIR) for indirect FDI relationship replacing the Fully Consolidated System (FCS); abolition of permanent debt, etc.
- *Introduction of new recommendations*. These include *inter alia*: the introduction of asset/liability principle for aggregate FDI statistics (BOP data); FDI by type segregating

Mergers & Acquisitions (as opposed to Greenfield investments; extension of capital and financial restructuring); looking through funds passing through SPEs, looking at the ultimate investing/host country; developing an FDI glossary; etc.

- **Research agenda:** These include *inter alia*: establishing closer linkages with the statistics on the Activities of MNEs; round tripping; economic measurement of FDI stocks. Establishment of a future work under research agenda was adopted to accommodate in an adequate way the dissemination of the results of additional work after the publication of core recommendations in 2008.

The structure and the level of details of the revised *Benchmark Definition* were substantially improved. It is useful to underline the introduction of two new chapters or sections: (i) statistical units; (ii) uses of FDI statistics to provide guidance to users of FDI data on the interpretation of the statistics; and (iii) FDI and globalisation.

#### **Box 1. Working arrangements so far for the revision of the benchmark definition of foreign direct investment**

IMF/OECD Direct Investment Technical Expert Group (DITEG) was created in 2004 as a joint IMF/OECD expert group to make recommendations on the methodology of FDI statistics within the framework of the revision of the IMF Balance of Payment Manual and the OECD Benchmark Definition of Foreign Direct Investment. DITEG held three meetings (June 2004 in Paris; December 2004 in Washington D.C.; and March 2005 in Paris). DITEG was co-chaired by IMF and OECD and serviced by a joint IMF/OECD Secretariat.

The coverage of DITEG's work programme was based on the joint list of some 30 items identified by the IMF BOPCOM and OECD WIIS as issues for resolution. Creating such an informal but a dynamic body composed of experts from a range of countries and international agencies provided a flexible organization which could start work rapidly. DITEG's conclusions and recommendations were submitted to the consideration of the BOPCOM and to the WIIS as from October 2004. The conclusions of both groups were very similar, mainly due to the high level of expertise of their membership and to the close co-operation and the degree transparency between IMF and OECD secretariats.

For the next steps, WIIS established a drafting group – Benchmark Advisory Group (BAG) to assist the Secretariat in the preparation of 4<sup>th</sup> edition of the Benchmark Definition. BAG has gone beyond its initial task as drafting group and made very valuable contributions for the development of methodologies in new standards.

WIIS and BAG were prompted by the pressing user needs to resolve at least some parts of the problems raised for better analytical ability of FDI statistics. WIIS created four small project groups:

- Project group on Special Purpose Entities
- Project Group on Mergers and Acquisitions
- Project Group on Ultimate Host/Investing Country
- Project Group on Income

The results of the work of project groups were approved by WIIS in March 2007.

### **Direct investment relationship**

The classification of financial positions and flows to direct investment requires that the two institutional units be resident in different economies and that they be in a direct investment relationship. While direct investment measures a wide variety of instruments, direct investment

relationships are based on equity only. The legal structures of related enterprises can consist of many enterprises linked through complex ownership chains (see text box 2 for a description of direct investor and direct investment enterprise).

### **Box 2. Direct investment, direct investor and direct investment enterprise**

*Foreign direct investment* reflects the objective of establishing a lasting interest by a resident enterprise in one economy (*direct investor*) in an enterprise resident in an economy other than that of the investor (*direct investment enterprise*). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The ownership of 10 per cent or more of the voting power of a resident enterprise by a non-resident investor in a resident enterprise is the evidence of such a relationship. Some compilers may argue that in some cases the ownership of 10 per cent of the voting power may not lead to the exercise of any significant influence while on the other hand, a direct investor may own less than 10 per cent but have an effective voice in the management. Nevertheless, the recommended methodology does not allow any qualification of the 10 per cent threshold and recommends its strict application to ensure statistical consistency across countries.

Direct investment involves both the initial equity transaction that meets the 10 per cent threshold and all subsequent financial transactions between the direct investor and the direct investment enterprise and among affiliated enterprises, both incorporated and unincorporated. Direct investment is not solely limited to equity investment but also relates to reinvested earnings and inter-company debt.

A *foreign direct investor* is an entity (an institutional unit) that has acquired at least 10% of the voting power of a corporation, or equivalent for an unincorporated enterprise, resident in an economy other than its own. A direct investor could be from any sector of the economy and could be any of the following:

- an individual;
- a group of related individuals;
- an incorporated or unincorporated enterprise;
- a public or private enterprise;
- a group of related enterprises;
- a government;
- an estate, trust or other societal organization; or
- any combination thereof.

In the case where two enterprises each own 10% or more of each other's voting power, each is a direct investor in the other.

A *foreign direct investment enterprise* is an enterprise in which a non-resident investor owns 10% or more of the voting power of an incorporated enterprise or the equivalent of an unincorporated enterprise.

In contrast to some other statistical measures such as those on the Activities of MNEs, direct investment does not require control by the investor (i.e. more than 50% owned by the investor and/or its related enterprises). Direct investors may have direct investment enterprises in just one economy or in several economies.

If a direct investment enterprise is an incorporated enterprise then it will be either a *subsidiary* or an *associate* of the direct investor.

A *subsidiary* company is a direct investment enterprise that is incorporated in its country of residence and that is a controlled affiliate of the direct investor.

An *associate* company is a direct investment enterprise that is incorporated in its country of residence and that is a non-controlled affiliate of the direct investor.

The Framework for Direct Investment Relationships (FDIR)<sup>5</sup> is a generalised methodology for identifying and determining the extent and type of direct investment relationships. In other words, the FDIR allows compilers to determine the population of direct investors and direct investment enterprises to be included in FDI statistics.

The FDIR identifies all enterprises affiliated with a direct investor. For example, within a group, it is possible that a direct investment enterprise itself owns 10% or more of the voting power of another enterprise, in which case the direct investment enterprise is itself a direct investor in a further direct investment enterprise.

The FDIR principally identifies all enterprises over which the investor has significant influence. In this determination, three degrees of influence are recognised for each enterprise. They are categorised as controlled, influenced, and not influenced.

- The degree of influence that may be exercised through controlling links (more than 50%) is not diminished by the existence of multiple links.
  - An enterprise controlled by a controlled affiliate or by a group of controlled affiliates (which may also include the investor) is itself regarded as a controlled affiliate.
  - An enterprise controlled by a non-controlled affiliate is also regarded as a non-controlled affiliate.
- The degree of influence that may be exercised through a single or cumulative influencing link (from 10% to 50%) is diminished by one degree.
  - Thus, an enterprise influenced by a controlled affiliate or the group of controlled affiliates (which may include the investor) is regarded as a non-controlled affiliate.
  - An enterprise influenced by a non-controlled affiliate is not influenced by the investor in question, i.e. it is not regarded as an affiliate of the investor within the FDIR.
- A chain of ownership is followed until the degree of influence that may be exercised by the investor is diminished to the point where an enterprise can be categorised as not influenced.

Recognising practical difficulties compilers may encounter in fully applying the FDIR, two alternative methods may be applied: the ‘participation multiplication’ method, and the ‘direct influence / indirect control’ method. Should compilers choose to apply either of these alternate methods due to practical difficulties, they should include this information in their metadata. However, such countries should endeavour to apply the FDIR over time.

## Valuation

The underlying principle for the valuation of equity is the market value of that equity. Listing in an organised market provides a good basis for valuing listed equity. However it can be more difficult to determine a market value for unlisted equity and illiquid listed equity. In any case, if there has been a material change in an enterprise's financial position since the date to

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<sup>5</sup> FDIR replaces the former Fully Consolidated System (FCS) described in *Benchmark Definition*, 3<sup>rd</sup> edition.

which the valuation applies (but before the reference date), an adjustment may need to be made. Examples of such material events include an unexpected decision in a lawsuit, credit downgrade or upgrade, major new invention or mineral find, or bankruptcy.

The Benchmark Definition recognises five methods for approximating market value for unlisted equity:

- Recent transaction price
- Market capitalization method
- Net asset value (NAV)
  - Including goodwill and intangibles
  - Excluding goodwill and intangibles
- Present value
- Own funds at book value (OFBV)
- Apportioning global value

The choice of method depends primarily on having information available to support the application of the method. In practice, one or more of these methods could be ruled out because of a lack of information available to support the application of the method. Among the methods that could be implemented, the primary consideration should be how well the method approximates market value. A further consideration is the stringency of the requirement for symmetric recording by debtors and creditors.

## Scope of foreign direct investment

### *Standard features of FDI statistics*

Direct investment statistics take into consideration a wide range of elements and method of calculation as investors apply a large variety of financing structures and instruments. The growing complexity of the measurement of the direct investment activity was accelerated with the expansion of globalisation and its effects. Taking into account these economic and financial developments over the past decade or so which may directly or indirectly impact the measurement of the FDI activity, two standard presentations of direct investment statistics were adopted:

- FDI statistics for main aggregates of standard components (BOP statistics);
- FDI statistics by (i) geographical allocation; and (ii) industry classification (FDI statistics)

### *Aggregate FDI components*

The analytical presentation of FDI statistics showing non-resident assets and liabilities of direct investors and direct investment enterprises is a new feature of the *Benchmark Definition*. It complies fully with the overall presentation of macro-economic statistics of an economy. Conceptually, these data are in line with the balance of payments statistics and the international investment position<sup>6</sup> as well as the national accounts presentation of the institutional sectors of

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<sup>6</sup> The asset/liability approach constitutes a break in series from previous aggregate data compilation of balance of payments and international investment position.

the economy. Direct investment measured in terms of assets and liabilities constitute the basis for compiling FDI statistics from which can be derived other presentations provided that a number of additional relevant information is included in national data collection systems.

### Exhibit 1. FDI transactions according to asset/liability principle

<b>{Transactions in} Assets</b>	<b>{Transactions in} Liabilities</b>
<b><i>Of direct investors in direct investment enterprises</i></b>	<b><i>Of direct investment enterprises to direct investors</i></b>
<b>A1</b> Equity	<b>L1</b> Equity
<b>A1.1</b> Equity transactions	<b>L1.1</b> Equity transactions
<b>A1.2</b> Reinvestment of earnings	<b>L1.2</b> Reinvestment of earnings
<b>A2</b> Debt instruments	<b>L2</b> Debt instruments
<b><i>Of direct investment enterprises in direct investors- Reverse investment:</i></b>	<b><i>Of direct investors to direct investment enterprises – Reverse investment</i></b>
<b>A3</b> Equity	<b>L3</b> Equity
<b>A4</b> Debt instruments	<b>L4</b> Debt instruments
<b><i>Of direct investment enterprises in other affiliated enterprises abroad</i></b>	<b><i>Of direct investment enterprises to other affiliated enterprises abroad</i></b>
<b>A5</b> Equity	<b>L5</b> Equity
<b>A6</b> Debt instruments	<b>L6</b> Debt instruments

Note: The presentation for FDI Positions is the same with the exception that A1.1 and A1.2 and L1.1 and L1.2 are not shown separately

Aggregate FDI statistics include all types of enterprises (operational affiliates as well as Special Purpose Entities-SPE). These statistics are compiled according to first counterparty. Considering that the details are not shown, the level of counterpart information is not relevant for aggregate data dissemination but constitutes the basis for data compilation. Industry classification is not relevant for these data.

#### *Detailed FDI statistics*

As from its first edition, the *Benchmark Definition* recommends that countries compile and disseminate detailed FDI statistics broken down by (i) geographical allocation; and (ii) industry classification. Such statistics provide a further refinement to an aggregate statistical framework which is traditionally used for balance of payments and international investment position presentations. It allows FDI analyses by source and destination which cannot be achieved by aggregate data. Current standards for detailed FDI statistics have also maintained the directional principle as in the previous version of the *Benchmark Definition* (in contrast to aggregate statistics described above).

**Exhibit 2: FDI transactions according to directional principle**

<b>Outward foreign direct investment</b>	<b>Inward foreign direct investment</b>
<i>Outward equity transactions</i>	<i>Inward equity transactions</i>
<b>A1</b> Equity assets of DI in DIE	<b>L1</b> Equity liabilities of DIE to DI
<b>A1.1</b> Equity transactions	<b>L1.2</b> Equity transactions
<b>A1.2</b> Reinvestment of earnings	<b>L1.2</b> Reinvestment of earnings
<b>-L3</b> Equity liabilities of DI to DIE*	<b>-A3</b> Equity assets of DIE in DI*
<b>A5</b> Equity assets of DIE in other affiliated enterprises abroad	<b>L5</b> Equity liabilities of DIE to other affiliated enterprises abroad
<i>Outward debt instruments transactions</i>	<i>Inward debt instruments transactions</i>
<b>A2</b> Debt instruments assets of DI in DIE	<b>L2</b> Debt instruments liabilities of DIE to DI
<b>-L4</b> Debt instruments liabilities of DI to DIE*	<b>-A4</b> Debt instruments assets of DIE in DI*
<b>A6</b> Debt instruments assets of DIE in other affiliated enterprises abroad	<b>L6</b> Debt instruments liabilities of DIE to other affiliated enterprises abroad

\* entered as a deduction in outward or inward FDI

Note: The presentation for FDI Positions is the same with the exception that A1.1 and A1.2 and L1.1 and L1.2 are not shown separately

For positions data, foreign direct investment assets under the asset/ liability principle are greater than foreign direct investment outward position calculated under the directional principle. In the same manner, foreign direct investment liabilities under the asset liability principle are greater than the foreign direct investment inward position calculated under the directional principle. The difference between the two presentations is as follows:

- The asset position is greater than the outward position and the difference is equal to:  
 $(A1+A2+A3+A4+A5+A6) - (A1-L3+A5+A2-L4+A6) = A3+L3+A4+L4$
- The liability position is greater than the inward position and the difference is equal to:  
 $(L1+L2+L3+L4+L5+L6) - (L1-A3+L5+L2-A4+L6) = A3+L3+A4+L4$

The net asset (liability) position is the same for both presentations; the difference between foreign direct investment asset and foreign direct investment liability is equal to the difference between outward foreign direct investment and inward foreign direct investment.

*Isolating “Genuine FDI”*

The term “genuine” FDI was used as a working terminology to designate FDI excluding “pass-through” funds which could be channel either through SPEs or through operating affiliates of multinational enterprises. Including these transactions in the measurement of FDI may distort the reality and seriously impact policy analysis. Main problems are inflation of FDI transactions and distortion of bilateral and industry analysis of FDI.

Given the complex financing structures used by MNEs and the limitations of data collection systems compilers may face difficulties in identifying “genuine” FDI. To date no single method could provide a solution to resolve the problems. Therefore the *Benchmark Definition*, will deal, in the first instance, only with funds passing through SPEs and leave the funds channelled through operating affiliates to the research agenda. Most of the generic methods proposed to resolve the problems have led to possible deflation of FDI which is not desirable either.

More specifically, compilers are recommended to “look through” SPEs and to allocate transactions or positions with foreign SPEs to the country of the first known non-SPE. Due to the fungibility of funds and the use of SPEs as financial turning tables for different destinations/countries, it may not always be possible to look through SPEs in an unambiguous way. Compilers are therefore encouraged to intensify bilateral exchanges of information.<sup>7</sup> Some bilateral asymmetries may remain, but these would seem less serious than distortions of geographical breakdowns, in which countries with many SPEs would give the wrong impression to be overly attractive as a place for direct investors. As a complement, it is recommended to analyse and present separate tables for SPEs.

### *Supplemental features of FDI statistics*

#### FDI by type

Direct investment will have, all other aspects being equal, a different impact, in particular, on the “host” economy depending on the type of FDI. It is generally considered that cross-border investments in the form of M&As will not involve significant changes in the performance of economic variables such as production, employment, turnover, etc. unless the acquired enterprise is subject to drastic restructuring. On the other hand, new investments, greenfield investments and extension of capital, are likely to add new dimensions to the economic performance of the host economy and the earnings of the direct investor.

Moreover, to measure the impact of FDI in host and home economies, users need detailed analytical information: FDI by type broken down by partner country and by industry. This novel feature of FDI statistics is at the centre of arguments which have led to the revision of the *Benchmark Definition*, i.e. to align international standards to economic and financial developments since the last edition. To avoid any confusion, it should be clear to the reader that the statistics of M&As shown as an “of which” category of FDI are not identical to what is generally referred to as “M&A statistics” by private commercial sources compiled and disseminated outside the context of foreign direct investment statistics. It is more appropriate to call the former “purchase of existing shares” and the latter M&A statistics while the scope and the coverage of the two data sets differ but they remain complementary.

In the current edition of the *Benchmark Definition* the main focus to compile and disseminate FDI by type is M&A type transactions. Compilers are strongly encouraged to provide “M&A transactions” as an “of which” item of total inward and outward equity

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<sup>7</sup> The allocation of inward amounts across outward destinations may still require some rules of thumb, which countries are asked to clarify in meta-data.

transactions. More specifically, data relate only to FDI financial flows in the form of equity but exclude reinvested earnings and debt instruments (inter-company loans).

The examination of greenfield investments, extension of capital, and financial restructuring is deferred to the research agenda while they require further research which may not be completed on time for the publication of the present edition. However, after deducting M&A equity transactions from the total, users would be able to obtain, as residual, “other types” of investments.

### Exhibit 3. Components of M&A transactions

#### **Foreign direct investment**

***Inflows:*** Gross investments and divestments by non-residents

Investment in equity

Divestment in equity

*Of which:*

*Of which:*

Acquisition of existing stake in resident companies by non-residents

Sale of existing stake in resident companies by non-residents

- (i) partner country and
- (ii) industry

- (i) partner country and
- (ii) industry

***Outflows:*** Gross investments and divestments by residents

Investment in equity

Divestment in equity

*Of which:*

*Of which:*

Acquisition of existing stake in non-resident companies by residents

Sale of existing stake in non-resident companies by residents

- (i) partner country and
- (ii) industry

- (i) partner country and
- (ii) industry

***Memo items:*** Total of which M&A under control

- (i) partner country and
- (ii) industry

Note: The above presentation relates to the conceptual framework by country allocation and by industry classification. For data dissemination, data may be disseminated at higher level of aggregation if limited by confidentiality.

#### **FDI according to ultimate host/investing country**

As a basic principle, it is recommended that all FDI transactions and positions be compiled by immediate host country and immediate investing country. As a matter of principle, for outward investment, this method takes into consideration only the economy of the directly owned non-resident enterprise. For inward investment, geographic classification is allocated to the economy directly owning the domestic enterprise, i.e. the resident direct investment enterprise.

It is recognised that there is a substantial analytical need to follow funds back to their origin and also to their ultimate destination. Therefore, it would be very useful that supplemental presentations of direct investment positions on an ultimate investing/host country basis be compiled and disseminated. Notwithstanding this general recommendation, the *Benchmark Definition*, in the first instance, will incorporate only guidance with regard to ultimate investing country (i.e. for inward investment of the reporting economy). Such a step-wise approach was necessary due to conceptual difficulties which may benefit further research. The methodology for inward investment is currently under discussion.

## References

- [1] Draft Benchmark Definition of Foreign Direct Investment, 4<sup>th</sup> edition, OECD, 7 March 2007
- [2] Draft: Features of standard and optional FDI statistics – Benchmark Definition of Foreign Direct Investment, 4<sup>th</sup> edition, OECD, 7 March 2007
- [3] Revision of the OECD Benchmark Definition of Foreign Direct Investment: Discussion document, OECD, 15 March 2007
- [4] Various documents of the IMF/OECD Direct Investment Technical Expert Group, OECD and IMF, 2004, 2005 [Issues papers, background documents, outcome papers]

## APPENDIX

## Appendix 1. Selected deliberations of the OECD workshop on international investment statistics 2004-2007

Topic	WIIS deliberations
1. <b>Direct Investment: 10 per cent threshold of voting power/equity ownership, employment:</b>	(1) To maintain the current 10 per cent threshold, thus not endorsing the recommendation of DITEG to change the threshold to 20 per cent; (2) To maintain the strict application of the 10 per cent threshold with a view to achieving cross-country comparability of FDI statistics; (3) Not to include the employment criteria in the definition of FDI; (4) To further clarify the definition of: “ordinary shares” and “voting rights”, “subsidiary”, “associate”, and “branch”, in co-ordination with the definitions used for the System of National Accounts (SNA).
2. <b>Indirect investment-Fully Consolidated System (FCS), US Method, or EU Method</b>	The Framework of Direct Investment Relationship describes the conceptual basis for delineating the scope of the FDI relationship based on influence and control through a chain of equity holdings. It replaces the earlier Fully Consolidated System (FCS) reflects the ideal. Two alternate approaches were also accepted - Participation Multiplication Method – PMM (former US Method) and the Direct Influence/ Indirect Control Method – DIICM (the former EU Method)
3. <b>(a) SPE’s, shell companies, holding companies, holding companies, off-shore enterprises</b>	(1) It was agreed that there is no single definition of SPEs and no single classification of all types of entities. The classification of SPEs will be co-ordinated with SNA. (2) The proposal to use elements of ISIC classification was not accepted.
<b>(b) SPEs inclusion in direct investment of transactions between non-financial die and affiliated financial SPEs</b>	(1) A single solution could not address all problems related to the operations of SPEs and agreed (but not unanimously) with the identification of three main statistical problems: <ul style="list-style-type: none"> <li>(i) large volume of gross (inward and outward) flows and stocks due to the operations of SPE holding companies in countries which are SPE hosts;</li> <li>(ii) loss of information on the final destination / ultimate origin of direct investments passing through SPEs located in third countries; and</li> <li>(iii) how to record financial flows / stocks due to the existence of conduits and SPVs raising funds in offshore centres for their direct investors.</li> <li>(iv) The solutions responding to users’ requests concerning SPEs should be provided.</li> </ul> (2) WIIS agreed to extend the directional principle for detailed FDI statistics and to look through SPEs.
4. <b>Asset/liability principle, Directional principle / Reverse investment</b>	(1) <u>Aggregate</u> (BOP) direct investment positions, financial transactions and income will be presented on a gross basis under assets, liabilities, payables and receivables (but not including reverse investments on a net basis). Investments by a direct investment enterprise in its direct investor will continue to be considered as direct investment even when the equity holding is less than 10%. (2) <u>Detailed FDI statistics (by partner and industry)</u> will continue to be recorded according to directional principle for direct investment positions, financial transactions and income on a net basis (i.e. including reverse investments). However, the formula for deriving gross FDI data will be provided.

Topic	WIIS deliberations
<p><b>5. Valuation of direct investment equity;</b></p>	<p>The market price principle is the basic principle for the valuation of direct investment equity positions and endorsed the following methods as appropriate proxies for market valuation for the valuation of unquoted direct investment equity:</p> <ul style="list-style-type: none"> <li>(i) value of recent transactions (within the previous twelve months);</li> <li>(ii) net asset value, including intangibles and goodwill;</li> <li>(iii) net asset value, excluding intangibles and goodwill;</li> <li>(iv) apportioning global value of a group to a local operation, using an appropriate indicator;</li> <li>(v) own funds at book value;</li> <li>(vi) use of capitalization ratios (stock market indices) to own funds at book value of listed companies; and use of models that revalue non-financial assets.</li> </ul>
<p><b>6. Reinvested earnings: (a) as affecting national savings; (b) of indirectly owned direct investment enterprises</b></p>	<ul style="list-style-type: none"> <li>(1) To retain the current treatment but to co-ordinate work in other (namely in the context of the SNA).</li> <li>(2) Clarification of how to record reinvested earnings along the chain of indirectly owned direct investment enterprises.</li> </ul>
<p><b>7. Permanent debt between affiliated financial intermediaries</b></p>	<ul style="list-style-type: none"> <li>(1) The Basle Tier 2 Capital definition was not appropriate for use as the definition of permanent debt between affiliated financial intermediaries. The group also concluded that all “unsecured and subordinated debt” should not be regarded as permanent debt.</li> <li>(2) Compilers should no longer define nor include “permanent debt” in direct investment and that all debt between affiliated financial intermediaries should be excluded from direct investment. WIIS also noted concerns expressed by only a few delegates that this deliberation may lead to excluding too much from FDI.</li> </ul>
<p><b>8. Geographic classification principles and Country Identification</b></p>	<ul style="list-style-type: none"> <li>(1) The preferred method is the debtor/creditor principle.</li> <li>(2) In addition to the basic principle for the identification of immediate host/investing country, it would be useful to identify on a supplemental basis the ultimate investing/host country for analytical purposes.</li> </ul>
<p><b>9. Principles for classification by industry</b></p>	<ul style="list-style-type: none"> <li>(1) The classification refers to the categories of the United Nations International Standard Industrial Classification (ISIC) and does not recommend other regional classifications.</li> <li>(2) To maintain the present recommendation of the methodology, namely that FDI statistics by industrial activity should refer (i) to the activity of the direct investment enterprise and (ii) to the activity of the direct investor, for both inward and outward statistics (in line with the existing recommendations of the <i>Benchmark Definition</i>). WIIS agreed that data be compiled at least according to the activity of the direct investment enterprise in both cases (inward and outward investment). However, concerns were expressed with regard to the practical implementation of the recommendation by some countries.</li> </ul>

Topic	WIIS deliberations
<b>10. FDI by type: Mergers &amp; Acquisitions (M&amp;A), greenfield investment, extensions of capital</b>	(1) To incorporate new breakdowns by type of FDI as supplemental items in the <i>Benchmark Definition</i> . : Mergers & Acquisitions, greenfield investment, extensions of capital. WIIS recommended to limit the initial recommendations to M&A and to defer the others to the research agenda.
<b>OTHER FDI ISSUES</b>	
<b>11. Land and buildings owned by non-residents</b>	<p>(1) Concepts and treatments be clarified in the OECD <i>Benchmark Definition of Foreign Direct Investment</i> (recognising the existence of long-term leases on land and buildings) and WIIS stressed the importance of consistency of the concepts and treatments with the System of National Accounts and the national accounts.</p> <p>(2) Where an effective change in ownership takes place through a lease on land (and buildings), in a manner comparable to a finance lease, a notional enterprise should be created, in the same way as when land (and buildings) are acquired outright. The claim on the direct investment entity should be considered to be equity (rather than debt) and that the value of the asset would fall as the lease moves to maturity (assuming that there are no price changes).</p> <p>(3) For the valuation of real estate, compilers should be encouraged for the use of real state price indexes (despite their methodological heterogeneity among countries) rather than a more general price index to calculate the market value of real estate stocks. However the use of acquisition cost was not totally rejected but was proposed as an inferior option.</p>
<b>12. Multi-territorial enterprises</b>	The current treatment will be generalised to all enterprise where identification of separate units in different economies is not possible. Fore joint sovereignty zones, guidance will be provided but will include some flexibility.
<b>13. Transfer pricing between banks</b>	Payments by a branch to its non-resident head office that result in a zero balance in the branch's income account should be treated as income, and not to try to separate any other elements (such as service payments).
<b>14. Shipping companies</b>	<p>(1) There are three main institutional units, namely</p> <ol style="list-style-type: none"> <li>i. the owner (the lessor);</li> <li>ii. the operator (the lessee); and</li> <li>iii. ticket offices/management offices/ sales promotion offices which, in general, do not qualify for FDI.</li> </ol> <p>(2) If the owner and the operator are the same entity, then they comprise a single institutional unit.</p> <p>(3) Following the basic asset/liability principle, the statistical treatment of shipping transactions related to branches should meet the criteria to be included under FDI.</p> <p>(4) Different types of leasing arrangement may exist that can make it difficult to determine whether the ship is being leased or effectively sold to the institution that operates it. Such operations may be either considered as FDI or could be treated simply as merchandise trade.</p> <p>(5) Solutions that apply to shipping companies be also extended to the treatment of other mobile equipment, as appropriate, e.g. aircraft leasing arrangements.</p>

Topic	WIIS deliberations
15. <b>Natural resource exploration and construction</b>	<p>(1) The starting points of the statistical treatment of construction and natural resource exploration are:</p> <ul style="list-style-type: none"> <li>(i) identification of a possible notional enterprise, to which ownership of certain assets is transmitted, and</li> <li>(ii) examination of how services are being delivered.</li> </ul> <p>(2) The application of notional enterprise to these activities should be in line with the SNA and ESA.</p>
16. <b>Mutual funds (units, sectorisations, residence, transactions)</b>	<p>WIIS agreed that the standard rule for establishing a direct investment relationship should apply:</p> <ul style="list-style-type: none"> <li>• were a retail mutual fund to hold 10 per cent (or more) of the voting power in an institutional unit resident in another economy; and</li> <li>• were a feeder fund to hold 10 per cent or more of the voting power in its non-resident master fund.</li> </ul>
17. <b>FDI glossary</b>	<p>WIIS agreed to incorporate an FDI glossary which will be limited to direct investment terms only and cross-reference the primary sources for terms which have a broader coverage than direct investment.</p>
<b>FUTURE RESEARCH WORK</b>	
18. <b>Pass-through funds</b>	<p>Improve the treatment of pass-through funds including those channelled through operating affiliates.</p>
19. <b>Geographic classification : Ultimate host country</b>	<p>Develop methods for outward investment</p>
20. <b>FDI by type</b>	<p>Develop definitions and methods for greenfield investments, extension of capita, financial restructuring.</p>
21. <b>Round tripping</b>	<p>The data on round tripping should be included in FDI statistics and concepts and the methods need to be developed for supplemental series.</p>
22. <b>FDI stocks (financial versus economic measurement)</b>	<p>Work should proceed on developing supplemental FID position and FDI income statistics as part of work on providing globalisation statistics in response to user needs.</p>

**Appendix 2. The scope of foreign direct investment statistics**

<i>Standard features and presentation</i>	<i>Basic presentation</i>	<i>Type of statistics</i>	<i>Components</i>	<i>FDIR coverage</i>	<i>Counterpart (level)</i>	<i>Type of data</i>
<b>(1) FDI statistics according to Assets/Liabilities principle (new basis)</b>	(i) Assets (ii) Liabilities	(1) Positions	(a) Equity (b) Debt instruments	All	Immediate	Only aggregate
	(i) Assets (ii) Liabilities	(2) Transactions	(a) Equity (b) Reinvestment of earnings (c) Debt instruments	All	Immediate	Only aggregate
	(i) Assets (ii) Liabilities	(3) Income	(a) Distributed earnings (b) Reinvested earnings (c) Interest (on debt instruments)	All	Immediate	Only aggregate
<b>(2-A) FDI statistics: according to Directional principle (current basis)</b>	(i) Inward (ii) Outward	(1) Positions	(a) Equity (b) Debt instruments	All	Immediate	(1) By partner country (2) By industry
	(i) Inward (ii) Outward	(2) Transactions	(a) Equity (b) Reinvestment of earnings (c) Debt instruments	All	Immediate	(1) By partner country (2) By industry
	(i) Inward (ii) Outward	(3) Income	(a) Distributed earnings (b) Reinvested earnings (c) Interest (on debt instruments)	All	Immediate	(1) By partner country (2) By industry
<b>(2-B) FDI statistics: according to Directional principle excluding SPEs</b>	(i) Inward (ii) Outward	(1) Positions	(a) Equity (b) Debt instruments	All -excluding SPEs	First non-SPE*	(1) By partner country (2) By industry
	(i) Inward (ii) Outward	(2) Transactions	(a) Equity (b) Reinvestment of earnings (c) Debt instruments	All -excluding SPEs	First non-SPE*	(1) By partner country (2) By industry
	(i) Inward (ii) Outward	(3) Income	(a) Distributed earnings (b) Reinvested earnings (c) Interest (on debt instruments)	All -excluding SPEs	First non-SPE*	(1) By partner country (2) By industry

\* SPE = according to national definitions

<i>Standard features and presentation</i>	<i>Basic presentation</i>	<i>Type of statistics</i>	<i>Components</i>	<i>FDIR coverage</i>	<i>Counterpart (level)</i>	<i>Type of data</i>
<b>(2-C) Memo item: Pass-through funds</b>	(i) Inward (ii) Outward	(1) Positions	(a) Equity (b) Debt instruments	SPEs only*		Only aggregate
	(i) Inward (ii) Outward	(2) Transactions	(a) Equity (b) Reinvestment of earnings (c) Debt instruments	SPEs only*		Only aggregate
	(i) Inward (ii) Outward	(3) Income	(a) Distributed earnings (b) Reinvested earnings (c) Interest (on debt instruments)	SPEs only*		Only aggregate
<b>(3-A) M&amp;A transactions according to Directional principle 10%-100% *</b>	(i) Inward (ii) Outward	Transactions	Equity	All -excluding SPEs involved in capital in transit	Final destination	(a) By partner country (b) By industry
<b>3-B Sub-category: M&amp;A transactions according to Directional principle +50%</b>	(i) Inward (ii) Outward	Transactions	Equity	All -excluding SPEs involved in capital in transit	Final destination	(1) By partner country (2) By industry
<b>(4.) FDI statistics: according to UIC/UHC</b>	(i) Inward (ii) Outward	(1) Positions	(i) Equity (ii) Debt instruments		Ultimate controlling parent (inward) as in AMNE statistics**	(1) By partner country (2) By industry

\* SPE = according to national definitions

\*\* UIC/UHC under discussion

### Appendix 3. Framework of direct investment relationship

Summary of the guiding principles and norms that determine the extent of a direct investment relationship.

#### **Basic types of affiliates:**

- A controlled affiliate is an enterprise in which the investor has control of more than 50% of the voting power.
- A non-controlled affiliate is an enterprise in which the investor has control of at least 10% of the voting power and no more than 50%.

#### **Principles for extending the relationship through indirect ownership:**

- A series of controlled affiliates can continue as long as control exists at each stage in the ownership chain – a chain such as that in Figure 1 can continue indefinitely.
- Any controlled affiliate can extend the relationship to a non-controlled affiliate by owning from 10% to 50% of the voting power of that enterprise.
- A non-controlled affiliate can extend the relationship only to another non-controlled affiliate by owning more than 50% of the voting power of that enterprise. Such a chain of non-controlled affiliates can be extended as long as majority ownership of voting power exists at each stage.

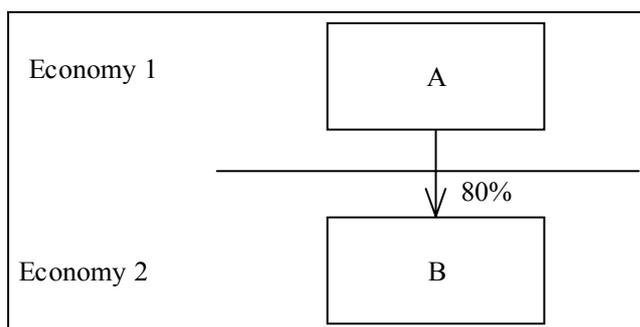
#### **Basis for extending the relationship through joint ownership:**

- Where the investor and its controlled affiliates combined own more than 50% of the voting power of an enterprise, the owned enterprise is a controlled affiliate of the investor.
- Where the investor and its controlled affiliates combined own at least 10% of the voting power of an enterprise but no more than 50%, the owned enterprise is a non-controlled affiliate of the investor.

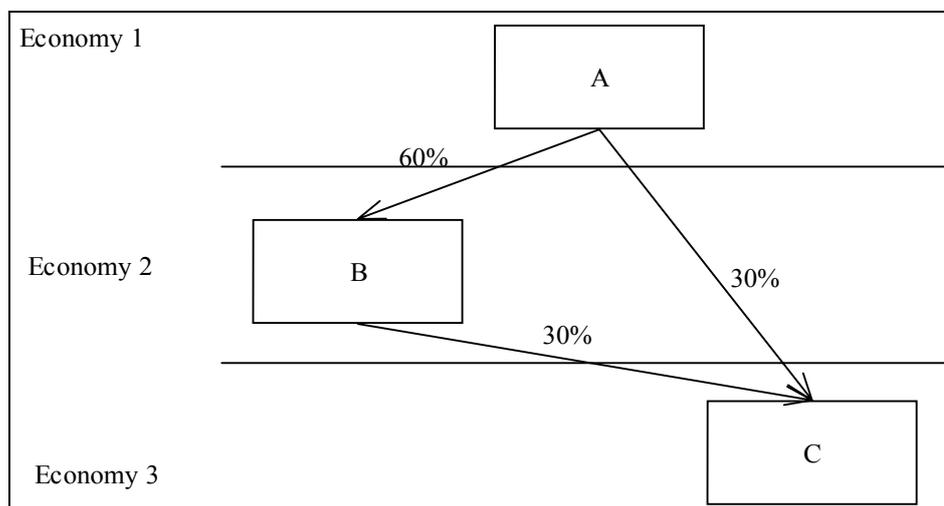
Where an investor's non-controlled affiliate and its controlled affiliates combined own more than 50% of the voting power of an enterprise, the owned enterprise is a non-controlled affiliate.

#### **Examples of FDIR**

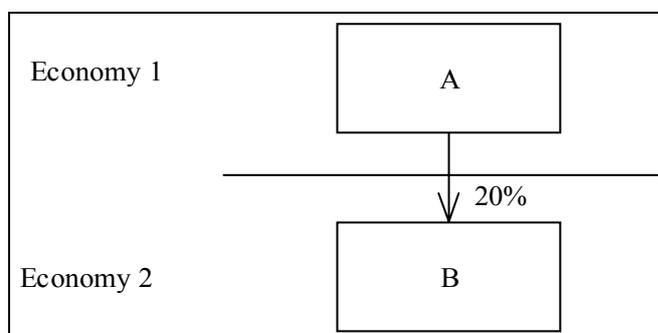
- A controlled affiliate is an enterprise in which an investor owns more than 50% of the voting power. In Figure 1, B is a controlled affiliate of A.

**Figure 1. Controlled affiliate**

- Where an investor and its controlled affiliate(s) combined own more than 50% of the voting power of an enterprise, the owned enterprise is also regarded as a controlled affiliate of the investor. In Figure 2, C is a controlled affiliate of A.

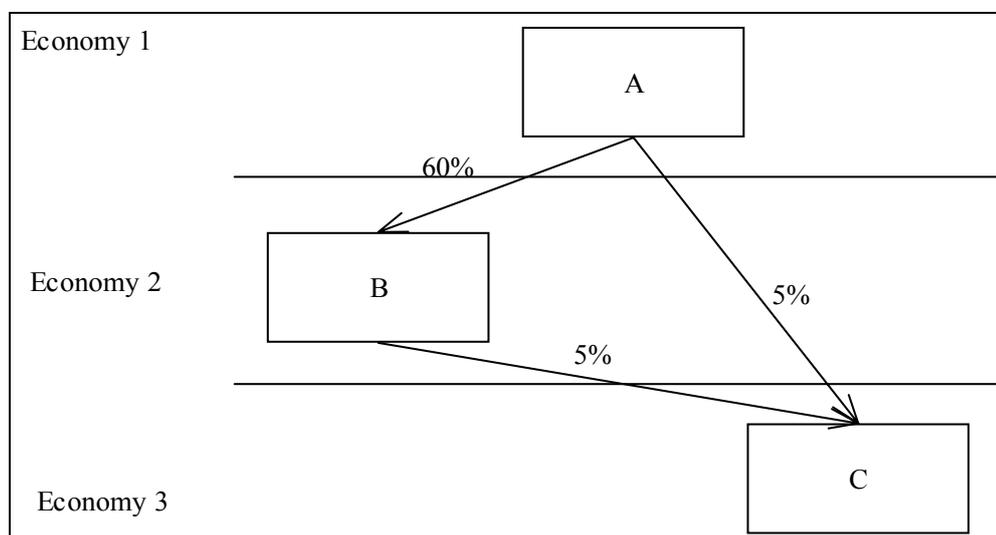
**Figure 2. Controlled affiliate**

- A non-controlled affiliate is an enterprise in which an investor owns at least 10% and no more than 50% of the voting power. In Figure 3, B is a non-controlled affiliate of A.

**Figure 3. Non-controlled affiliate**

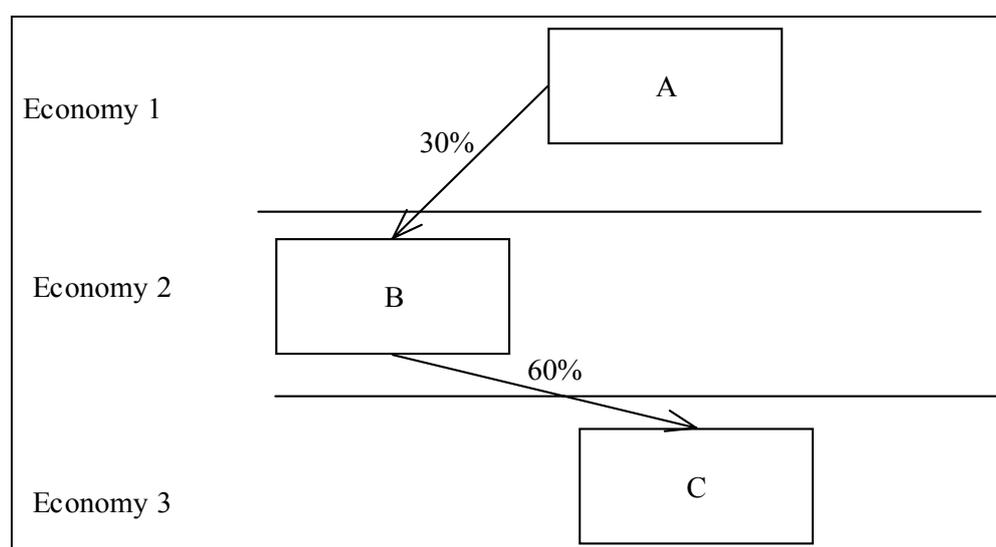
- Where an investor and its controlled affiliate(s) combined own at least 10% but no more than 50% of the voting power of an enterprise, the owned enterprise is regarded as a non-controlled affiliate of the investor. In Figure 4, C is a non-controlled affiliate of A.

**Figure 4. Non-controlled affiliate**



- Where an investor's non-controlled affiliate (and the affiliate's controlled affiliates combined) own more than 50% of an enterprise, the owned enterprise is regarded as a non-controlled affiliate of the investor. In Figure 5, C is a non-controlled affiliate of A.

**Figure 5. Non-controlled affiliate**



#### **Appendix 4. Reference indicators of globalisation related to FDI**

- **Extent of globalisation through FDI (total FDI or by industry)**
  - Inward FDI financial flows as a percentage of GDP
  - Outward FDI financial flows as a percentage of GDP
  - Inward FDI income flows as a percentage of GDP
  - Outward FDI income flows as a percentage of GDP
  - Inward FDI positions as a percentage of GDP
  - Outward FDI positions as a percentage of GDP
  
- **Contribution of host and investing economies or of industries to globalisation through FDI**
  - Relative share of inward FDI financial flows by partner country as a percentage of total inward FDI flows.
  - Relative share of outward FDI financial flows by partner country as a percentage of total outward FDI flows.
  - Relative share of inward FDI positions by partner country as a percentage of total inward FDI positions.
  - Relative share of outward FDI positions by partner country as a percentage of total outward FDI positions.
  - Relative share of inward FDI financial flows by industry as a percentage of total inward FDI flows.
  - Relative share of outward FDI financial flows by industry as a percentage of total outward FDI flows.
  - Relative share of inward FDI positions by industry as a percentage of total inward FDI position.
  - Relative share of outward FDI positions by industry as a percentage of total outward FDI position.
  
- **Return on FDI**
  - Inward FDI equity income debits [debits for a) dividends/distributed branch profits, plus b) reinvested earnings/undistributed branch profits] as a percentage of inward FDI position [rate of return for total inward FDI or by industry or investing country].
  - Outward FDI equity income credits [credits for a) dividends/distributed branch profits, plus b) reinvested earnings/undistributed branch profits] as a percentage of outward FDI position [rate of return for total outward FDI or by industry or investing country].

### Appendix 5. Time-table: Revision of the OECD benchmark definition of foreign direct investment

	Date	Comments
<b>Phase 1: Methodological recommendations by DITEG<sup>1</sup> and deliberations by WIIS<sup>2</sup></b>		
<b>1<sup>st</sup> DITEG meeting</b>	June 2004, Paris	
<b>WIIS meeting 2004</b>	12-13 October 2004, Paris	WIIS deliberations on the results of the 1 <sup>st</sup> DITEG meeting
<b>2<sup>nd</sup> DITEG meeting</b>	6-9 December 2004, Washington D.C.	
<b>3<sup>rd</sup> DITEG meeting</b>	7-11 March 2005, Paris	
<b>WIIS meeting 2005</b>	26-28 April 2005, Paris	WIIS deliberations on the results of the 2 <sup>nd</sup> and 3 <sup>rd</sup> DITEG meetings and recommendations on the draft outline of the benchmark definition, 4 <sup>th</sup> edition
<b>Phase 2: Drafting of the benchmark definition, 4<sup>th</sup> edition by BAG and WIIS</b>		
<b>1<sup>st</sup> BAG<sup>3</sup> meeting</b>	29 April 2005, Paris	
<b>2<sup>nd</sup> BAG meeting</b>	16-18 November 2005, Paris	
<b>WIIS meeting 2006</b>	24-25-26 April 2006, Paris	
<b>3<sup>rd</sup> BAG meeting</b>	27-28 April 2006, Paris	
<b>WIIS meeting 2006</b>	17-18 October 2006, Vienna	
<b>4<sup>th</sup> BAG meeting</b>	19-20 October 2006, Vienna	
<b>WIIS meeting 2007</b>	26-28 March 2007, Paris	
<b>5<sup>th</sup> BAG meeting</b>	29-30 March 2007, Paris	

<sup>1</sup> DITEG: IMF/OECD Direct Investment Technical Expert Group.

<sup>2</sup> WIIS: Workshop on International Investment Statistics of the OECD Investment Committee.

<sup>3</sup> BAG: OECD Benchmark Advisory Group.

<b>Phase 2: Drafting of the benchmark definition, 4<sup>th</sup> edition by BAG and WIIS</b>		
<b>WIIS meeting 2006</b>	1-3 October 2007, Paris	Final comments for approval
<b>6<sup>th</sup> BAG meeting</b>	4-5 October 2007, Paris	
<b>Phase 3: Approval of the Benchmark Definition, 4<sup>th</sup> edition by WIIS, the Investment Committee and the OECD Council</b>		
<b>WIIS approval of <i>draft benchmark definition, 4<sup>th</sup> edition</i></b>	Mid-December 2007	Approval by written procedure
<b>Investment committee - Approval of the <i>draft benchmark definition, 4<sup>th</sup> edition</i></b>	25-27 March 2008	Approval by the Investment Committee at its plenary session
<b>Council - Approval of the <i>benchmark definition, 4<sup>th</sup> edition</i> by the OECD</b>	April 2008 (tentative date)	Final approval
<b>Publication of the <i>benchmark definition, 4<sup>th</sup> edition</i></b>	Before end-June 2008	

## 5. Compilation of Consumer Price Indices (CPIs)

by Carsten Hansen, UNECE

### Introduction

The activities involved in the compilation of a CPI can be divided in the following areas of work:

- Determining the purpose(s) and conceptual basis of the CPI
- Deciding on the index coverage and classification structure
- Compilation of expenditure weights
- Designing the sample of outlets and products
- Price collection
- Calculation of the index
- The treatment of missing prices and replacement products
- Adjusting for quality changes
- Data editing
- Dissemination

The paper describes briefly these areas and aims to point only on the most important issues within the various activities. The paper relies heavily on the international *CPI Manual*, published in 2004<sup>1</sup>, to which interested readers are referred for further details and explanations.

### Determining the purpose(s) and conceptual basis of the CPI

#### *CPI used for different purposes*

A consumer price index (CPI) measures the average rate of change of prices of goods and services acquired by the households for consumption. Most statistical offices compile only one CPI, which serves different purposes:

- as a measure of the general rate of consumer price inflation
- as a measure of changes in the cost of living
- deflation of national accounts series
- indexation of wages and pensions and the like
- indexation of private contracts

It is useful to discuss and decide on the main purpose(s) of the index, as this should serve as a basis for subsequent decisions regarding the compilation of the index.

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<sup>1</sup> ILO, IMF, UNECE, OECD, Eurostat and the World Bank: Consumer Price Index Manual: Theory and Practice. ILO 2004, Switzerland. The manual is available in English from ILO's website: <http://www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm>

## **Inflation measure**

In the theory on price indices there are two main types of CPIs, *fixed basket indices*, and *cost of living indices*. The fixed basket index tries to measure the average price change of a representative basket of goods and services that is kept constant over time. This type of an index is sometimes referred to as a *pure price index*, a *cost of goods index (COGI)* or an *inflation index*.

### *Cost of living measure*

A cost of living index (COLI) tries to measure the change in the cost of maintaining a given standard of living over time. The quantities are allowed to differ between the periods compared as a result of households' substitution behaviour. In the fixed basket approach by definition the quantities are kept constant.

In practice, however, the CPI has to be calculated on the basis of a fixed basket or fixed weights approach. Whether the primary purpose is to measure the inflation or the cost of living may primarily influence the coverage of certain goods or services and the treatment of owner-occupied housing.

### *The price concept*

The CPI should be based on *purchaser prices* – the prices that the household actually pay for goods and services, including taxes less subsidies.

## **Deciding on the index coverage and classification structure**

### *Population coverage*

For the CPI to be representative, the weights of the index should be defined on the basis of the consumption of the whole reference population including all households. More narrowly defined CPIs may be compiled for special purposes, for example a CPI for low-income households or wage and salary workers types of households, where the weights would have to be derived from the expenditure data for this limited groups of households.

### *Geographical coverage*

Ideally, the CPI is an indicator for the entire country. It is therefore important that the compilation basis is representative for the whole country. In principle, the expenditure weights and the prices collected should refer to the same population and geographical area. However, due to resource constraints, price collection is often limited to urban areas the price changes of which are assumed to reflect those in surrounding smaller areas.

### *'National' and 'domestic' concepts*

In the definition of population and geographical coverage, countries tend to follow one of two options:

- The *national concept*, which covers the consumption expenditure of resident households, whether made in the country or abroad
- the *domestic concept*, which covers the consumption expenditure inside the country, whether made by resident or foreign households

It is up to the statistical office to decide on the coverage, depending on the purpose of the CPI. The Harmonized consumer price indices (HICPs) of the EU member countries, for example, follow the domestic concept as this is seen to be the more relevant for monitoring inflation.

#### *Coverage of goods and services*

The goods and services consumed by the households can in principle be acquired in four ways:

- Purchase in monetary transactions
- From own production
- As payment in kind
- As transfers or gifts from other economic units

The broadest possible scope for goods and services would cover all four categories. It would include all social transfers in kind in the form of education, health and housing and other goods or services provided free of charge or at nominal prices. The total acquisition of goods and services is equivalent to total actual consumption of households in the SNA.

For the CPI as a measure of inflation the more relevant would be to include only goods and services purchased in monetary transactions by the households, which excludes categories 2) – 3). Only monetary expenditures generate prices that can be observed for the CPI. The HICP is based on *households' final monetary consumption expenditure*.

#### *Owner-occupiers and food produced for own consumption*

However, many countries include the service of owner-occupied housing even if there is no market transaction involved. The 'price' is imputed by the rent of similar rented dwellings or estimated by user costs. Food produced for own consumption is sometime included in the weighting data for the CPI although no prices are imputed.

#### *Classification – COICOP*

The individual goods and services should be grouped and aggregated according to an international, or international comparable, classification. The one most common in use is *COICOP – Classification of individual consumption according to Purpose*. COICOP derives from the SNA and is used for the HICP, for example.

#### *Compilation of expenditure weights*

The expenditure weights for the CPI are used to average the detailed, elementary aggregate indices into indices at higher level of aggregation, up to the overall CPI itself.

### *The household budget survey*

The principal data source for household consumption expenditures in most countries is a household budget survey (HBS). When using HBS data appropriate corrections should be made to adjust for systematic bias, for example underreporting of ‘undesirable’ products such as gambling, alcohol and tobacco. Other data sources may be used for such purposes.

### *Adjusting HBS data*

It may also be necessary to adjust HBS data to bring them in line with the consumption concept required for the CPI. Some important areas are *owner-occupied housing*, where the imputed rents are usually not included in the HBS; the *consumption of foreign households* (tourists) in the country, which also is not included in the HBS, but will have to be included in the weighting data if the domestic concept is applied; and *insurances*, where the weights should be net of claims paid out to be consistent with national accounts principles. Finally, the weights should include also expenditures of *institutional households* to be consistent with national accounts.

### *National accounts*

Many countries also use consumption data from the national accounts to form the CPI weights, or they are used in combination with the weights from the HBS. The national account data can be used to compile weights at an aggregate level, for example for some 70 main groups of households expenditures, which can then be further divided by use of HBS data. This approach ensures, at least at some level of aggregation, consistency between the CPI and the national accounts.

### *Purchases between households*

The weights should reflect the consumption pattern of the household sector as a whole. Buying and selling *between* individual households cancel out and should not influence the CPI weights.

### *Second-hand products*

Second-hand products, for example used cars, should enter into the weights calculation with the amount used to purchase the product minus the amount received from sale of the product.

## **Designing the sample of outlets and products**

The sample should provide a representative basis for the calculation of the CPI. In the design of the sample the following issues should be considered.

### *Geographical and population coverage*

The sample should be representative of the geographical area covered by the CPI. It should cover larger and smaller cities and rural areas. Differences in the price *level* between regions are irrelevant to the CPI as a measure of price *changes*. Due to resource constraints the price collection may be restricted to mainly urban areas.

### *Coverage of outlets*

The sample should be representative of the various types of outlets, supermarkets, chain stores, specialized outlets etc. The selection of outlets should be based on their market share, or the relative turnover, of the outlets.

### *Probability sampling*

Outlets can be selected from business registers or by use of other sources, i.e. other statistics, telephone books, Internet. The outlets can be selected in a stratified probability sample where the probability of being selected is proportionate to the relative market share of the outlets.

### *Cut-off sampling*

However, in many instances it will not be possible to conduct probability sampling. Another option is to use Cut-off sampling where focus is to ensure that the most important outlets are included, while outlets with smaller market shares are left out.

### *Coverage of goods and services*

Most elementary aggregates cover a large variety of individual goods and services of which usually only relative few are included in the sample. In the sampling of goods and services it therefore has to be taken into account that the price development of the selected items has to represent the average price development of all items in the elementary aggregate.

### *Resources and response burden*

It is resource demanding to collect prices and maintain the sample over time. It may therefore be useful for the statistical office to analyse and optimize the sample of outlets and products. This may save resources and reduce the response burden. For an optimal allocation the price volatility and weight of each individual item and the costs of obtaining the price has to be taken into account.

A simple, first approach, would be to calculate how much each elementary aggregate index, on average, contributes to the monthly or annual changes of the overall CPI. For example, the 12-month rate of change of the overall CPI can be decomposed into the percentage contributions of the elementary aggregate indices. This calculation can be repeated each month for a period of a year or more, and the average relative contributions be calculated. The relative importance of the elementary aggregates can then be compared with the numbers of prices collected for the elementary aggregates. This simple approach would provide a rough guidance about where the number of collected price may be reduced or increased.

## **Price collection**

Prices can be collected in various ways:

- By mailed questionnaires to the outlets.
- By price collectors visiting the outlets.

- By use of price lists, catalogs and Internet.
- By central price collection.

#### *Mailed questionnaires*

Mailed questionnaires are a relative cheap way of collecting prices. It is more appropriate for areas with standardised products with less replacement and quality changes. The respondents have to be reminded to include new items that appear on the market, and delete obsolete ones.

#### *Price collectors*

The use of price collectors is resource demanding, but may be needed to ensure the quality of the collected prices, including updating of the sample with new items. It is more appropriate for areas with many product replacements and quality changes, fresh food and clothing, for example.

#### *Price lists and Internet*

Price lists and the like and Internet can also be used as data sources for the CPI, providing useful information at relatively low costs.

#### *Central price collection*

Prices for specific items may be collected from a central source. For example the prices of many supply services (water, gas, electricity) may be collected from one source. Similarly, outlet chains may charge the same prices in which cases it may be possible to collect the prices from a central office.

### **Calculation of the index**

#### *CPI calculated in two stages*

The CPI is calculated in two stages. In the first stage the *elementary aggregate price indices* are calculated for groups of relatively homogenous goods and services, on the basis of the collected prices. In the second stage indices at higher level of aggregation, up to the overall CPI, are calculated by weighting together the elementary aggregate indices with their relative expenditure shares.

### **Calculation of elementary indices**

#### *Formation of elementary aggregates*

The elementary aggregate indices are the basic building blocks of the CPI. In the formation of elementary aggregates some key points should be noted:

- Elementary aggregates should consist of groups of goods or services that are as similar as possible, and preferably fairly homogeneous.

- They should consist of items expected to have similar price movements. The objective should be to minimize the dispersion of price movements within the aggregate.
- The elementary aggregates should be appropriate to serve as strata for sampling purposes.
- The items selected should be ones for which price movements are believed to be representative of all the products within the elementary aggregate.
- The number of items within each elementary aggregate should be large enough for the estimated price index to be statistically reliable.
- The object is to try to track the price of the same item over time for as long as it continues to be representative. The items selected should therefore be ones that are expected to remain on the market for some time, so that like can be compared with like and problems with replacements and quality changes be reduced.

The elementary indices can be calculated in various ways. The most common practice is to calculate the elementary indices without using explicit weights for the individual observations. Three index formulas are common in used:

#### *Carli index*

The Carli index is the unweighted arithmetic mean of the price ratios:

$$(i) \quad P_{0,t}^C = \frac{1}{n} \sum \left( \frac{p_t^i}{p_0^i} \right)$$

#### *Dutot index*

The Dutot index is the ratio of the unweighted arithmetic mean prices:

$$(ii) \quad P_{0,t}^D = \frac{\frac{1}{n} \sum p_t^i}{\frac{1}{n} \sum p_0^i} = \frac{\sum (p_t^i / p_0^i) \cdot p_0^i}{p_0^i}$$

#### *Jevons index*

The Jevons index is the unweighted geometric mean of the price ratios, identical to the ratio of the unweighted geometric mean prices:

$$(iii) \quad P_{0,t}^J = \prod \left( \frac{p_t^i}{p_0^i} \right)^{1/n} = \frac{\prod (p_t^i)^{1/n}}{\prod (p_0^i)^{1/n}}$$

The Carli and Jevons are independent of the price levels. The Dutot index depends on the price levels in the reference period.

The Dutot index requires prices to be averaged. Hence, it should only be applied for elementary aggregates consisting of homogenous products nominated in the same measurement unit.

Table 1 shows an example of an elementary aggregate calculated by the three index formulas.

**Table 1. Calculation of elementary indices**

	January	February	March	April	May	June	July
	<i>Prices</i>						
Item A	6,00	6,00	7,00	6,00	6,00	6,00	6,60
Item B	7,00	7,00	6,00	7,00	7,00	7,20	7,70
Item C	2,00	3,00	4,00	5,00	2,00	3,00	2,20
Item D	5,00	5,00	5,00	4,00	5,00	5,00	5,50
Arithmetic mean	5,00	5,25	5,50	5,50	5,00	5,30	5,50
Geometric mean	4,53	5,01	5,38	5,38	4,53	5,05	4,98
	<i>Monthly price ratios</i>						
Item A	1,00	1,00	1,17	0,86	1,00	1,00	1,10
Item B	1,00	1,00	0,86	1,17	1,00	1,03	1,07
Item C	1,00	1,50	1,33	1,25	0,40	1,50	0,73
Item D	1,00	1,00	1,00	0,80	1,25	1,00	1,10
<b>Carli – arithmetic mean of price ratios</b>							
Monthly index	100,0	112,5	108,9	101,9	91,3	113,2	100,1
Chained monthly index	100,0	112,5	122,5	124,8	113,9	128,9	129,0
Direct index	100,0	112,5	125,6	132,5	100,0	113,2	110,0
<b>Dutot – ratio of arithmetic mean prices</b>							
Monthly index	100,0	105,0	104,8	100,0	90,9	106,0	103,8
Chained monthly index	100,0	105,0	110,0	110,0	100,0	106,0	110,0
Direct index	100,0	105,0	110,0	110,0	100,0	106,0	110,0
<b>Jevons – geometric mean of price ratios = ratio of geometric mean prices</b>							
Monthly index	100,0	110,7	107,5	100,0	84,1	111,5	98,7
Chained monthly index	100,0	110,7	118,9	118,9	100,0	111,5	110,0
Direct index	100,0	110,7	118,9	118,9	100,0	111,5	110,0

### *Direct and chained indices*

In a direct elementary index, the prices of the current month are compared directly with those of the price reference month (January). In a chain index, prices in each month are compared with those of the previous month, and the resulting short-term indices are multiplied, or chained, together to obtain the long-term index.

On the basis of the Table 1 calculations the following points may be noted:

- The chained Carli index is upward biased and should not be used. In May all prices have returned to the initial level, but the chained Carli shows an increase of almost 14%. In July, all prices have increased by 10% while the chained Carli shows an increase of 29%.
- Jevons and Dutot are transitive – the direct index is equal to the chained index. The Carli index is not transitive.
- Jevons is always below the Carli.

- Carli shows an increase in case of ‘price bouncing’, i.e. the prices change between items but are otherwise equal, as from March to April.

From a statistical viewpoint the Jevons index appear to have better properties; it satisfies more tests in the so-called *axiomatic approach* to index number theory.

From an economic interpretation Carli and Dutot are fixed basket indices that maintain the underlying quantities unchanged. The Jevons index allow for some degree of substitution.

It is up to the statistical office to decide whether to calculate the elementary indices as direct of chained indices. In practice the use of monthly chained indices seems to have some advantage. When a new or replacement item is included in a direct index, it will often be necessary to estimate the price of the item in the price reference period, which may be some time in the past. In a chain index, new items are linked into the index as part of the ongoing index calculation by including the item in the monthly index as soon as prices for two successive months are obtained.

#### *Calculation of weighted elementary indices*

If weighting information about the individual items is available this can be exploited by calculating the elementary aggregates using the weights. Thus, the elementary aggregates can be calculated as Laspeyres indices or as so-called geometric Laspeyres indices:

$$(iv) \quad P_{0,t}^{La} = \sum w_0^i \left( \frac{P_t^i}{P_0^i} \right), \quad \sum w_0^i = 1$$

$$(v) \quad P_{0,t}^{GLa} = \prod \left( \frac{P_t^i}{P_0^i} \right)^{w^i}, \quad \sum w^i = 1$$

Note that expenditure weights should not be attached to individual price observations in a Dutot Index, since this would conflict with the implicit weighting of the price changes in this index.

#### *Calculation of higher-level indices*

The higher-level indices are calculated as the expenditure weighted arithmetic average of the elementary aggregate indices:

$$(vi) \quad P_{0,t} = \sum w_b^j \cdot P_{0,t}^j$$

$P_{0,t}$  is any higher-level index,  $w_b^j$  is the weight of elementary aggregate j that belongs to the higher-level index, and  $P_{0,t}^j$  indicates the corresponding elementary indices. The weights refer to a period b, which in practice has to precede period 0, the price reference period.

### *Additivity*

Equation (6) applies at each level of aggregation above the elementary aggregate level; the index is additive. This means that any higher-level index can be calculated in one step as the weighted arithmetic average of the elementary indices of which it consist, or by weighting together the indices at intermediate level, with the same result.

Note that equation (6) is not a Laspeyres index. For equation (6) to equal a Laspeyres index, the weights should refer to the same period as the prices.

### *Price-updating of weights*

The statistical office has to decide if the weights should be re-referenced, or *price-updated*, from the weight reference period ( $b$ ) to the price reference period (0), or be applied as they stand without price-updating. Weights are price-updated by multiplying the original period  $b$  expenditure shares by their elementary indices from period  $b$  to 0, and rescaling to sum to unity:

$$(vii) \quad w_{b(0)}^i = \frac{w_b^i P_{b:0}^i}{\sum w_b^i P_{b:0}^i}$$

By price-updating the underlying quantities are implicitly kept constant. Price-updating the weights from  $b$  to 0 means that the index will show the same rate of changes as if the weights had been applied from period  $b$ .

### *Lowe index*

If the statistical office decides to price-update the weights, the resulting index will be a *fixed basket index*, a so-called *Lowe index*. From month to month it measures the value of the same (annual) basket of goods and service. If the primary aim is to compile a CPI measuring the price development of an actual, past fixed basket of goods and services, the weights should be price-updated. The index will provide a good estimate of the price development if quantities tend to remains constant, i.e. if there is no or not much substitution in response to changes in the relative prices.

### *Young index*

The statistical office can decide instead to use the expenditure shares without price-updating. This corresponds to the calculation of a *fixed weight index*, a so-called *Young index*. Focus is that the weights should be as representative as possible for the average expenditure shares in the period for which the weights are applied. It does not measure the changing cost of any actual fixed basket. It will provide a good estimate of the price development if the expenditure shares roughly remain constant, i.e. if consumers tend to substitute in response to relative price changes.

### *Automatic price-updating*

In all cases automatic price updating should be undertaken with care. When there is an inverse relation between movements of prices and quantities, price-updating on its own could produce

perverse results. For example, the price of computers has been declining rapidly for years and price-updating of the expenditure share of computers would seriously underestimate the importance of computers. In practice, the expenditure share of computers might actually be rising because of a very rapid increase in quantities of computers purchased.

### Chaining and re-weighting

From time to time a new set of weights is applied for the CPI. The weights can be updated annually or with less frequency. The weights should be updated at least every five years. Irrespective of the frequency of weights updating the CPI based on the new weights should be chained onto the terminal value of the CPI based on the old set of weights. The chained index is calculated as:

$$\begin{aligned}
 P_{0:t} &= \sum w_b^j \cdot P_{0:k}^j \cdot \sum w_c^j \cdot P_{k:t}^j \\
 \text{(viii)} \quad &= P_{0:k} \cdot \sum w_c^j \cdot P_{k:t}^j \\
 &= P_{0:k} \cdot P_{k:t}
 \end{aligned}$$

There are several important features of a chained index:

- The chained index formula allows weights to be updated and facilitates the introduction of new items and removal of obsolete ones.
- To chain the old and the new series, an overlapping period ( $k$ ) is needed where the index is calculated using both the old and new set of weights.
- A chained index may have two or more links. In each link the index is calculated as a fixed weight index as in equation (6). The chaining period is usually a month, often December.
- Chaining is intended to ensure that the individual indices on all levels show the correct development through time.
- Chaining leads to non-additivity. When the new series is chained onto the old as in equation (7), the higher-level indices cannot be calculated as the weighted arithmetic averages of chained individual indices.

It is useful to take the opportunity of re-weighting and chaining to introduce other changes to reduce breaks in time series.

### Treatment of missing prices

*Missing prices are inevitable, and have to be dealt with*

Missing prices occurs regularly since it is not always possible to collect all prices for the goods and services in the sample. Prices will be missing because outlets are closed or have stopped selling a product, or products have disappeared from the market, temporarily or permanently. A special type of temporary unavailability occurs with seasonal items such as fruit, vegetables, clothing and package holidays.

In the case of missing observations one of four actions may be taken:

- Omit the item for which the price is missing so that a matched sample is maintained, even though the sample is depleted.
- Carry forward the last observed price.
- Impute the missing price by the average price change of the prices that are available in the elementary aggregate.
- Impute the missing price by the price change of a comparable item.

#### *Omit the item*

One should be careful to omit too many observations as this will lead to a depletion of the sample.

#### *Carry forward*

Carrying forward prices biases the rate of change of the CPI towards zero. Thus, prices should only be carried forward for a limited period of time. When the item reappears, the whole of the price change should be included in the index.

#### *Imputation by group*

Imputing by the average price change of those goods and services for which prices have been recorded assumes that the price of the missing item would have moved as the average price change of the available items.

#### *Imputation by another item*

In some cases it may be more appropriate to estimate the price change of the missing price by the price change of another similar item, which may be known or expected to move in similar way.

#### *Overlapping prices*

If possible it may be an advantage to obtain overlapping prices, i.e. prices for the same month for both the disappearing and the replacement item. In this case, it is possible to link the price series for the new item to the price series of the item it replaces. Linking with overlapping prices involves an implicit adjustment for the difference in quality between the two items, since it assumes that the relative prices of the new and old item reflect their relative qualities. For perfect or nearly perfect markets, this may be a valid assumption, but for other markets it may not be a reasonable assumption.

More practical examples of how to deal with missing prices are provided in the CPI Manual, chapter 9.

#### *Adjusting for quality changes*

The CPI shall reflect only 'real' price changes. Thus, price changes that are due to quality changes as a matter of principle should not be included in the CPI. Quality adjustments can be undertaken in a variety of ways:

- **Direct comparison:** The price of the new item is compared directly with the price of the old one. It is thus assumed that the two items are of comparable quality and the whole of the price change is included in the index.
- **'Link to show no change':** The price of the new item is linked into the index. The price change is assumed to equal the quality change and thus not included in the index calculation.
- **Overlapping prices:** With overlapping prices the new item can be linked into the index. This assumes that the price difference reflects the value of any quality difference between the two items.
- **Imputation:** The price development of the new item is imputed by the price development of similar items or groups of items.
- **Monthly re-sampling and chaining:** The sample is updated regularly on monthly basis and a chained index is calculated on the basis of the matched monthly prices.
- **Adjustment for quantity changes:** For items where the quantity change a proportionate change should be made in the price.
- **Experts judgement:** Persons with detailed product knowledge are requested to value the difference between the new and old product, and appropriate adjustment are made in the recorded prices.

### *Hedonic regressions*

Hedonic regression is a special way to adjust for quality changes in which the relationship between the price of an item and its price determining characteristics is estimated in a regression equation. The estimated coefficients reflect the influence on the price from the price determining characteristics. For a product with new values of the characteristics, for example a PC with more RAM, the quality adjusted price can then be determined. Hedonic regressions are relatively resource demanding, require relatively large amount of observations and regular updating.

Examples of methods a) – e) are provided below where it is assumed that the elementary index is calculated as a monthly chained index.

#### **Direct comparison (include the whole of the price change)**

	March	April	May
Item A	200	220	
Item B		220*	190
Monthly index	100,0	110,0	87,4
Chained index	100,0	110,0	96,1

\* Adjusted price

In May item A is replaced by item B. It is assessed that there is no quality difference, and the whole price difference is included in the index by using the price of A as previous price of B.

**Link to show no change**

	March	April	May
Item A	200	220	
Item B		400*	400
Monthly index	100,0	110,0	100,0
Chained index	100,0	110,0	110,0

\* Adjusted price

In May item A is replaced by item B. It is assessed that the whole of the price change is due to a quality change, and B is included in the index with an unchanged price from April to May, so that the replacement does not affect the index.

**Overlapping prices**

	March	April	May
Item A	200	220	
Item B		400	420
Monthly index	100,0	110,0	105,0
Chained index	100,0	110,0	115,5

Overlapping prices are recorded for April. This allows the price of the new item to be linked into the index, assuming that the price ratios in April reflect only quality changes.

**Imputation**

	March	April	May	June
Item A	190	210	200	190
Item B	400	400	400	380
Item C	300	300		
Item D			240	240
Monthly index	100,0	103,4	97,6	96,6
Chained index	100,0	103,4	100,9	97,5

Note: The indices are calculated on the basis of geometric means

From March to April the index is calculated on the basis of the prices for items A, B and C. The monthly index for April-May is calculated on the basis of prices for A and B only. The new item D is included in the monthly index for May-June (calculated on the basis of A, B and D), which is then linked onto the value of the chained index in May.

**Monthly re-sampling and chaining**

	Month 0	Month 1	Month 2	Month 3	Month 4
Item A	$a_0$	$a_1$	$a_2$	$a_3$	
Item B	$b_0$	$b_1$	$b_2$	$b_3$	$b_4$
Item C	$c_0$	$c_1$	$c_2$	$c_3$	$c_4$
Item D		$d_1$	$d_2$	$d_3$	$d_4$

In this method the index is calculated by multiplying the monthly indices, each based on a set of matched prices including only the prices obtained in both periods. Using geometric means, the index in month 4 would be calculated as:

$$P_{0:4} = \left( \frac{a_1 \cdot b_1 \cdot c_1}{a_0 \cdot b_0 \cdot c_0} \right)^{1/3} \left( \frac{a_2 \cdot b_2 \cdot c_2 \cdot d_2}{a_1 \cdot b_1 \cdot c_1 \cdot d_1} \right)^{1/4} \left( \frac{a_3 \cdot b_3 \cdot c_3 \cdot d_3}{a_2 \cdot b_2 \cdot c_2 \cdot d_2} \right)^{1/4} \left( \frac{b_4 \cdot c_4 \cdot d_4}{b_3 \cdot c_3 \cdot d_3} \right)^{1/3}$$

The method assumes a competitive market and requires a relatively large number of observations.

### *Data editing*

The data editing process comprises two main steps: detecting of possible errors and outliers, and validation and correction of data.

### *Errors and outlier*

Errors may be falsely reported prices, or they may be caused by recording or coding mistakes. Possible errors and outliers are usually identified as observations that fall outside some pre-specified acceptance interval or are judged to be unrealistic by the analyst on some other ground.

### *'Inliers'*

It may also be the case, however, that even if an observation is not identified as a potential error, it may actually show up to be false. Such observations are sometimes referred to as inliers. The reporting of unchanged prices by respondents is a particular source of error that potentially may cause a downward bias in the CPI if not corrected.

### *Validation*

When a possible error has been identified, it needs to be verified whether it is in fact an error or not. This clarification can usually be made by asking the respondent to verify the price, or by comparison with the price change of comparable items. If it is in fact an error, it needs to be corrected. This can be done easily if the respondent can provide the correct price or, where this is not possible, by imputation or omitting the price from the index calculation. Sometimes exceptional price changes outside the acceptance interval are captured but verified as correct. Such outliers should be included, or otherwise omitted or imputed according to predefined practice.

The identification of extreme or unusual price changes can be accomplished by *non-statistical checking of input data*, *statistical checking of input data* and *output checking*.

### *Non-statistical checking of input data*

Non-statistical checking can be undertaken by manually checking the input data, by inspection of the data presented in comparable tables, or by setting filters.

### *Statistical checking of input data*

Statistical checking of input data compares, for some time period, each price change with the change for similar goods or services. Statistical checking or filtering may use different types of means or the median of the observed price changes on the basis of which an acceptance interval can be generated. Such intervals may also detect for example reported constant prices as potential errors if the general price trend is increasing.

### *Output checking*

Checking by impact, or data output checking, is based on calculating the impact that an individual price change has on an index to which it contributes. This index can be an elementary aggregate index, the total index, or some other aggregate index. A maximum value for this impact can be set, so that only those price changes that cause an impact greater than this have to be reviewed.

## **Dissemination**

### *CPI is a key economic indicator and part of official statistics*

The CPI is one of the most important economic statistical series. It must be published and otherwise disseminated according to the policies, codes of practices and standards for such data. Above all, the CPI should meet the *Fundamental Principles of Official Statistics* (UN 1994).

According to the *CPI Manual*, the CPI should therefore be:

- Released as soon as possible
- Made available to all users at the same time
- Released according to pre-announced dates
- Released separately from ministerial comments
- Made available in convenient form for users
- Accompanied by methodological explanation
- Backed up by professionals who can answer questions and provide further information

For the index to be widely accepted, it is essential that the decisions about how to compile the CPI are based on strictly professional grounds and that methods are documented and made available to the public.

## 6. Compilation of Producer Price Indices

by Carsten Hansen, UNECE

### Introduction

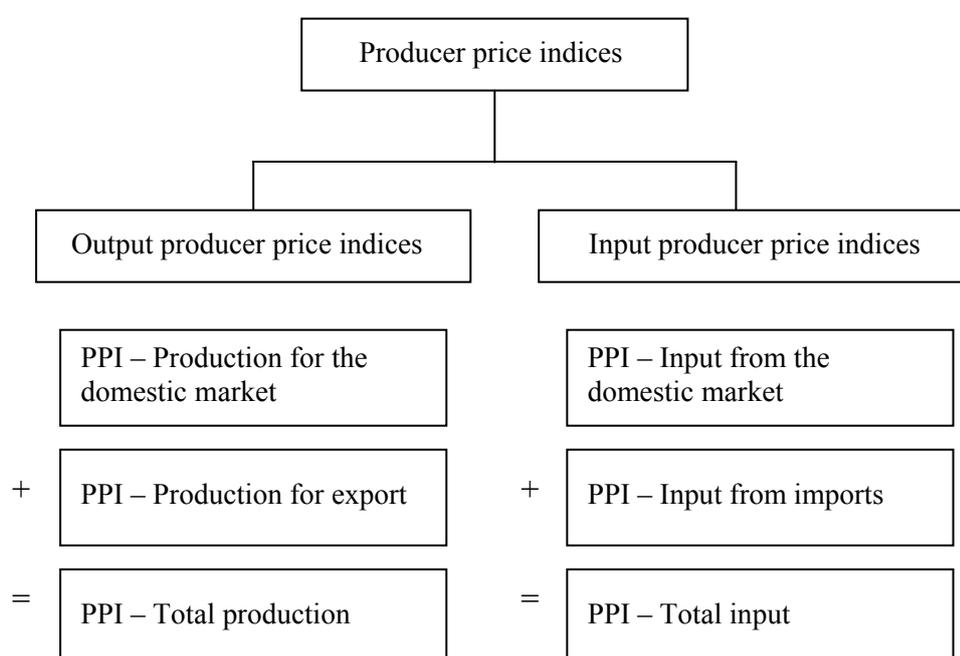
The paper provides a brief overview of the different types of producer price indices (PPIs). It discusses the coverage of PPIs, the compilation of weights, classification standards and the price concept of the PPI. It then gives a short description of the main uses of PPIs and the calculation methods, and end with a section on how to adjust for quality changes.

The paper is based mainly on the international *PPI Manual*<sup>1</sup>, to which interested readers are referred for further details and explanations.

### Different types of PPIs

There are many types and variants of PPIs, which differ according to a number of issues. However, there are two main types of PPIs – supply based *output* producer price indices, and demand based *input* producer price indices.

### The family of producer price indices



<sup>1</sup> IMF, ILO, UNECE, OECD, Eurostat and the World Bank: *Producer Price Index Manual: Theory and Practice*. IMF 2004, USA. The manual is available in English from IMF's website: <http://www.imf.org/external/np/sta/tegppi/index.htm>

In general terms a PPI can be described as an index designed to measure the average change in the price of goods and services either as they leave the place of production or as they enter the production process.

### *Output PPIs*

The total production in terms of goods and services can be divided between the domestic and the foreign market. Hence, output PPIs may be constructed to cover total production, production for the domestic market or production for export. In the latter case, this will be an export price index.

Output PPIs aims to measure the average price change for goods or services produced by business. They should be based on the prices received by the producers. Ideally, the output PPI should cover all goods and services resulting from the production activity, whether sold on the domestic market or exported. Many countries compile both the output PPI for the total production and separate PPIs for production for the domestic market and for exports. EU member countries are required to compile PPIs for both total production and export price indices.

### *Input PPIs*

In the same way producers purchase goods and services from both domestic suppliers and from abroad. Hence input PPIs may be constructed to cover total input of goods and services, input from the domestic market and input from abroad. In the latter case, this will be an import price index.

Input price indices measure the change in the prices of all intermediate inputs used in production by a specified sector of the economy. Input PPIs should be based on the prices actually paid by business in return for goods and services purchased. More countries over the last decades have developed input PPIs, and the increase in international trade has spurred the interest in compiling import price indices. In the EU countries that participate in the common currency union, the euro, are required to compile import price indices.

### *Output PPIs are more common in use*

Output PPIs are the more common in use as they are more appropriate for deflation of national accounts data and serve as an important inflation measure in their own right.

## **The scope and coverage of PPIs**

An operational definition of a PPI requires a decision about the actual coverage of establishments and goods and services; whether the index is meant to cover all production, that is, all economic activities and/or products, or just particular industries and/or product groups.

### **Net or gross PPI**

PPIs can be compiled on the basis of two different weighting concepts –*gross* or *net of intra-sectoral transactions*.

### *The treatment of intra-sectoral transactions*

The scope of a gross PPI is broader than that of a net PPI in that it also includes *intra-sectoral* transactions. That is, taking as an example a manufacturing sector output PPI, transactions between different manufacturers would be in scope (for example, sales of refined sugar for the production of soft drinks) for a gross output PPI, while only sales from the sector to the outside would be in scope for a net output PPI.

### *Gross and net weights*

In the net PPI approach the weight of a sector would be made up of the value of goods and services sold from the sector to the other sectors. In the gross approach the aggregate weight would include also the value of sales between units inside the sector.

It is desirable to produce aggregated PPIs based on net weights. When using gross sectoral indices, there is a problem with multiple counting of price change as products flow through the different production processes. This occurs where the output of one industry is used as an input in another industry within the same sector of the PPI aggregation. The net sectoral approach is the measure that best reflects the impact of inflation in a sector, such as manufacturing, on the rest of the economy.

## **Coverage of activities and products**

### *Output PPIs*

Output PPIs should in principle cover all (marketed) goods and services produced and sold by the establishments that are within the scope of the index.

### *Input PPIs*

Input PPIs should in principle cover all intermediate inputs used in production by the establishments. Intermediate inputs are inputs into the production process of an establishment, excluding primary inputs like land, labor, or capital.

In practice, however, the purpose of the index and a number of practical issues, such as the availability of weighting and price data and resource constraints, has to be taken into account when the actual coverage is decided upon

### *Traditional coverage of industrial activities*

In many countries the PPI is limited to the industrial sector including manufacturing, mining and energy supply. Agriculture is often excluded and there are different practices according to inclusion of activities such as mining and public utilities (gas, electric and water supply). Industrial activities represent a good starting point.

### *Services becoming more important*

However, the share of such activities in national economies is becoming smaller, and services such as transport, communication, medical care, trade, and business services are becoming increasingly more important. If the primary purpose of the PPI is to serve as an inflation indicator or a deflator for national accounts aggregates, a broad coverage of economic activity is needed.

### *Services PPIs*

With the growing importance of the service sector many countries are progressively developing PPIs for services. These services PPI can then be incorporated within the larger PPI frameworks. These developments are discussed among interested statistical agencies in the *Voorburg Group*. EU member countries are required to compile PPIs for the services producing industries.

### *Export and import*

Export and import price indices are important extensions of domestic producer price indices. Foreign trade price indices are the subject of a separate *Export and Import Price Index Manual*, to be published later in 2007 or in 2008.

### **Non-market activities**

#### *Non-market activities usually excluded from the PPI*

Most countries have defined non-market activities as falling outside the scope of the PPI, which is then limited to marketed products and services. Non-market activities are, e.g., general government services such as national defense and the value of owner-occupied structures. The decision of whether non-market transactions should be included or excluded should be based on a consideration of the primary objective of the index and on the availability of data sources.

#### *Changes in stocks and imputed rents*

For example, for an index that aims to reflect changes in actual market transaction prices, prices of notional transactions such as changes in stocks and imputed dwelling rents have no place – in contrast to the national accounts, where conventions provide for the valuation of certain non-traded goods and services so that no economic activity is omitted.

#### *The non-observed economy*

Similarly, practical decisions need to be made about whether efforts should be expended on trying to capture price changes of goods and services transacted in the non-observed (“hidden”) economy. Issues such as the relative size of the non-observed economy and its accessibility for price measurement should be considered.

### *Capital formation*

Other coverage issues include the treatment of capital formation on own account. A decision needs to be made whether these flows are to be included or excluded. If they are to be included, an assessment needs to be made about whether the book entry valuations recorded in the company accounting records are realistic in terms of being contemporary market-based estimates, or are merely notional estimates. If the latter, the preferred approach would be to assign the weight associated with these transfers to the prices obtained from businesses engaging in arms-length trading.

### **Globalisation and e-commerce considerations**

#### *Outsourcing*

The e-commerce revolution, coupled with globalisation, is having a substantial impact on determinations of population coverage. The outsourcings of production are redefining the role of many business enterprises. An enterprise that had been a major manufacturer may now outsource all production to establishments based in other countries. The enterprise may not even provide the material inputs to the production entity because it is more cost-effective to allow the production entity to arrange its own inputs utilizing just-in-time inventory techniques.

If the fabricated good is repatriated before marketing, this leaves the domestic enterprise only a wholesale trade margin output-generating activity. However, the enterprise is busily engaged in new product development and prototyping. These are the main wealth-generating activities for the modern corporation. But the enterprise has its output valued as wholesale margin rather than as manufacturing with a gross sales output valuation.

#### *Virtual corporations*

A related phenomenon is the establishment of virtual corporations to manufacture a new product with a quite short expected life span. The virtual corporation may be production facilities that can be quickly converted to different manufacturing activities to produce items on a contract basis. A consortium of firms can establish the virtual corporation with different skills coming together briefly to manufacture a new product with a short expected life.

In both cases, the PPI program is challenged to review its concepts of domestic production and manufacturing. Criteria for manufacturing may need to be revised to ensure appropriate weighting of these activities. The boundary between manufacturing and wholesale trade may need to be reestablished in recognition of this.

#### *The speed of changes challenges the survey methods*

Finally, the statistical agency can be expected to be challenged by the speed with which these partnerships are formed and dissolved. Traditional surveying methods may be too slow and cumbersome to permit inclusion of short-lived virtual corporation partnerships in the PPI program. New surveying methods may need to be developed in order to ensure coverage of this most dynamic part of the economy.

### *Compilation of weights*

Weighting data can be considered at two levels: for the calculation of elementary aggregate indices and for the calculation of higher-level indices.

#### *Weights within elementary*

Elementary aggregate indices can be calculated with or without the use of weights. If *explicit* weights are used, the relevant value data has to be obtained, or estimated, from available sources. Note that if the elementary indices are calculated without the use of explicit weights, there will still be an *implicit* weighting of the price changes determined by the (relative) number of observations of the sampled products. Such “self-weighted” indices require the number of price observations of each product to reflect the relative importance of the products in terms of value.

#### *Elementary aggregate weights*

The elementary aggregate weights are used to average the elementary indices into indices at successively higher level of aggregation, up to the overall PPI. The selection of the level at which the elementary aggregates are formed and weights applied is particularly important.

#### *Setting the level of the elementary aggregates*

The main advantage of setting the level relatively high, for example, at the four-digit industry or product group level, is that the price statistician then has greater discretion to maintain the sample (at the establishment and product level) on a needs basis as market activity changes. New products and establishments can be introduced easily into the sample, and individual weights can be updated on the basis of more recent information. That is, there is greater opportunity to keep the index representative through an ongoing program of sample review.

If the level is set relatively low in the index structure, there is less freedom to maintain the representativeness of the index on an ongoing basis, and there will be a greater dependence on the periodic index review and re-weighting process. In such circumstances, the argument for frequent re-weighting becomes stronger.

#### *Allocation of weights for production that is not priced*

In the formation of the elementary aggregate weights it may be appropriate to assign the production values of industry output that is *not* going to be directly priced in the index to a related industry in order to maintain the correct broad weighting relativities. This may happen because certain output clusters are either too small, or because of practical pricing difficulties. The assumption underlying this practice is that the price movements of the un-priced products are more likely to be similar to those of related products than to those of the aggregate of all the products priced in the index.

### *Smoothing of weights*

Weights aim to be representative of the pattern of transactions expected to prevail during the period for which they are used in the index construction, which depends on the frequency of re-weighting. It may therefore be necessary to adjust some of the values to *normalize* them and overcome any irregularities in the data for the particular period from which it is being sourced (for example, as a result of a one-off increase in production of a product in response to a temporary increase in demand). Alternatively, the weights may be *smoothed* by basing them on data from a run of years (say, three years).

### *Source data*

Potential source data for elementary aggregates include industry surveys, economic censuses, input-output tables, and international trade statistics.

### *Classifications*

The classification system provides an organizing structure for the PPI and is the first step in sample surveying. It defines how industries and/or product groups be grouped and the aggregation structure of the index. The PPI should be compiled according to an international, or international comparable, classification.

### *Coding*

A detailed product or activity code should be assigned to each sampled commodity in order to facilitate the grouping and calculation of individual observations into elementary aggregate indices. Similarly, the elementary aggregates should be appropriately coded to allow further aggregation into higher-level indices.

The classification at the lowest level of aggregation provides a frame by which to organize the sample. In the UK, for example, the sample is based on the six-digit *Classification of Products by Activity* (CPA) codes. The elementary indices are calculated at this level and then weighted up into *ISIC* or *NACE* four-digit, two-digit group, or higher-level totals. The *Harmonized Commodity Description and Coding System* (HS) is also common in use.

## **Price concepts in PPIs**

### *Basic prices*

Output PPIs should be based on *basic prices*, the amount of money received by the producer. The *1993 SNA* (paragraph 6.205) defines basic prices as follows:

The *basic price* is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

As a rule of thumb, for an output PPI, the pricing point is ex-producer, for example, ex-factory, ex-farm, ex-service provider.

### *Purchasers' prices*

Input PPIs should be based on purchasers' prices, the price actually paid by the purchaser (the establishment) for goods or services. The purchaser price is the amount paid by the purchaser inclusive of any taxes net of subsidies on products and transport and trade margins. For an input PPI the pricing point is "delivered into store".

### *Transaction prices*

The prices collected should be actual transaction prices. Transaction prices would not necessarily be "list" or "book" prices because they should reflect any applicable discounts, rebates, surcharges, etc. that may apply to their customers for the sampled transactions. These would include contract prices, where they exist, and spot market prices.

### *The time of the recorded price*

The prices should be recorded at the time the transaction occurs, not at the time of order, particularly for major durable goods such as airplanes and ships, which have a long production period between order and delivery.

Special care needs to be taken with subsidized prices and intra-company transfer prices. The prices used in the PPI should reflect the revenue received by producers from transactions. Prices for products on which subsidies are received will not reflect the revenue to the producer unless the subsidies are included. Also, intra-company transfer prices may not reflect actual market prices.

### *Export and import price indices*

Export price indices usually are also based on basic prices, the price received by the exporting establishment. Import price indices usually are based on purchasers' prices, including insurance and freight charges incurred to the point of the customs frontier of the importing country, and taxes and excise duties on imports, since these are not deductible and have to be paid by the producer.

## **Transfer prices**

### *Transfer prices become more important ...*

Intra-company transfer prices are of increasing importance as globalisation progresses. Intra-company transfer prices are defined as the value assigned on a per unit or per shipment basis to goods shipped from one establishment of an enterprise to another. The ownership of the good does not change hands, so the value assigned to the shipment is not a market price. Where there is a vertically integrated enterprise, these shipments cross industry lines and account for revenue within that product line. Therefore, they are reflective of output-generating activity in the domestic economy.

... and are likely to distort price analysis

One of the primary goals of the PPI is to help determine the magnitude and direction of price movement on both a macro- and microeconomic level. Price movements at earlier stages of processing or within intermediate demand are often of the greatest interest to policymakers concerned with price inflation. For such a use, any index containing non-market prices not paralleling market price movement is of dubious value. Intra-company transfer prices may well distort price analysis of market trends in the domestic economy.

It is generally recognized that the statistical agency must research the basis for setting intra-company transfer prices to determine how closely they proxy market prices. Often, vertically integrated companies establish separate profit maximizing centers and allow the use of market measures to determine the performance of each unit. In such instances, intra-company transfer prices generally meet the test as good market price proxies.

#### *Transfer prices and taxes*

Where tax considerations are important in price setting, transfer prices are generally poor proxies. Internationally traded goods might have valuations set to minimize import tariffs and corporate taxes. The statistical agency may decide to exclude such transfer prices from the index when they are judged to be accounting entries with no relation to market prices or values sensitive to taxation. On the other hand, to the extent that such activity is a significant portion of an industry's output, it is important to get the best proxy prices available because they will be needed to derive the industry PPI for use as a deflator in compiling GDP.

### **The collection of prices**

The aim of survey collection techniques is to facilitate the transmission of price data from businesses to the statistical office in a secure and cost-effective manner, while minimizing the administrative burden of the respondent.

#### *Different collection methods*

A range of approaches to PPI data collection is available: postal survey, automated telephone response, personal interview, telephone interview, and Internet data provision. All of these methods rely on good questionnaire design, good respondent relations, and good interviewing techniques. The exact methods chosen by countries for particular industries will depend on the special circumstances applicable to each form of collection in their industry/country.

#### *Cost efficiency*

For some products, the prices collected may be *estimated* transaction prices because the transaction sampled did not have sales during the reference period. In addition, it is generally neither practical nor cost effective to try to collect prices each month or quarter directly from establishments by personal visits. Data can effectively be collected using mail questionnaires, telephone contacts, fax, or through Internet.

## The main uses of the PPI

PPIs serve multiple purposes. The most important ones are the following:

- Short-term indicator of inflation
- Deflation of national accounts and other macroeconomic series
- Indexation of contracts
- Economic analysis and inflation monitoring

### *Inflation measure*

A monthly or quarterly PPI is in its own right an important measure of short-term inflation. Detailed series allows monitoring of inflation for different types or through different stages of production.

### *Deflation*

A vital use of PPIs is as a deflator of nominal values of output or intermediate consumption for the compilation of production volumes of national accounts. PPIs are used for this purpose because the volumes underlying the nominal values are not directly measurable.

### *Indexation of contracts*

PPIs are widely used for indexation of long-term contracts in both the public and private sectors, particularly for more detailed PPI components.

### *Economic analysis*

The overall PPI and its sub-indices are used for a variety of economic analysis. For example analysis by commodity to reveal the impact of inflationary pressure from raw materials, which are often priced on international markets outside the control of domestic agencies. A particularly important example is crude oil. Aggregations of commodities can also be constructed to show the total impact of commodity price change on the economy.

### *Stage-of-processing indices*

Another method for analysis is to aggregate by stage-of-processing indices. This concept classifies goods and services according to their position in the chain of production – that is, primary products, intermediate goods, and finished goods. This method allows analysts to track price inflation through the economy – for example, changes in prices in the primary stage could feed through into the later stages, so the method gives an indicator of future inflation further down the production chain.

### *Productivity calculations*

A final use for PPIs is in deflating the nominal value added of an industry into a real value added. These industry measures of real value added are then divided by labor input to the industry to

form estimates of *industry labor productivity*, or are divided by an index of industry primary input usage to form estimates of *industry total factor productivity*. Productivity increases act as a primary driver of increases in the standard of living of a country, so it is of some interest to try to determine which industries are the main drivers of productivity improvements.

PPIs are requested by international organizations such as Eurostat, OECD, IMF and the European Central Bank (ECB).

### Calculation of the PPI

#### *PPI calculated in two stages*

PPIs are basically calculated in the same way as consumer price indices (CPIs), namely in two stages. In the first stage the *elementary aggregate price indices* are calculated for groups of relatively homogenous goods and services. In the second stage indices at higher level of aggregation, up to the overall PPI, are calculated by weighting together the elementary aggregate indices with their relative volume shares.

#### *Calculation of elementary aggregate indices*

In the absence of available detailed weighting information the elementary aggregates are calculated using one of the three options:

- The unweighted arithmetic mean of the price ratios (Carli index)
- The ratio of the unweighted arithmetic mean prices (Dutot index)
- The unweighted geometric mean of the price ratios, identical to the ratio of the unweighted geometric mean prices (Jevons index).

The statistical properties are the same as those explained in the Working Paper 5: *Compilation of Consumer Price Indices (CPIs)*, UNECE Statistical Division. Further discussions about the advantages and disadvantages of using either of the three index formulas are provided in the *PPI Manual*. The following points should be noted, however:

- The Jevons index has the best statistical properties (i.e. it satisfies more tests than the two other formulas)
- The Carli and Jevons are independent of the price levels, while Dutot depends on the initial price levels
- The chained Carli index is biased upwards and should not be used.
- The Dutot index should only be used for strictly homogenous elementary aggregates

#### *Direct and chained indices*

It is up to the statistical office to decide whether to calculate the elementary indices as direct or chained indices. In practice the use of monthly chained indices seems to have some advantage in terms of facilitating product replacements.

### *Calculation of weighted elementary indices*

If weighting information about the individual products is available this can be exploited by calculating the elementary aggregates using the weights. Thus, the elementary aggregates can be calculated as Laspeyres indices or as geometric Laspeyres indices. Expenditure weights should not be attached to individual price observations in a Dutot Index, since this would conflict with the implicit weighting of the price changes in this index.

### **Calculation of higher-level indices**

The higher-level indices are calculated as the value weighted arithmetic average of the elementary aggregate indices:

$$(i) \quad P_{0:t} = \sum w_b^j \cdot P_{0:t}^j$$

$P_{0:t}$  is any higher-level index,  $w_b^j$  is the weight of elementary aggregate  $j$  that belongs to the higher-level index, and  $P_{0:t}^j$  indicates the corresponding elementary indices. The weights refer to a period  $b$ , which in practice has to precede period 0, the price reference period.

### *Laspeyres and Paasche are lower and upper bounds for output PPIs*

Under the assumption of profit maximizing producers in competitive markets it can be expected that the Laspeyres price index will provide a lower bound of the 'true' economic output PPI, and Paasche will provide the upper bound.

### *Paasche and Laspeyres are lower and upper bounds for input PPIs*

For an input PPI it can be expected that the Paasche price index will provide a lower bound of the 'true' economic input PPI, and Laspeyres will provide the upper bound.

### *Ideal indices*

Hence, some average of Laspeyres and Paasche could be expected to produce a better estimate of the true price development. It has been shown that the Fisher price index (the geometric average of Paasche and Laspeyres) provides a good estimate of the true economic PPI. The same holds for the Törnqvist and Walsh price indices, which both utilise weighting information from both the reference and current period of the price index.

### *Retrospective calculations of ideal indices*

It is not possible to compile these ideal indices on an ongoing basis, since weighting data are usually only available with a considerable time lag. However, when weights become available, such ideal indices can be calculated retrospectively.

### *Updating of weights*

To keep the index representative the weights needs to be reviewed and updated regularly. The weights can be updated annually or with less frequency, but at least every five years. A regular update of the weights reduces potential bias arising from basing the PPI on dated weights.

### *Chain-linking*

Irrespective of the frequency of weights updating the CPI based on the new weights should be chained onto the terminal value of the CPI based on the old set of weights to obtain coherent long-term index series.

## **Unit value indices**

### *Use Unit values only for strictly homogeneous products*

Unit values are acceptable in the PPI if they represent a strictly *homogeneous* set of product transactions. Often this cannot be met. If average prices are calculated over a large number of transactions with differing quality and/or terms of sale, they are not acceptable in the PPI. Changes in such prices may reflect any changes in the composition of individual products or mix of quality characteristics. Such changes in the heterogeneous mix of transactions lead to what is often referred to as *unit-value bias* in the measurement of price changes.

It is possible, however, to use unit value indices for products where they are known to estimate price indices, and combine these with indices based on surveyed prices.

## **Adjusting for quality changes**

### *The importance of adjusting for quality changes*

The treatment of quality change is perhaps the greatest challenge facing PPI compilers. It presents both conceptual and practical problems for compilers of PPIs. The whole of Chapter 7 of the *PPI Manual* is devoted to the treatment of quality change, and Chapter 8 addresses the closely related topic of new goods and product substitution. Three points are stressed in chapter 7 in the *PPI Manual*:

- The pace of innovation is high, and possibly increasing, leading to continual changes in the characteristics of products.
- There is not much consistency among countries in the methods they use to deal with quality change.
- Empirical studies indicate that the choice of method can lead to very different results.

### *Some action has to be undertaken, you cannot “do “nothing*

When a new product is introduced to replace a disappearing one, it is necessary to establish a link between the series of past price observations on the old transaction and the subsequent series for the new transaction. The two series of observations may, or may not, overlap in one or more

periods. Whether or not there is an overlap, the linking of the two price series requires some estimate of the change in quality between the old product and the product selected to replace it. However difficult it is to estimate the contribution of the changed quality to the change in the observed price, it must be clearly understood that *some estimate has to be made either explicitly or implicitly*. Even apparently “doing nothing” necessarily implies some kind of adjustment.

The *Handbook on price and volume measures in national accounts*<sup>2</sup> divides possible methods to adjust for quality changes into three groups:

- A methods:** most appropriate methods  
**B methods:** those methods, which can be used in case an A method cannot be applied  
**C methods:** those methods, which shall not be used

The handbook describes the following methods that can be applied:

- **Direct comparison:** The price of the new item is compared directly with the price of the old one. It is thus assumed that the two items are of comparable quality and the whole of the price change is included in the index.
- **'Link to show no change':** The price of the new item is linked into the index. The price change is assumed to equal the quality change and thus not included in the index calculation.
- **Overlapping prices:** With overlapping prices the new item can be linked into the index. This assumes that the price difference reflects the value of any quality difference between the two items.
- **Matched models only.** This approach may cover *Imputation*, where the price development of the new item is imputed by the price development of similar items or groups of items, or *Monthly re-sampling and chaining*, where the sample is updated regularly on monthly basis and a chained index is calculated on the basis of the matched monthly prices.
- **Option prices:** If the difference between A and C is the inclusion of an extra option, e.g. a CD-ROM drive in a computer, the extra option can be separately priced and appropriate adjustment made in the recorded price.
- **Production costs:** Producers can be asked about the difference in cost of producing the old and new item, and the ratio of costs be applied for adjusting the prices.
- **Experts judgement:** Persons with detailed product knowledge are requested to value the difference between the new and old product, and appropriate adjustment are made in the recorded prices.
- **Hedonic adjustments** by use of hedonic regression.

### *Unique products*

Unique products such as major equipment projects (for example ships, aircrafts and special purpose machinery), construction and tailored business services (for example IT or management consultancy) pose a special problem for quality adjustments in PPIs.

<sup>2</sup> *Handbook on price and volume measures in national accounts*. The European Commission, Eurostat, 2001, Luxembourg. The handbook is available in electronic form from Eurostat's webpage.

While a project or a consultancy service may be seen as unique in its entirety it is often possible to break down a project in the components of which it exists. For example a house may seem unique but is made up of a number of combined products and services each of which may be priced. Where it is possible to break down activities in component parts, two methods may be applied:

### *Model pricing*

A model is constructed by combining a series of components that can be priced over time. The model should be representative of the projects produced and sold on the market; it does not have to be a project actually observed on the market.

Model pricing can be applied when the following criteria are met:

- The model should be representative and regularly updated to ensure that it continues to be representative.
- The model should be defined in terms of outputs, not inputs, e.g. “a tiled wall of 20 square metres”, not “a contract of 100 hours of work”
- The prices used for the component parts should be the actual prices charged, taking account of producers’ profit margins and discounts offered to costumers

### *Specification prices*

A real product can be broken down in its key elements or components. In the successive periods individual projects are examined and the prices of the matched set of components are compared. No ideal, representative model has to be constructed or updated. However, the key elements specified might become less relevant over time for which reason they will need to be updated regularly. The key elements should be specified in terms of outputs rather than inputs.

### *Input prices*

In general, input prices should not be used, as they do not take into account changes in productivity. However, for example charged average hourly wage rates may be used for compiling price indices for certain types of work, e.g. repair or machineries or legal or management or IT consultant services, if productivity can be assessed to be reasonable constant.

### *International prices*

The use of international price indices is an acceptable (B) method for certain products if they can be considered to be representative of the price development in the country. Examples of such possible products may be raw materials and computers where often international prices or indices can be found on Internet; US compiled hedonic indices for computers may be used as a data source.

### *Resampling*

Resampling is a practical method in which to cope with quality changes and keep the product sample up to date by gradually dropping certain products and introducing new ones. Products may be dropped for two reasons:

- The product is believed by the respondent or the statistical office to be no longer representative. It appears to account for a diminishing share of the total revenue within the product group or industry in question.
- The product may simply disappear from the market altogether. For example, among other reasons, it may have become obsolete due to changing technology, or unfashionable due to changing tastes.

### *Update sample of establishment and products on ongoing basis*

At the same time, new products or new qualities of existing products appear on the market, and at some point they should be included in the sample. Thus, by resampling the sample of establishment and products is updated on an ongoing basis and kept representative.

## ANNEX

In addition to the papers presented at the seminar and included in this publication, several presentations were based on PowerPoint only. The list of these presentations is provided below. The full text is available at: <http://www.unece.org/stats/documents/2007.07.global.htm>

### **What makes official statistics trusted by users?**

by Heinrich Brügger, UNECE

### **National accounts, globalisation and business survey**

by Robin Lynch, Office for National Statistics, United Kingdom

### **OECD Handbook on Economic Globalisation Indicators**

by Thomas Hatzichronoglou, OECD

### **Issues of forming group of enterprise statistics in Ukraine?**

by Olga Vasechko, STC of Statistical Research, Ukraine

### **Update of the 1993 SNA – towards SNA rev.1**

by Lidia Bratanova, UNECE